

# **In Re Lighthouse Wind Energy Public Hearing**

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*October 02, 2018*

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1 1  
 2 LIGHTHOUSE WIND COMMUNITY FORUM  
 3 -----  
 4 Public Information Meeting  
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 8 Location: Lyndonville Central School District  
 9 25 House Avenue  
 10 Lyndonville, New York 14098  
 11 Date: October 2, 2018  
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 13 Time: 7:00 p.m.  
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 21 Reported By: MEREDITH A. BONN, CSR, RPR, NYRCR  
 22 Alliance Court Reporting, Inc.  
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 24 Rochester, New York 14604  
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 2 Moderator:  
 3 Rita Coleman-Graham  
 4  
 5 Apex Clean Energy Representatives:  
 6 Paul Williamson  
 7 Dave Phillips  
 8 Tracy Butler  
 9 Steve Wilkinson  
 10 Robert O'Neal  
 11 Jim Muscato  
 12 \* \* \*  
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1 LIGHTHOUSE WIND ENERGY  
 2 TUESDAY, OCTBER 2, 2018;  
 3 (Proceedings in the above-titled matter  
 4 commencing at 7:03 p.m.)  
 5 \* \* \*  
 6 MS. COLEMAN-GRAHAM: Good evening. People  
 7 in the back, please continue to come on in and grab a  
 8 seat. We have got plenty of them here still.  
 9 I want to thank you for coming out tonight  
 10 in kind of questionable weather and attending this  
 11 public informational meeting about the Lighthouse Wind  
 12 project proposed by Apex Clean Energy.  
 13 My name is Rita Graham and I'm an  
 14 independent consultant from south of Pittsburgh,  
 15 Pennsylvania and I'm here tonight as the moderator for  
 16 this meeting. Now, my role tonight is to facilitate the  
 17 meeting and to present your questions to the panelists  
 18 over here for responses during the Q and A session.  
 19 Now, Apex Clean Energy comes here tonight  
 20 with three main goals. Okay. The first goal is to  
 21 present updated project information, which you can see  
 22 from out in the lobby includes locational information  
 23 about the proposed turbines.  
 24 The second goal is to have a panel of  
 25 experts here today to provide information on wind energy

1 LIGHTHOUSE WIND ENERGY  
 2 projects, information on their development, their  
 3 permitting, their construction and their operation.  
 4 Okay. Now, the third goal for tonight is to  
 5 gather as many questions as is needed to have -- for you  
 6 to have -- for everyone to have a clear understanding of  
 7 the Lighthouse Wind Project and to clarify any sort of  
 8 misunderstandings that may be out there.  
 9 Now, this meeting is not a regulatory  
 10 required meeting. Okay. It's not.  
 11 What it is is Apex chose to hold this  
 12 meeting to better inform the community with updates on  
 13 the project and to solicit and to respond to community  
 14 questions about the project.  
 15 In addition, Apex chose to videotape and to  
 16 transcribe tonight's presentation from the panel and the  
 17 Q and A session that we are going to be doing with your  
 18 questions. So that material can be readily available  
 19 for maybe your neighbors, other interested communities,  
 20 for other people to be able to see what they may have  
 21 missed here not being able to be here in person.  
 22 Now, take a look at your agenda. It's on  
 23 the flip side of this. Okay. And I'll go over what the  
 24 format is going to be for our time together here  
 25 tonight. In a few minutes I'm going to ask the

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2 panelists to stand real quick and give a brief

3 introduction of themselves.

4           That handout that has the agenda at the

5 bottom, you are going to see there's bio information in

6 more detail on each of the speakers. We are then going

7 to move into the information presentation part.

8           And then that brings me to these. Everybody

9 should have received when you came into the door, at

10 least the door into the auditorium, four by six cards.

11 These are what I'm going to refer to tonight as question

12 cards.

13           I might slip up and say cue cards, because I

14 wrote that in my notes. Okay. But they are your

15 question cards.

16           So when one of the panelists is speaking and

17 it brings a question to mind, I need you to jot it down

18 on this card and we are going to collect them in between

19 each panelist. And then I'm going to be reading your

20 questions from these cards. Okay. So these are your

21 question cards that we are going to engage the panel

22 with.

23           Now, after each of the panelists speak, the

24 way I'm going to collect these cards, is I'm going to

25 ask you very nicely and quietly, pass your cards to

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1           LIGHTHOUSE WIND ENERGY

2 video camera that's going to be capturing all of the

3 activity here today. So we need to be careful on how we

4 do question generation and the card collection. So

5 please don't wave the cards around. Just sort of pass

6 them to each person.

7           So I just need everybody to cooperate on

8 that so that we will have a good quality video to be

9 able to share with others.

10           Now, after the last speaker I'll present the

11 audience questions. I'm going to read two or three

12 questions for each of them. Cycle back around, two or

13 three questions more, until 9:25.

14           We have told the school we would be out of

15 here so they could lock up at ten. So that's what our

16 timeline is.

17           Now, one last thing before we get started in

18 the panel, I want to draw your attention to the ground

19 rules. I've found that in facilitating large meetings

20 that it's very helpful to have some ground rules. It's

21 basically common courtesy type of stuff.

22           The first one I ask that you please listen

23 without interruption. I want to make sure we don't have

24 a lot of interruptions and distractions so that I'll

25 have sufficient time to ask your questions and get

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1           LIGHTHOUSE WIND ENERGY

2 these two center aisles. And we are going to have two

3 runners, Jessica and Gabe. Jessica is in the back. I

4 think you saw Gabe -- Gabe is back there too. They are

5 waving a little.

6           They will be coming up and down the aisles,

7 picking those up. And then what they are going to do is

8 they are going to bring those question cards up here to

9 this table where I'm going to have two assistants. I

10 have got one right now. The other one is still working

11 out back -- or out front. Carmine and Rachel. And they

12 are going to sort those question cards to make it

13 efficient to be able to then pass them to me during the

14 Q and A period so I can ask questions based on each of

15 the topics.

16           Okay. So that's the method that we are

17 using with the question cards.

18           If we happen to run out of time before I'm

19 able to ask every one of those question cards, Apex has

20 agreed that they will answer all of the questions and

21 they'll provide the questions and answers on their

22 website.

23           Okay. So if you don't get an answer to your

24 question tonight, it will be answered and it will be

25 posted. Now, as I mentioned, there's going to be a

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2 responses from the panel.

3           Already talked about writing your questions

4 on the cards. Please put them in the form of a

5 question. I won't be reading statements or

6 proclamations. I will be reading things in the form of

7 a question to get responses from the panel.

8           You already took care of the other one, no

9 banners or signs. I don't want anybody's eyes poked

10 out. So that was, that was my request there.

11           And, respect each other. I know that for

12 some, emotion kind of runs high at these type of

13 meetings and I understand that. I just need everybody

14 to be courteous and to be respectful with one another.

15 I want it to be a very productive meeting to get your

16 questions done and answered here tonight.

17           So with that, please silence your cell

18 phones, and refrain from any heckling or disruptive

19 behavior.

20           For the record, I do want to note, as you

21 saw, we have security on site. That's because when I do

22 these kind of meetings, I always have a standard

23 protocol to have security on the site, just in case

24 there's disruptions.

25           And, come on, we all know what it's like out

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1           LIGHTHOUSE WIND ENERGY  
2 there in the world now. It's to protect all of us and  
3 to keep everybody safe too. So please work with me.  
4 I've never had to engage security and I don't want to do  
5 that tonight.  
6           Okay. Panelists, I'm going to ask you each  
7 to stand up, give your name, your company, your title  
8 and your topic for tonight.  
9           MR. WILLIAMSON: Good evening. My name is  
10 Paul Williamson. I am the senior project developer with  
11 Apex Clean Energy and I'll be providing a general  
12 project overview and some background on how we have come  
13 up with our current design before then handing off to  
14 our next panelist.  
15           MR. BUTLER: Hi, there. I'm Tracy Butler.  
16 I'm the director of civil engineering for Apex. I'll be  
17 chatting about engineering of a wind farm and  
18 construction of a wind farm.  
19           MR. WILKINSON: Good evening. I'm Steve  
20 Wilkinson. I work with Fisher Associates. We are an  
21 engineering firm. We will be focused on designing the  
22 access roads into the project.  
23           MR. PHILLIPS: Hi, my name is Dave Phillips.  
24 I oversee environmental permitting and compliance for  
25 Apex Clean Energy.

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2 first step in the process of designing a project and  
3 then we go and we will be working on the additional  
4 information that allows us to position access roads,  
5 collection lines, other facilities that will be  
6 associated with the project.  
7           Through that process there's some additional  
8 field studies that we need to do. Completing those  
9 field studies will inform the project. So the project  
10 or the layout that you see today is subject to change as  
11 we go through that process. And also as we go through  
12 the engineering there's a number of different factors  
13 that can influence the project.  
14           And, likewise, as we go through the permit  
15 review process, there are additional factors that may  
16 cause an alteration to the project. So, again, what we  
17 are showing you tonight is a preliminary layout. It's a  
18 foundation of where we get started with that entire  
19 process of developing and designing a project.  
20           And the end result will look something close  
21 to this. But we can't guarantee that it will be exactly  
22 what we see tonight.  
23           So, again, this is a copy of the map that  
24 you see out in the foyer. To generate this right now we  
25 are modeling, we have modeled actually several different

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2           MR. O'NEAL: Good evening. My name is Rob  
3 O'Neal. I am a managing principal at Epsilon  
4 Associates. I'm here to talk about sound and answer  
5 your questions about sound tonight.  
6           MR. MUSCATO: Hi, good evening. My name is  
7 Jim Muscato. I am with the law firm of Young Sommer. I  
8 am permitting counsel for Lighthouse Wind in the Article  
9 10 process.  
10           MS. COLEMAN-GRAHAM: Thank you, gentlemen.  
11 And, with that, we are going to ask Paul to come on up.  
12 And, remember, get out your question cards. If a  
13 question comes up, jot it down and we will collect it.  
14           MR. WILLIAMSON: Okay. So, as I noted  
15 earlier, I'm going to provide general project overview.  
16 I believe that you had an opportunity to look at the  
17 current project layout as we have conceived it in the  
18 hallway and so I'll go over that.  
19           I'll talk a little bit about how we come up  
20 with some of those decisions on where we locate turbines  
21 and I'll also talk about the impacts and benefits to the  
22 community.  
23           One thing worth noting, as we talk about the  
24 layout tonight, this is a preliminary layout. We have  
25 been able to identify the turbine locations. That's the

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2 turbines for this project and the Vestas V150 is the  
3 model turbine that seems to be performing best in this  
4 area.  
5           So we have generated our turbine layout  
6 based on that model. With that turbine we would have 47  
7 turbines in the entire project area. The hub height of  
8 the turbines would be 345 feet high. The hub height is  
9 the center, or the top of the tower, from where you see  
10 the blades all attached. The maximum tip height would  
11 be 591 feet off the ground.  
12           Rotor radius, the length of the blade  
13 essentially, would be 246 feet. I mentioned the Vestas  
14 V150. That is a 4.2 megawatt turbine and that would  
15 allow us to generate 197.4 megawatts in the project  
16 area.  
17           With this layout there are 39 turbines  
18 located in the Town of Somerset and eight turbines  
19 located in the Town of Yates. This -- I have several  
20 slides here that just really kind of show a close-up.  
21 Again, probably best for you really, if you are  
22 extraordinarily interested, to really take a close look  
23 at the maps that we have out in the foyer.  
24           This shows the turbine array in the western  
25 section of the project. I've put in some of the road

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1           LIGHTHOUSE WIND ENERGY  
 2 names there to help you get an idea where everything is  
 3 located.  
 4           This is the current power plant that's in  
 5 Somerset. So this shows two clusters of turbines that  
 6 would be located just south of that.  
 7           As we go through this, and the engineering  
 8 folks will talk about this a little bit further. You'll  
 9 notice that the turbines tend to be located in clusters.  
 10 And so, again, you see a small group of three there.  
 11 And then seven turbines. This is in the central part of  
 12 the turbine -- I mean the central part of the project  
 13 area.  
 14           And then over in the eastern part of the  
 15 project area you can see the town line there between  
 16 Somerset and Yates. And this shows the final cluster of  
 17 turbines over in the eastern part of the project area.  
 18           UNIDENTIFIED SPEAKER: Can you go back to  
 19 the first picture please?  
 20           MR. WILLIAMSON: Sure.  
 21           Again --  
 22 (Indiscernible comment by audience member)  
 23           MR. WILLIAMSON: Okay. I'll ask you not to  
 24 interrupt. There are maps that you can look at.  
 25 (Indiscernible comment by audience member)

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1           LIGHTHOUSE WIND ENERGY  
 2 from different areas of concern or futures of concern.  
 3 And so I'll walk through that briefly with you.  
 4           So this is exactly the same area that I  
 5 showed before. But you see some shaded areas coming in.  
 6 This image shows the application of municipal and  
 7 infrastructure features. So roads, electricity lines.  
 8 That bright orange area, shaded area is the distance  
 9 that we want to be back from the rail line.  
 10           So you can start to see that that five mile  
 11 square area starts getting encroached upon a little bit.  
 12 In all of these shaded areas we would not want to put a  
 13 turbine in those areas because we, again, want to make  
 14 sure we provide adequate safety distance between the  
 15 turbines and any one of these features.  
 16           So this image shows the application of  
 17 environmental features which include streams, wetlands,  
 18 some of our setbacks. Also include the identification  
 19 and setting back from bird flyway areas and there's  
 20 additional environmental features that we apply as well.  
 21           So, again, more shaded areas now being  
 22 imposed upon the area. Those shaded areas are not where  
 23 we would want to locate turbines.  
 24           Then we go even a step further and we do  
 25 setbacks from property lines. We try to create a good

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1           LIGHTHOUSE WIND ENERGY  
 2           MR. WILLIAMSON: There are maps that you can  
 3 look at in the foyer. And I can assure you that all of  
 4 the turbines in all of the facilities that we are  
 5 currently working with are entirely on leased land. And  
 6 so -- and I'll talk a little bit further about that too  
 7 and how we have come up with this layout.  
 8           So this shows -- this is just south of the  
 9 power station that currently exists in Somerset. This  
 10 is an area that's five square miles.  
 11           And I'm just going to talk a little bit  
 12 about the process of how we come up with locating the  
 13 turbines. So this is five square miles in the western  
 14 part of the project area.  
 15           This is an aerial photograph. So you can  
 16 see these are the open farm fields. This shaded area in  
 17 here, this darker green, that shows the wooded areas.  
 18 You can actually make out the railroad that comes out of  
 19 the current station. And there's Hosmer Road as well.  
 20           So here's what the land looks like when we  
 21 first approach it. And then we start applying a number  
 22 of different considerations to it as we inform where we  
 23 want the turbines to go.  
 24           And we want to make sure that we take into  
 25 consideration proper safety, setting back the turbines

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 2 safe distance from any residence. Both residents that  
 3 are participating in the project and also residents that  
 4 are not participating in the project.  
 5           And from that whole five, five square mile  
 6 area, you can see that we end up with just four small  
 7 areas that we can locate turbines and that would allow  
 8 us to locate turbines, five turbines in that area.  
 9           Now, when we locate our turbine we want to  
 10 have approximately 1,600 feet in between our turbines.  
 11 Because the turbines can have an effect on how each  
 12 turbine operates. And so we have to spread out those  
 13 turbines a little bit. They can't be right beside each  
 14 other.  
 15           And then the other thing that we take into  
 16 consideration too when we put all this together is we  
 17 want to make sure our grouping of turbines are set up in  
 18 an area -- in a way so that we don't generate too much  
 19 noise that would affect any of the nearby residents.  
 20           So in generating this project design, we  
 21 have been able to achieve a number of different features  
 22 that really take into consideration safety. For  
 23 starters, the sounds generated from this project will  
 24 not exceed 45 decibels at any nonparticipating  
 25 residence.

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2           So anybody who is not directly involved in  
3 the project outside of their house, the sound will never  
4 exceed 45 decibels while operating. Again, shadow  
5 flicker is often a concern for all nonparticipating  
6 houses. None of these turbines through an entire 365  
7 days of the year, none of these turbines will generate  
8 shadow flicker on any residence any greater than 30  
9 hours throughout an entire year. And that includes  
10 mornings, daytime, evening -- evening times.  
11           Again, some additional notes on this project  
12 layout, we are over one mile away from the Barker  
13 School. No turbine is -- or all turbines are greater  
14 than one-third of a mile away from any nonparticipating  
15 home.  
16           Nonparticipating property lines we are 650  
17 feet back. Roads we are 885 feet back. Infrastructure,  
18 including transmission lines, gas lines, railroads,  
19 anything else, we would be 650 feet back and 492 feet  
20 back.  
21           We even take into consideration structures  
22 such as barns, silos, all that including all lands that  
23 we have under lease. Because, again, this project is  
24 being designed with safety in mind.  
25           So when we develop a project there are

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2 utilize and how we can connect all these properties  
3 together. And it really took us until this summer  
4 through all the time that we have been developing this  
5 project to coordinate, come up with contracts with all  
6 that land involved.  
7           Now, I'm sure you can imagine that if we  
8 showed up and we previously showed a layout to people  
9 without having the lands properly contracted under  
10 lease, somebody might show up to that meeting and be  
11 somewhat upset if we were projecting a turbine on their  
12 property that was not under lease and so we wanted to  
13 avoid those kinds of problems.  
14           And so that's one of the reasons why it's  
15 taken this long for us to really put this together  
16 because we -- this is a complex project. It involves  
17 multiple different leases and it's a large project with  
18 47 turbines and we want to make sure that we get this  
19 right.  
20           So from this step going forward we will have  
21 additional community meetings, as information becomes  
22 available, and we will be informing all of you about the  
23 different aspects of the project. Those meetings will  
24 be scheduled when there's information appropriate to be  
25 shared and not until that information is verified and we

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2 essentially three major elements when you put together a  
3 project like this. And the process -- the process  
4 requires three major elements. One of those being land.  
5 The other one being the interconnect process, where and  
6 how we plug the project in to the grid. And then,  
7 finally -- or, not finally, coherent or in parallel the  
8 permit.  
9           And so when you develop a project like this  
10 you are trying to kind of line all of these things up  
11 together so that the outcomes all are happening or the  
12 processes are all happening in parallel.  
13           Now, with this project in particular, we  
14 have over -- we have leases signed with over a hundred  
15 different people and so that is a relatively high number  
16 and in getting there --  
17           Keep moving down the line. Okay. So in  
18 getting there --  
19           So, let's see. I was talking about the  
20 lands and signing a number of leases. We have received  
21 a number of questions over time. When are you going to  
22 release a turbine layout?  
23           And, you know, we have been working to get  
24 to that point. But before we could get to that point we  
25 really needed to understand what properties we could

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2 can trust that we are providing accurate information to  
3 the public.  
4           So, our schedule right now, again, I  
5 mentioned field studies that we needed to complete  
6 before we really get our permit application put  
7 together. So we are working on completing those field  
8 studies right now. We hope to be able to complete all  
9 of those field studies prior to the onset of winter. So  
10 we are working diligently to complete that.  
11           Assuming we can get that process complete,  
12 we would be submitting our permit application in the  
13 winter of 2019. We expect that the application process  
14 will take approximately two years for us to get through.  
15 And then in 2021 we will be doing final project  
16 planning, go into preconstruction with the real heart of  
17 construction activities happening in 2022 and the  
18 project going operational towards the end of 2022.  
19           So, this project is going to have an impact  
20 on the local area. You will be able to see turbines at  
21 times and some people will think that they really look  
22 fantastic and other people really won't like them. But  
23 the project is going to also bring additional impacts.  
24           Obviously, the people who hold land leases  
25 will benefit from the project being here because they

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2 will receive payments. But, the rest of the community

3 also receive benefits as well. I've illustrated a

4 number of benefits that other communities have had.

5           If you go up to the Orangeville Wind Farm in

6 the Town of Orangeville, they have a line item in their

7 budget in 2018 for over \$500,000 generated specifically

8 from the wind power project that's there. That payment

9 will increase over time for that community.

10          The Noble Bliss Wind Farm in the Towns of

11 Eagle and Arcade in Wyoming County, the county, the

12 towns and the schools have already received investments

13 of nearly \$2,000,000.

14          In addition to that, the Town of Eagle,

15 which is the host community, has a host community

16 agreement of \$6,400 per megawatt. They were able to

17 eliminate all of their town taxes and all of their

18 garbage fees within the town.

19          In the Dutch Hill Wind Farm in Steuben

20 County, Towns of Cohocton, Avoca and Prattsburgh, the

21 county, the towns and the schools have received 3.7

22 million dollars in tax payments from the project.

23          The Cohocton community -- the Cohocton

24 community benefit payments have provided an additional

25 3.9 million dollars to the town. And that town has been

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2 Apex, as a company, really wants to engage in the near

3 term with the communities to negotiate a community

4 benefits agreement that really is planning the use of

5 the investments so that it has the largest impact.

6          We want to hear from you and we want your

7 impact on that and we want to work creatively to solve

8 problems so that any kind of investment we bring to the

9 community really directs -- directly impacts the

10 community's needs and desires. Working together we can

11 sustain the attractiveness and increase the value of

12 living in both of these towns.

13          So our next steps, again, I mentioned the

14 field studies and then we go into engineering and

15 designing. Through that process we will also -- this

16 will be informing the project layout as well. We will

17 be working with federal and state agencies to enhance

18 the environmental benefits of the project while also

19 reducing any environmental conflicts that the project

20 might create.

21          Additional community and information

22 meetings will be held, again, when the information

23 becomes available. Firsthand opportunities, we are

24 going to generate a number of different firsthand

25 opportunities for people to really start learning more

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2 able to reduce their property taxes by 60 percent.

3           So these are the kinds of benefits that we

4 really want to work with the community to amplify. So

5 that is we are designing the project. We can bring it

6 forward in a way that really creates high benefit for

7 your area.

8           Right now in our initial estimates and

9 modeling, we expect that the Lighthouse wind power

10 project will be bringing 1.5 million dollars to the

11 local communities, once it's operational. And, as this

12 project is having impacts, we want to work cooperatively

13 with the communities to make sure that there is a net

14 positive of impacts from this project.

15          So, we know that communities really thrive

16 and do well and have high value when there is community

17 renewal investment. When there's a diverse tax base.

18 When diverse businesses and job opportunities exist in

19 the communities. When there's low and consistent taxes

20 in those communities. And when there is healthy

21 infrastructure and good educational systems.

22          And so this is an opportunity for us really

23 to utilize this project as a vehicle to make sure that

24 there are sustainable finances available to both towns

25 to make sure that all of these elements exist. And,

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2 of the details about wind energy.

3           And, again, we really want to work directly

4 with the communities to frame the benefits to best meet

5 the needs and the desires.

6           We look forward to working constructively

7 with all of you. Thank you for your time.

8           MS. COLEMAN-GRAHAM: Thank you, Paul.

9           Now, remember, if you had questions, please

10 forward them in your aisles to the center here and

11 Jessica and Gabe will get them.

12           And Tracy is up next.

13           MR. BUTLER: All right. So, again, I'm

14 Tracy Butler, the director of civil engineering for

15 Apex. I'm going to chat about engineering the wind farm

16 and constructing the wind farm. So we have a couple of

17 slides here.

18           This first slide kind of shows,

19 schematically, the configuration of a wind farm and how

20 it works and we are going to start here in the bottom

21 left with the turbine itself. So the wind turbines that

22 use the wind to turn the three-bladed rotor that you see

23 there, which turns a generator and creates electricity.

24 And that's the purpose of this.

25           So this project has 47 turbines, as Paul

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2 mentioned, and they are laid out in a cluster array.

3 Each turbine being approximately 1,600 feet from the

4 next. And, as Paul mentioned, that's due to the design

5 constraints of the turbines so that they don't wake each

6 other.

7           So the turbine as it's generating

8 electricity is transmitting that electricity down the

9 tower, underground to a set of cables, collection cables

10 that collect all the power from each turbine, one after

11 the next, after the next. And that all gets wrapped up

12 in a substation where there's a large transformer that

13 increases the voltage from 34.5 kilovolts to 345

14 kilovolts.

15           So that's the voltage of the transmission

16 grid. So the substation takes that power, gets it up to

17 the transmission voltage, gets it on the grid and out to

18 the grid.

19           I should note that these collection cables,

20 there's a couple of cables in a trench for each run.

21 There's three conductors, one for each phase. There's a

22 fiber optic cable in there as well. There's a ground

23 cable also, which is basically just a copper clad cable.

24           So, those all connect together in a

25 substation, then to the transmission line. And then, I

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2 first thing we are going to do is mobilize to the

3 project area and build a lay down yard. Which we are

4 doing up here.

5           And the lay down yard is where there will be

6 temporary office trailers for the contractors. There

7 will be places to put spools of cable, to put

8 components, if needed. So it's generally like where the

9 guys are staging everything and running the project from

10 during construction.

11           Once that's done, or while it's being set

12 up, we will get started on the access roads and the

13 foundation. So the public roads will be improved, where

14 needed, to allow the turbine components to come in and

15 then there will be private roads constructed in the

16 fields to get the components out to where the turbines

17 are going to be.

18           So every one of those dots that Paul had on

19 the map for the turbine will have a little access road

20 going out to it so that the turbine can be delivered and

21 so that operations and maintenance people can also get

22 access to the turbine without driving through a field.

23           While the roads and foundations are being

24 built, there will also be buried collection cable that I

25 mentioned. You can see here, the way it works is, the

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2 guess, you know, in more detail here is a turbine with

3 its various components. You'll see that there's a

4 tubular steel tower right there and that is most likely

5 for the turbine that we are looking at is going to be in

6 four or five sections.

7           Then on top there's a nacelle which holds

8 the generator and the gearbox. On the front of the

9 nacelle there's a rotor or hub where all the blades get

10 attached and that's the part that rotates.

11           And then you have the individual blades

12 there. They are kind of like an airplane wing and they

13 rotate and there you go.

14           So, in more detail, holding this whole thing

15 up is a foundation and there's a little schematic

16 diagram down here with foundation. For this turbine,

17 the foundation is probably about 70 feet in diameter

18 underground at the very bottom. And then you can see

19 it's tapered up. You have got a pedestal at top here.

20 So the part that sticks up out of the ground is about 18

21 feet in diameter. And that's about 11 feet deep. So a

22 foundation of this size will probably have about a 1,000

23 cubic yards of concrete.

24           Okay. Moving on. Here we go. So this is

25 the general steps in constructing a wind farm. The

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2 topsoil is slid off to one side with a motor grader and

3 then a trencher comes through, which is basically a

4 tracked machine with a trenching saw, which is kind of

5 like a chainsaw in the ground and that will cut the

6 trench.

7           And, if you can see it on this photo, it's

8 kind of small, each of the cables is kind of coming over

9 the trencher and down into the trench. So it goes

10 along, cuts the trench, puts the cable in behind it and

11 then a trackhoe or backhoe will come right behind it,

12 compact the soils back in over top of the cable and put

13 the topsoil back. Like I said, that goes from

14 turbine-to-turbine connecting them all to the

15 substation.

16           Then, at the same time, or shortly

17 thereafter, turbine components will start showing up.

18 And, what I mentioned in the previous slide, the turbine

19 will have several tower sections; the nacelle, the

20 blades and such. So each of those will come in on a

21 separate truck. They will go right to the specific site

22 of the turbine.

23           And then they will use cranes. As you can

24 see there just to erect that turbine. It will start,

25 obviously, with the tower getting stacked and then the



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2 nacelle put on top and then -- here in this photo they

3 are lifting the rotor as one unit. Which means they

4 have assembled it on the ground and picked it up.

5           For a turbine, on this project, there will

6 probably be a single blade direction where they would

7 actually lift each blade up and stick it into the hub

8 one at a time for all three.

9           While that's going on, the project

10 substation will go under construction. And that's where

11 all of the collection lines are bringing the power and

12 then it's going to get transformed up to the voltage of

13 the transmission line. So that will be built.

14           That will have circuit breakers and switches

15 and a little control enclosure and then a connection to

16 the existing transmission line that runs through the

17 area. So that's generally the construction process.

18           I should note too that once the project is

19 built and turbines are erected and commissioned, you

20 know, we will start to peel back some of that

21 disturbance. So the lay down yard, which was maybe ten

22 acres or so. That was just temporary. That will go

23 back to its previous condition.

24           Some of the road infrastructure, if like a

25 big turn was put in an intersection, that will come back

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2 think around this project being located near the south

3 shore of Lake Ontario and concern about it being in a

4 migratory pathway.

5           So representation of the Fish and Wildlife

6 Service recommending that service is not -- wind

7 projects are not placed in these locations. And so

8 that's a pretty important consideration.

9           I want to talk to you a little bit about

10 some of the work that we have done around siting the

11 project, some of the considerations that we look at

12 carefully before moving forward on a site like this.

13 And, hopefully, present to you some facts and help your

14 understanding of what we do with regard to environmental

15 compliance. And if I don't answer your questions then,

16 by all means, make sure you jot them down so that we can

17 clarify any concerns.

18           As I mentioned, I work with four other

19 environmental folks. Two are based in Denver, Colorado.

20 Two are based in Charlottesville, Virginia in our main

21 office. And I'm based near Albany, New York. Three of

22 us are Master's level wildlife biologists. One has a

23 graduate degree in environmental policy and the other is

24 more of a GIS in wetland permitting specialist.

25           So basically we have five people that all

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2 out. Wherever the cranes walked from

3 turbine-to-turbine, if it's in an ag field, that will

4 get decompacted. So there is kind of a restoration that

5 happens at the end of construction so that the impacts

6 are minimal.

7           So really what is left is that little bit of

8 foundation sticking above the ground, the turbine of

9 course, and then the access road and everything else

10 will be removed or underground.

11           That's generally it really. Okay. So I

12 think next in line is wildlife and environmental for

13 Dave.

14           MS. COLEMAN-GRAHAM: Okay. Again, if you

15 have questions for this speaker on your cards, again,

16 please pass them to the aisle like you did so they can

17 be collected and brought up.

18           Okay. Dave.

19           MR. PHILLIPS: Okay. Hi. My name is Dave

20 Phillips again. I'm the vice president of environmental

21 compliance and permitting at Apex. I oversee our group

22 that deals with birds and bats, wetlands, cultural

23 resources, things like that.

24           I deal a lot with the DEC and the fishing

25 wildlife service. There has been a lot of discussion I

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2 come from conservation or environmental background. We

3 all care a great deal about the environment. So we are

4 kind of lucky to be involved with a company that takes

5 those kind of considerations seriously.

6           What do we do? We do a lot of managing the

7 consultants that do the technical studies around the

8 environmental resources. So we work with the agencies

9 to identify what studies need to be done. We get those

10 studies implemented and then we meet and work with the

11 agencies to understand the results.

12           And then we go out and work with the many

13 aspects of our company, the engineers, the business

14 folks, the construction folks and help design a project,

15 operate a project or build and operate a project that we

16 can be proud of that we basically can check that it's

17 operating without a lot of impacts, particularly to

18 birds and bats and other things like water quality.

19           So my little diagram, kind of outlining what

20 we do, starting at the lower left, we start with early

21 site assessment work. And I'm going to walk through

22 each of these fairly quickly. But as we agree on a site

23 we then meet with the agencies and talk to them about

24 our findings and why we want to be here.

25           Now, environmental, unfortunately, is only

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 2 one small aspect of our siting and design work. We have  
 3 to consider transmission capacity, zoning, all kinds of  
 4 other factors. But, you know, when we settle in on an  
 5 area then I try to help us fine tune where we put our  
 6 facilities to minimize impacts.  
 7           But we do the studies that the agencies  
 8 recommend. We meet with them. We implement our  
 9 avoidance and minimization measures, siting or  
 10 operational protocols and build a project that we like,  
 11 and, as I mentioned, can be proud of.  
 12           Once it's operational, we actually monitor  
 13 the impacts to birds and bats pretty carefully. It's  
 14 kind of a science that has evolved substantially over  
 15 the years where we actually have biologists that go out  
 16 and count things that collide with turbines; birds and  
 17 bats. And estimate the specimens that are killed, the  
 18 numbers that are killed and if we have concerns about  
 19 either of those then we work with the agencies to try to  
 20 resolve those.  
 21           Now, Apex, since its inception, has  
 22 commercialized about four and a half gigawatts of wind  
 23 power. We have yet to have a project that operates that  
 24 kills an endangered species, has killed an eagle. So we  
 25 have a very good track record along those areas.

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 2 levels, what species are there.  
 3           Raptor nests surveys. Winter grassland  
 4 raptor surveys. Breeding bird surveys. Avian radar  
 5 surveys. Quite a list. After we collect that data, we  
 6 then sit down with the agencies and talk about it. What  
 7 does it mean? How do we avoid it and minimize risk,  
 8 particularly to those more rare or sensitive species  
 9 that may be out there.  
 10           The figure on the top right is simply a  
 11 representation of our avian use survey plots. The  
 12 biologist stands at the center of each one of those  
 13 circles which represent the habitats that we plan to  
 14 disturb. They basically count what's there.  
 15           Small birds for ten minutes. Raptors and  
 16 large birds, like water fowl and gulls and things, for  
 17 20 minutes. And then eagles for an hour. They do that  
 18 once or twice a month and that gives us a picture of  
 19 what's out there. When do we have peaks of avian  
 20 activity?  
 21           There are certain times of year when  
 22 sensitive species are present that we need to consider.  
 23 Some of the other studies identify very specific  
 24 habitats that may be occupied by a State-listed  
 25 specimens, for example, a short-eared owl, northern

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 2           Some projects, however, we expect that to  
 3 occur at fairly low levels and we work closely with the  
 4 agencies to permit those impacts and I'll talk to you a  
 5 little bit about that through my presentation.  
 6           So putting the pieces together, as I  
 7 mentioned, initially, the site assessment, there's a lot  
 8 of publicly available data. New York is great. We have  
 9 great inventory of wetlands, waters, eagles nests,  
 10 sensitive areas, bird migratory routes, things like  
 11 that. So we can look at all that before we ever even  
 12 get started. That's something that we did starting in  
 13 2014 on this project.  
 14           We met with the agencies. We deal with Fish  
 15 and Wildlife Service, DEC -- preservation office, Army  
 16 Corps of Engineers and, you know, talked to them about  
 17 the resource issues that are here on what information  
 18 needs to be obtained in order to move forward through  
 19 development.  
 20           We then turn the resource specialists in the  
 21 field and they collect their data. Here we started  
 22 doing bird and bat studies in late 2014. We did quite a  
 23 suite of studies for about two years looking at avian  
 24 use throughout the site. Bat activity, when and where  
 25 are the bats occurring and when are they there at high

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 2 harrier, other raptor species that the DEC, in  
 3 particular, is concerned with.  
 4           The figure on the bottom, the black dots are  
 5 areas where we know there is potential bat habitat for  
 6 State-protected species. So the black dots are where  
 7 biologists have actually gone out, set up mist nets,  
 8 which are nets which capture bats. And they actually  
 9 collect those bats by hand, identify them, take  
 10 biological measurements and release them. So we sample  
 11 these habitats to determine what's present and, more  
 12 importantly, what's absent.  
 13           So in the end we wind up with cool maps like  
 14 this which I then send to our engineers. We call it a  
 15 constraints map. It identifies areas where we simply  
 16 can't disturb the ground or we can't install turbines or  
 17 that we can't construct during certain times of the  
 18 year.  
 19           So this helps inform some of those turbine  
 20 locations or all the turbine locations that Paul was  
 21 speaking about earlier.  
 22           Once the project is built and operational we  
 23 then actually for the course of sometimes two, three and  
 24 even more years will evaluate the impacts. So we feel  
 25 that we have done a good job avoiding and minimizing

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2 risk of impact to birds and bats in particular, but we

3 want to check that work.

4           So we actually have biologists going out at

5 different times of the year and basically looking under

6 the turbines. And some areas we will clear the plot --

7 clear plots, study plots around the turbines. And other

8 areas they will just walk the cleared areas of the roads

9 and the pads and they will do that consistently and

10 basically count the things that they see.

11           This has been done at a lot of projects

12 throughout the U.S. and so we have quite a data set to

13 sort of predict risk in different settings. And I will

14 talk about that a little bit in this presentation. But

15 we check that very carefully here so that if there's a

16 problem that we didn't anticipate, we pick it up. We

17 pick it up early and then we are able to figure out ways

18 to address that issue.

19           How many of you can see the bat in the lower

20 left picture? I sort of gave it away. It's right

21 there.

22           With these studies when biologists go out

23 and they find four birds over the course of a year at a

24 turbine, does that mean that turbine killed four birds?

25 Probably not. They may only find half the birds that

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2 kind of go through this tiered decision-making process

3 to inform our studies, to inform our siting and

4 operations and then our monitoring during operations and

5 response if we need to. Really trying to avoid and

6 minimize impacts where we can. And, where we can't

7 avoid them, particularly when it's required by

8 regulation for protected species, we mitigate those

9 impacts.

10           I like to think of that as if we are going

11 to impact a particular bird species, if we are going to

12 be responsible for taking two or three out of the air

13 each year, we need to be responsible to put five or six

14 back in the air that same year. Sounds bad if you are

15 the individual that collided with the turbine, that is

16 bad. But from a population viability standpoint, our

17 goal is to not result in impacts or unstable

18 populations.

19           So it's kind of like the deer hunter. Go

20 out, go deer hunting, kill a deer. It is not good for

21 that individual deer. But the herd is sustained and

22 well-managed through the process that's occurring.

23           Okay. So I mentioned the Fish and Wildlife

24 Service letter. And, actually, what they say is,

25 previously, in a letter to us -- Fish and Wildlife

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2 are out there because of grass or other visual

3 interference.

4           Another ten of them may have been carried

5 away by foxes or crows or something like that. So they

6 didn't pick them up. So we have to adjust their count

7 data for the biases that are in those studies. And so,

8 as I mentioned, this science has evolved pretty

9 substantially to measure those biases.

10           We actually put test subjects out there. We

11 test the observers so that we understand their searcher

12 efficiency. We look at how long carcasses persist

13 before they decompose at different weather conditions

14 before they are carried away by scavengers. That all

15 goes in to understanding the facility-wide estimates.

16           So pretty interesting stuff, if you are bio

17 nerd like me I guess. But hopefully it's interesting to

18 you.

19           Ideally we have projects that are operating

20 basically in areas that are still functioning the way

21 they were before, from an environmental standpoint. So

22 we don't have these massive utility wind turbines

23 generating clean, renewable energy, but we are still

24 having occupancy by all these important animals.

25           So, to review, early site assessments, we

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2 Service in 2015 wrote a letter to the project. I

3 believe I have seen it on the internet, particularly

4 from some of the websites that are not necessarily in

5 favor of the project.

6           And, basically, they say in the past, the

7 Service, has recommended that wind projects are not

8 sited within three miles of the Great Lakes shoreline.

9 They also have completed radar studies along the Great

10 Lake shoreline. One study site is just to the west of

11 our Lighthouse project that documents pretty large

12 movements of bird and bat migration through the area.

13           So the issue with the Fish and Wildlife

14 Service letter is interesting. It was written in 2007

15 and 2009. Actually two letters written to a project in

16 Michigan, along the shoreline of Lake Michigan. That

17 was in an area where there was not a lot of fatality

18 studies done at operating projects, not a lot known

19 about risk of projects sited near lake shorelines. And

20 so there was a lot of concern.

21           But that project has since been constructed,

22 has been operational, and has bird and bat impacts very

23 similar to projects that operate in an Iowa cornfield or

24 an Oklahoma ranch land area. So some of those worst

25 fears from those earlier letters and advice were not

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2 realized. They did not come true.  
3           So that information though gets carried  
4 forward and used sort of to suggest that the Lighthouse  
5 project is a bad location. And the Fish and Wildlife  
6 Service radar data, which shows a lot of bird movement,  
7 particularly during the spring and fall migration,  
8 primarily the spring along the south shoreline of Lake  
9 Ontario, gets used to say there's a lot of birds here,  
10 you shouldn't put a turbine there.  
11           But, fortunately, what we have seen is, as  
12 we have seen projects become installed along the Great  
13 Lakes, along the Atlantic Coast, along the Texas Gulf  
14 Coast where you have massive quantities of birds  
15 migrating through or wintering and stopping over there  
16 before flying across the Gulf, the fatality rates are  
17 very similar to what we see at projects throughout the  
18 country. So the risk profile presence of these large  
19 migratory movements doesn't necessarily equate to high  
20 collision risk.  
21           So I will present some of the data that is  
22 behind those comments and we can talk about it.  
23           So, in 2009, around the time of those Fish  
24 and Wildlife Service letters, some projects have been  
25 studied with various techniques. But, really, there

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2 think in terms of there being ten billion, estimated ten  
3 billion birds, breeding birds in the U.S. in the spring  
4 of each year, and actually about twenty billion in the  
5 fall after reproduction. The impacts at this level are  
6 really very, very minor and they are spread across many  
7 species.  
8           We look at the impacts of projects in the  
9 northeast or in New York in particular. We start to see  
10 patterns. They are very similar to what we see in the  
11 Midwest, in the Western U.S., in the Rocky Mountain  
12 States, the Appalachians, et cetera.  
13           So the asterisks are New York projects.  
14 But, again, we see an average that is actually slightly  
15 lower than the national average in New York of about  
16 three birds per megawatt per year.  
17           I meant to replace Maine with New York in  
18 this slide but didn't get around to it. But, again,  
19 this is just indicating that the birds per megawatt and  
20 birds per turbine per year within these 250 study sites  
21 is very consistent. Regional averages, state averages.  
22 New York is actually slightly less. They are very  
23 similar to Maine actually and similar to the Canadian  
24 averages. So we start to see kind of the same patterns.  
25           We look at what actually is affected, what

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2 were only about a handful, about 14 that actually used  
3 fairly standardized methodology, sampled enough  
4 turbines, came up with reliable fatality estimates for  
5 birds.  
6           The results weren't necessarily alarming.  
7 But it wasn't a lot of data. Not many projects -- none  
8 of the projects actually, at the time, were along  
9 coastal areas.  
10           In 2014 though we have about ten more, ten  
11 times more studies. In 2017, we have about 250 studies,  
12 all of which have used very sort of defensible methods  
13 and techniques for estimating the fatalities. Most done  
14 in coordination with their regulatory agencies and the  
15 regions where they occur.  
16           So we have this really large body of  
17 information to start teasing out, you know, what are the  
18 effects of wind energy.  
19           This is an example -- basically those bars  
20 represent some of those 250 studies. Actually it's all  
21 of them. And we see the average is about three birds  
22 per megawatt per year.  
23           You can also look at these as a per turbine,  
24 birds per turbine per year. But, the important thing is  
25 the impact on birds is actually quite low. When you

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2 birds. The majority of them, of those impacted are  
3 neotropical migrants. The little, small birds that  
4 migrate very long distances from Central and South  
5 America up into North America and Canada for breeding.  
6           The fortunate thing about these is that they  
7 are very high reproductive rate birds and also very high  
8 mortality rate. So I mentioned ten billion in spring.  
9 Twenty billion breeding birds in the U.S. in fall. The  
10 next spring that's back to about ten billion.  
11           So a lot of those die from electrocution,  
12 collision, "credation" and other causes. Some do  
13 collide with turbines. But the percentage that are  
14 actually flying into turbines is very small relative to  
15 other natural and human-caused types of mortality.  
16           I should mention that we see -- we also find  
17 very few water fowl or water birds; gulls, terns,  
18 cormorants, herons, that sort of thing, in these data  
19 sets, which is an important consideration for these  
20 near-shore projects.  
21           So to get your bearings, the slide on the  
22 left is the Great Lakes. The turbines are shown that  
23 are operating currently are shown as yellow dots. So we  
24 have a lot of projects that are operating in very close  
25 proximity to the great lakes.

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2           The slide on the right is the Texas Gulf  
3 Coast. We have a lot of turbines operating right there  
4 and that actually has a phenomenal concentration of  
5 birds compared to the Lake Ontario shoreline. Some of  
6 those projects in Texas are basically right next to  
7 national wildlife refuges whose specific purpose is for  
8 bird habitat protection and protection of very large  
9 concentrations of wintering birds.  
10          So a lot of these projects have been  
11 studied. We see the impacts are very similar to other  
12 projects in the interior of the U.S. Sometimes you have  
13 slightly different species composition, but the overall  
14 fatality rates are very similar.  
15          This is a New Jersey project. A smaller  
16 utility scale project near Atlantic City. It operates  
17 in the presence of literally tens of thousands of terns  
18 and gulls and sandpipers and plovers and that kind of  
19 thing. Again, as it's studied very intensively, we see  
20 very little mortality there. So a lot of information to  
21 work with.  
22          The other comment that I made was there have  
23 been Fish and Wildlife Service radar studies throughout  
24 the Great Lakes and basically they have been designed to  
25 evaluate the number of critters that fly by, when they

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2 levels of mortality are relatively low.  
3          What we do know is that lights attract birds  
4 and projects that leave a light on in a nacelle or have  
5 lights on in substations, that kind of thing, can have  
6 higher impacts. So that's something we can manage  
7 against very carefully by making sure the lights are  
8 off.  
9          We avoid the use of guy wires on our met  
10 towers in particular. Put bird flight diverters on  
11 transmission lines where we install those and help  
12 minimize risk.  
13          So, to kind of wrap it up, just to  
14 summarize, basically, we are seeing that we are  
15 anticipating that the impacts of the Lighthouse project  
16 will be very low. The data that we have, which is  
17 pretty robust data set, suggests that it's going to be  
18 very similar to the other coastal projects, the other  
19 New York projects, the other inland projects in other  
20 parts of the U.S.  
21          There really aren't any data or studies  
22 along these coastal areas that suggest this would be a  
23 problematic site. So I think the important component is  
24 we have done a lot of screening work and a lot of  
25 preconstruction coordination with the agencies to make

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2 fly by and at what heights and at what numbers. So they  
3 have done a good job documenting that a lot of birds fly  
4 along the south shore of Lake Ontario or stop over  
5 there, particularly in the spring.  
6          Their recommendation, remember, is no  
7 winds -- wind turbines within three miles. Their data  
8 basically shows that from zero to ten miles you have a  
9 lot of bird movement, and bat movement, and actually  
10 some of the larger movements is further inland, more  
11 like the ten mile inland study site.  
12          So -- but the yellow -- the orange dots --  
13 Maine is a nice state from a data standpoint because  
14 they have required a lot of preconstruction radar  
15 surveys and then those projects have gone on to be  
16 operational and so then you have preconstruction radar  
17 data, post-construction fatality data. The dots on the  
18 right we see fairly consistent passage rates of birds  
19 moving through an area.  
20          And then the bars represent the fatality  
21 rates documented during operations and we see no real  
22 relationship between the two. So it kind of supports  
23 this idea of service documents high levels of avian  
24 movement. But it doesn't mean high presence is going to  
25 result in high mortality and actually even the highest

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2 sure this is okay and to take proper precautions in how  
3 we design and operate the project. And, once it's  
4 built, assuming it's built, we are going to monitor  
5 those impacts carefully and be in a position to respond.  
6          So with that I hand it over to --  
7          MS. COLEMAN-GRAHAM: Okay. Dave, thank you.  
8          And, again, if you have questions for him,  
9 same thing as before, jot them down, pass them to the  
10 aisles. You can see we are kind of sorting them and  
11 getting them ready here.  
12          Now, it's Rob.  
13          MR. O'NEAL: Good evening, again. My name  
14 is Rob O'Neal. I'm with Epsilon Associates.  
15          I've been doing community sound studies now  
16 for a little over 30 years. The last 14 of those years  
17 I have really focused on wind energy projects. So I  
18 have seen a lot of turbines, studied a lot of turbines,  
19 measured a lot of turbines, stood underneath a lot of  
20 turbines.  
21          I am board certified by the Institute of  
22 Noise Control Engineers and I also am a certified  
23 consulting meteorologist. And tonight, I know we are  
24 getting into the evening here. I hope everyone can stay  
25 awake. I have got sort of five topics I'm going to

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2 touch on each one relatively briefly.  
3           The first thing I'll talk about is a little  
4 quick sound 101 by way of background. Some of it will  
5 be old hat. To some of you folks who might be new, it  
6 might helpful in terms of what we will talk about later.  
7           The second thing is a little bit about  
8 monitoring, how we measure sound for this project and  
9 other projects. Third thing is modeling. How do we  
10 predict sound levels that we can expect from a wind  
11 turbine project such as the Lighthouse project?  
12           Number four, I'll talk a little bit about  
13 infrasound and low frequency noise. Again, a topic I  
14 get a lot of questions about sometimes. And, finally, I  
15 will wrap up with a few design goals and permit  
16 conditions that a project like this is likely to end up  
17 with.  
18           So a couple slides on sound 101. Two sound  
19 sources of equal sound level. Since sound in decibels  
20 are logarithmic. So a sound of 30 decibels add to a  
21 sound of 30 decibels is 33 decibels. It's not 60  
22 decibels. So that's logarithmic math, decibel math.  
23 Just basic concept. But it's important to keep in mind.  
24           On the other hand, if you have a source of  
25 sound that's at least ten decibels louder than another

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2 middle and higher frequencies. So right down here you  
3 can see that this audibility curve goes much lower. So,  
4 again, this shows you the different frequencies, the  
5 different sort of categories for discussion sake about  
6 infrasound and low frequency.  
7           This next graph we usually talk about  
8 A-weighted decibels. So the A-weighted is basically  
9 taking all those frequencies together and giving you a  
10 one number. So each individual frequency adds up to  
11 total X dba or A-weighted decibels.  
12           And, again, this chart, this is a stand --  
13 this is by ANSI standard that every frequency has a  
14 certain contribution to A-weighted levels. And, again,  
15 the middle frequencies and higher frequencies contribute  
16 pretty equally and pretty much straight up to the  
17 A-weighted levels.  
18           The low frequency infrasound does not. We  
19 don't hear those. That's the takeaway from this slide.  
20           All right. Enough of the sound 101. The  
21 second thing I want to talk about was monitoring or  
22 measurements. For a project such as this, Lighthouse,  
23 or any other wind project, we have sound level  
24 instruments like this.  
25           We have lots of sound level meters. They

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2 source of sound, this hypothetical example, a cricket at  
3 30 decibels, an air conditioner at 40 decibels, but what  
4 you hear really is the 40 decibels. Ten or more  
5 decibels louder is generally just going to be just the  
6 loudest source of sound.  
7           Sound is made up of frequencies. Different  
8 wavelengths of different frequencies. Long wavelengths  
9 are low frequency infrasound. Middle wavelengths are  
10 just that, they are in the middle. And high frequency  
11 have very short wavelengths.  
12           This graph here shows you a chart of  
13 one-third octave band frequencies on the bottom. The  
14 infrasound range is from 20 hertz and below. I should  
15 mention frequencies are measured in hertz, cycles per  
16 second.  
17           So infrasound is 20 hertz and below. And  
18 the message here is that at each of these individual  
19 frequencies, this curve here shows audibility. So for  
20 us to hear infrasound, the source of sound would have to  
21 be very, very, very loud.  
22           For example, at four hertz would have to be  
23 about a 105, 106 decibels at that particular frequency  
24 to be audible.  
25           Now, our human ear hears very well at the

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2 have ANSI standards associated with them. We use and  
3 follow the ANSI standards to collect and measure sound  
4 levels in a community like the Lighthouse community and  
5 any other place we measure sound.  
6           For wind projects, we also measure ground  
7 level winds and wind speeds. That's what the small six  
8 foot or two meter meteorological towers in that bottom  
9 photograph. So this type of equipment is what is used  
10 to measure sound.  
11           This slide here is from a publicly available  
12 report. It's not the Lighthouse data. But it was  
13 collected in a rural community in New York State and  
14 it's over a two week period.  
15           What it shows you really, the message here  
16 is what the variability is of sound in rural New York  
17 State. And I would expect that Lighthouse probably will  
18 not be markedly different than this.  
19           What you have got here in the multi colors  
20 are four different locations within a community showing  
21 you the ups and downs over the course of two weeks  
22 measured 24 hours a day. Okay. And what you can see is  
23 the sound levels vary from as low as 17 decibels when  
24 the winds are basically dead calm.  
25           This blue line at the bottom is the ground

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2 level wind speed. To as high as 54 decibels appear on

3 some occasions. And a lot of communities, like this

4 area, wind itself will drive sound levels in addition to

5 other manmade sources of sound.

6           And the point, again, this graph is the

7 sound is not always at 17 decibels or 20 decibels. It

8 is not always at 50 decibels. It varies quite a bit up

9 and down, day and night.

10          All right. The third topic I want to touch

11 on is modeling or sound level prediction. How do we

12 take the layout that Paul and his team are going to give

13 me and then calculate or estimate what the sound levels

14 could be at every home in the community?

15          So to do that it's a pretty detailed

16 process. There's a lot of bullets in here. I'm not

17 going to hit every single one of them. The point is

18 there's a lot of information we need to do those

19 calculations.

20          We follow an international standard. ISO

21 9613-2 standard, which is what pretty much all voice

22 calculations follow to take a source of sound and then

23 take that source of sound and calculate it out to a

24 location somewhere out in the community.

25          We get the layout. We need sound levels

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2 blowing stronger and making more noise at the ground,

3 the wind itself, but the turbines will not generate any

4 more sound.

5           That's important because we use that

6 information, we use the highest sound level from the

7 turbine spec sheet and we use that in our calculation.

8 I'll show you in a minute here what you can expect for

9 the worst case sound levels. We don't bother doing the

10 much lower wind speeds and those lower sound levels. We

11 go right to the worst case, which is the highest sound

12 level from a turbine.

13          The last bullet at the bottom here too, this

14 international standard requires that you make this worst

15 case assumption that the wind is always blowing from a

16 source of sound to the house. So even if your house has

17 got a turbine to the east and a turbine to the west, the

18 sound model blows the wind from the east and from the

19 west at the same time. We do calculations at home,

20 which is a little bit of conservatism because we know in

21 the real world the wind doesn't blow from two different

22 directions at the same time. So, again, it's a little

23 bit conservatism. It is built into the standard and we

24 are required to use that.

25          All right. So, again, this is not

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2 from the turbine. Paul mentioned Vestas V150. So we

3 get that sound level data from the turbine.

4           What is important to know about sound levels

5 from a turbine is every manufacturer does very detailed

6 tests of their turbines. Again, according to standard.

7 And they provide a spec sheet. On that spec sheet it

8 will tell us that the sound levels from their turbine

9 are going to vary by wind speed.

10          So at what they call cutting wind speed,

11 which is usually around three to four meters per second

12 or seven to nine miles per hour up at the hub height,

13 then the blades will start turning. Below that, they

14 don't turn and no sound.

15          So at that cutting wind speed there is a

16 certain sound level and it might be -- I'll say it's

17 down here. And as the wind continues to increase, sound

18 levels from the turbine will also increase until it

19 reaches a plateau, usually around nine or ten meters per

20 second, which is 18, 20 miles an hour, roughly.

21          And, at that point, even if the wind

22 continues to get stronger and blow harder, the sound

23 levels will not increase from the turbines. The sound

24 levels plateau at that point. The blades feather and

25 pitch and do certain things. So the wind might be

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2 Lighthouse. We haven't done this yet. But this is a

3 real wind farm. It's the Eight Point Wind Farm in

4 Steuben County, New York. This is publicly available.

5 I worked on this one. It was submitted, their Article

6 10 application, a few months ago. You will see

7 something like this for Lighthouse as well.

8           This shows the entire wind farm. From the

9 seats you can't really see what's there. I apologize.

10 But the point is this is the entire wind farm and a lot

11 of information is there.

12          There's 20 different tiles or inset maps.

13 I'm going to show you an inset map. This is what you

14 are really going to see from the modeling effort. You

15 are going to see every, every home. So, in this case,

16 they are -- again, it's tough to see.

17          There's -- there's receptor numbers. There

18 are symbols on there indicating where every house and

19 where every turbine is shown. So here is a turbine

20 right here. Here is a turbine right here. And then

21 there are sound contour lines showing what the expected

22 worst case sound levels are in the community anywhere

23 within at least a mile of a turbine.

24          So you will have that same information for

25 this project once we finish our work and that goes into

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2 the application. There will be detailed maps like this

3 showing the expected worst case sound levels.

4           This slide here is, again, not from

5 Lighthouse. It's from another meteorological tower from

6 another New York State wind project. What it shows you

7 is one year's worth of hub height wind speed. So this

8 is 8,760 hours. That's how many hours there are in a

9 year and it is the hourly wind speed from January 1st to

10 December 31st.

11           And, again, the message here is the wind

12 does not blow constant all the time. It varies, up and

13 down. Just like the map I showed you of existing sound

14 levels, hypothetical example.

15           It can be down here at two meters per

16 second, which means the turbines are not turning. It's

17 below cutting speed.

18           People only at six meters per second.

19 Eight, ten, 12, 14 meters per second. Once you get to

20 those top wind speeds now you have got your worst case

21 sound levels. Again, you are not going to experience

22 those loudest sound levels all the time. It's going to

23 vary by time of year, by wind speed.

24           This next plot shows you, again,

25 hypothetical example that someone did in a paper that

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2 conditions to get the maximum sound levels that we are

3 modeling.

4           The next two slides just show a couple of

5 publications. This is a conference paper that I wrote

6 which goes into the details of one of the programs I did

7 to confirm operating wind farm sound levels were a

8 little bit lower in reality than we modeled.

9           The second one here is the cover from a

10 government-sponsored research study on wind turbine

11 acoustics that the State of Massachusetts sponsored. My

12 firm was a part of one of the team members on the team

13 to do a lot of detailed measurements of operating wind

14 turbines again, and compare that to modeling and find

15 that the modeling does a really very accurate job

16 predicting sound levels from a wind turbine project.

17           All right. Fourth topic I want to touch on

18 is low frequency infrasound. Again, a topic I get a lot

19 of questions about.

20           If you remember the graph I showed early on,

21 the low frequency is the 20 hertz and below piece of the

22 graph -- I'm sorry. Low frequency is 20 hertz to 200

23 hertz. Infrasound is below 20 hertz.

24           Infrasound is not audible in community

25 applications. That's not disputed. Low frequency sound

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2 took a year's worth of wind speed data, similar to what

3 I just showed you in the previous slide, and they

4 calculated what the sound level would be at a particular

5 location for an entire year.

6           And, again, you can see every hour of the

7 year where that wind is below the cutting speed and the

8 sound level is zero from the wind project. The rest of

9 the time it's going to be varying somewhere between 20

10 and 40 decibels at this site.

11           And what we are going to calculate is that

12 worst case sound level right up here at the highest

13 point. That's what you are going to see calculated.

14           Question I often get is, you know, how

15 accurate are these models? Are they any good? Should

16 we believe them? It's a fair question. Myself, and a

17 lot of other engineers in the business, have done

18 post-construction measurement programs to determine

19 that. What we have found is that they are accurate.

20           If you put in reasonably conservative

21 assumptions into the model, like we just talked about,

22 the measuring programs we have done after the fact

23 confirm the modeling as being accurate. Usually the

24 actual sound levels are a few decibels lower than those

25 predicted. It's hard to find those incredibly perfect

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2 is audible. And, again, it's just part of the

3 environment.

4           There are many different standards. These

5 ANSI standards, the American National Standard

6 Institute, that go into what are some reasonable

7 numbers. Criteria to prevent vibration or rattle or

8 annoyance from low frequency infrasound and these will

9 be included as part of the application. We will look at

10 some of these.

11           Peer-reviewed publication that I did seven

12 years ago in the Noise Control Engineering Journal. We

13 did some infrasound and low frequency measurements at

14 some operating wind farms. I'll keep moving along. I'm

15 getting the five minute warning here.

16           This slide here shows actual example of

17 three measurements. Two of them from the project area

18 at Lighthouse and one from another project that had an

19 operating wind farm.

20           The red line, this shows you infrasound

21 right here up to 20 hertz. Low frequency sound in here.

22 And mid and high frequencies over here. With no wind

23 blowing, dead calm, this is the infrasound here in the

24 project area.

25           With a three meter per second wind blowing,



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2 so about seven mile an hour wind blowing, this is the

3 infrasound level here in the community today. No wind

4 turbines operating.

5           This purple plot is from another community

6 that does have a wind turbine operating and that's the

7 infrasound in that community with strong hub height

8 winds blowing.

9           Again, the message is, infrasound is not

10 unique or -- is not unique to wind turbines. It's

11 present in our environment today. It's in the room here

12 tonight in the HVAC system.

13           Here is a measurement I took of an air

14 conditioner. Again, this is infrasound right here up to

15 the black line. This is the sound from an air

16 conditioner.

17           And that's why I got my sound meter here.

18 When I'm not talking into the microphone, when I'm

19 pausing in speaking and no one is speaking here, the

20 sound level is between 48 and 50 decibels. Just to give

21 you a ballpark for decibels. Because sometimes they can

22 be kind of cryptic.

23           All right. So I'll wrap up here with some

24 design goals. As Paul alluded to in his remarks, the

25 project will be designed to be 45 decibels, or less,

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2 process. So, as I said before, my name is Jim Muscato

3 and I'm permitting counsel for Lighthouse Wind in the

4 Article 10 permitting process. Article 10 is the name

5 of the permitting. It's actually the name of the State

6 law that is required to be followed for the permitting

7 of this project prior to construction and operation of

8 the Lighthouse Wind Project.

9           Article 10 is -- the result of the Article

10 10 process, if the project is approved, will result in

11 the issuance of a certificate of environmental

12 capability and public need.

13           Just very quickly, there are multiple phases

14 in the Article 10 process. There is a preapplication

15 phase, there's an application phase, there's a hearing

16 phase and there's a compliance phase.

17           This project is very early in the Article 10

18 process. It's in the preapplication phase. A scoping

19 document was filed in 2015 and since that time parties

20 that have been involved in the Article 10 proceeding

21 have been working on finalizing stipulations and the

22 stipulations are, in essence, all of the studies and

23 content of the application. The stipulations will

24 reflect agreements on those studies and on the content

25 of the application.

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2 under worst case conditions at a nonparticipating

3 residence. That's outside. Sound levels inside will

4 obviously be lower.

5           There will be low frequency noise,

6 guidelines and criteria that the State is going to

7 impose on this project and will be designed to. There

8 will be tonality requirements. Again, wind turbines

9 don't make tonal noise. That's a pure tone, that high

10 pitch hum right here. The substation can be a source of

11 tonal noise and that will be examined very closely to

12 see if there are any tonal implications there. If there

13 are, there will be noise control put in for that.

14           I think with that, I'm out of time, and I'm

15 out of slides.

16           MS. COLEMAN-GRAHAM: Okay. Thank you.

17           Once again with the cards, if you have got

18 questions for Rob, please pass them to the aisles so we

19 can collect them.

20           And, Jim, I don't know if you want this

21 microphone or if you are going to use that one.

22           MR. MUSCATO: I will try this one.

23           MS. COLEMAN-GRAHAM: Okay.

24           MR. MUSCATO: My name is Jim Muscato. I'm

25 permitting counsel for Lighthouse Wind in the Article 10

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2 So following the finalization of the

3 stipulations and in parallel with that, the consultants

4 and experts that you have heard from today, as well as

5 many others, will be working on the contents of the

6 application which, as Paul said earlier, is anticipated

7 in the spring or early summer of 2019. And so those are

8 the immediate next steps in this process.

9           Those are the only remarks I had on the

10 Article 10 process, Paul, so I'll kick it back over to

11 you.

12           MS. COLEMAN-GRAHAM: We are talking about

13 microphones here so we don't have a problem. Thank you.

14           I am going to bring this one over to your

15 table because this one seemed to work quite well. There

16 seemed to be some interference. So you guys can share

17 that.

18           We are going to move into the question and

19 answer cards here. Like I said --

20           MR. WILLIAMSON: Rita, your microphone

21 doesn't appear to be on at this time.

22           MS. COLEMAN-GRAHAM: Right. There we go.

23 Jason just got back there.

24           Okay. Now, the first questions that I have,

25 the first stack here is, I think, mostly for Paul. But,

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2 you can hand it off if you think somebody else is more

3 appropriate to answer it.

4           This deals with the Tiger Paw Airport. How

5 can you position three turbines in close proximity to

6 Tiger Paw Airport?

7           MR. WILLIAMSON: So I have -- can you hear

8 me?

9           So I have to confess, I'm not familiar with

10 the location of Tiger Paw Airport. But I can say that

11 we have filed notice with the FAA and the FAA has

12 reviewed the turbine heights, the turbine locations and

13 present no negative -- their findings present no

14 negative impact on line of sight or navigational aids

15 that this project would have on any airport.

16           MS. COLEMAN-GRAHAM: Okay. The next

17 question: Is there any type of buffer zone distance

18 where a neighbor would not be allowed to build something

19 or construct something of any type like homes, barns or

20 silo?

21           So they are looking to see if their ability

22 to do something on their property is restricted based on

23 a distance from a turbine or a facility.

24           MR. WILLIAMSON: So, in response to that

25 question, from our work and our perspective, we do have

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2 permitted and safely operated within the State of New

3 York.

4           We have looked at all of the standards for

5 those types of projects and we have designed this

6 project with the intent to meet or exceed all of those

7 standards and we feel very confident that in doing so we

8 can build and operate a responsible project that is safe

9 for both communities.

10 (Indiscernible comment by audience member)

11           MR. WILLIAMSON: Again, we are designing the

12 project according to the standards that we believe are

13 safe and that would be acceptable by the State of New

14 York.

15           MS. COLEMAN-GRAHAM: Okay. The next

16 question we are going to take it to Tracy. It's his

17 turn now.

18           There's several questions dealing with the

19 substation. Where would it be located? Do you know

20 anything about the layout of it?

21           MR. BUTLER: Sure. So the substation

22 ideally is located near the point of interconnect, which

23 is the existing transmission grid. The exact site has

24 not been picked out yet.

25           The general layout of the substation, as I

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2 elements within our agreements that prevent somebody who

3 we have an agreement with from building a high structure

4 within a certain distance of our turbines. But, other

5 than that, we don't have any further prohibition of

6 such activities.

7           Now, there are elements within recently

8 adopted local zoning, local zone rules, that suggest

9 that a permit application for a structure that was made

10 within a certain distance from the turbine may be

11 prohibited. But that is a town zoning rule that's been

12 adopted and from our initial review of that it doesn't

13 appear that that would be State supported.

14           MS. COLEMAN-GRAHAM: Okay. That's kind of a

15 segue into the next question really.

16           On this project, will Apex be following

17 setback distances as laid out by the Towns of Somerset

18 and the Town of Yates? There are several similar, but

19 I'll just read that one.

20           MR. WILLIAMSON: Sure. So Town of Somerset

21 and the Town of Yates currently have setback distances

22 in their zoning laws that would prohibit any development

23 of a commercial utility scale wind power project in

24 either town. So we are currently designing the project

25 based on looking at projects that have been built,

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2 mentioned, it will consist of several circuit breakers

3 where each of those collection circuits come in. There

4 will be some switch gear. Also then the large step-up

5 transformer. So the configuration is basically circuit

6 breakers, switches, the transformer and then it gets

7 hooked, like I said, to the grid.

8           MS. COLEMAN-GRAHAM: Will you be using the

9 existing substation?

10           MR. BUTLER: No. We have to build one

11 specifically for the project.

12           MS. COLEMAN-GRAHAM: Okay. And will new

13 high voltage power lines be required?

14           MR. BUTLER: No. The intent is to build our

15 project substation near the existing transmission line

16 such that we wouldn't have an extensive high voltage

17 overhead line. It would just be a simple slack span

18 from our project substation to the existing line.

19           MS. COLEMAN-GRAHAM: And where do you plan

20 on locating the construction staging area?

21           MR. BUTLER: We have not nailed that down

22 yet. Most likely it would be on a leased piece of land,

23 but we don't have that exactly figured out yet.

24           MS. COLEMAN-GRAHAM: There were several

25 questions to that one.

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 2           MR. BUTLER: Okay.  
 3           MS. COLEMAN-GRAHAM: This is a two-parter.  
 4 Do the rotors of the turbines begin turning by wind  
 5 power alone?  
 6           MR. BUTLER: So modern wind turbine has  
 7 conductive coils in it that requires a little bit of  
 8 power to energize those coils. So it will just set  
 9 there without the wind blowing obviously, it won't turn  
 10 without the wind blowing. But there is a little bit of  
 11 power that comes to it to allow it to run. Then, when  
 12 the wind blows, it generates power.  
 13           MS. COLEMAN-GRAHAM: Okay. The second  
 14 question is really now I'm transitioning I think over to  
 15 Dave on this one.  
 16           Why do other agencies, health departments,  
 17 migratory bird agencies, for example, disagree, and so  
 18 strenuously, with your data?  
 19           MR. PHILLIPS: I'm actually not familiar  
 20 with the agencies or other entities that you are  
 21 describing there. So we haven't had our data contested  
 22 by any particular agency.  
 23           There are some environmental groups that I  
 24 think are not happy with the site choice from a  
 25 bird-risk standpoint. But that's really all I'm

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 2 that's when the kind of bird and bat collision risk  
 3 issue would become more apparent.  
 4           MS. COLEMAN-GRAHAM: Okay. Let me  
 5 interject. We have one question here that's really to  
 6 me and to the table. So let me give you a break for a  
 7 second.  
 8           How do you determine which questions to ask  
 9 tonight and which ones not to ask?  
 10           Very good question. First, I have to be  
 11 able to read them. And what we are trying to do is  
 12 group them together and then take similar ones and take  
 13 whichever one sort of asks the most.  
 14           And, I'm also trying to make sure that we  
 15 give them some hardball questions and, especially, as we  
 16 are leading off here.  
 17           So all the questions will be answered. We  
 18 just have to select some that we can do here tonight.  
 19 But I am trying to make it as representative as I can.  
 20           Okay. Back to you, Dave. What are the  
 21 proper precautions you are taking to minimize bird and  
 22 bat fatalities?  
 23           MR. PHILLIPS: So, starting with birds, the  
 24 primary siting measure -- well, one that we are kind of  
 25 doing voluntarily, even kind of in, you know, not

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 2 familiar with.  
 3           I apologize to the questioner that I'm not  
 4 able to answer it too well.  
 5           MS. COLEMAN-GRAHAM: Okay. Next questions  
 6 here for you, Dave.  
 7           Are there any environmental hazards or risks  
 8 to the area during or after construction of the  
 9 turbines, any environmental hazards or risks?  
 10           MR. PHILLIPS: So Tracy may be better  
 11 equipped to answer some of the questions. There are  
 12 some fuel tanks at the construction staging area with  
 13 precautions taken to avoid spillage or ground water  
 14 contamination. They are pretty standard State and  
 15 Federal kind of approaches.  
 16           The only other real hazard, that I can think  
 17 of -- well, there is sedimentation runoff in particular  
 18 in areas that are most steeply sloped. But we take  
 19 erosion control measures to keep the soil on site during  
 20 construction.  
 21           Late in construction, when the project is  
 22 approaching operations, we actually go through a period  
 23 of testing power. So it's technically not commercially  
 24 operational, but it's functioning like an operational  
 25 wind project, or certain turbines are. At that point

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 2 necessarily in response to the data, but siting back, to  
 3 some extent, from the shoreline, doing that as a more  
 4 higher activity or a potentially higher risk area.  
 5           Avoiding wetlands, avoiding forest habitats,  
 6 as much as we can, and trying to focus our ground  
 7 disturbance in previously disturbed areas, i.e. tilled  
 8 agriculture.  
 9           For bats, same thing, we really avoid the  
 10 forested habitat where we have summer roosting, maternal  
 11 colonies present. We also plan for this project to  
 12 operate the project during the fall migration period,  
 13 which is the bats, doesn't feel like fall, but July,  
 14 August and September in this part of the country when we  
 15 see a higher -- an elevated risk or higher mortality of  
 16 bats.  
 17           So during that period, we actually raise the  
 18 cut-in speeds of the turbines. So we feather the blades  
 19 at the real low wind speeds and then up around five  
 20 meters per second, when most of the smaller bats are not  
 21 flying, it's basically too windy, we then unfeather the  
 22 turbines and allow them to operate freely.  
 23           So we sacrifice a little bit of power  
 24 generation, but we dramatically reduce the bat mortality  
 25 that would otherwise result. The DEC estimates that

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 2 reduction would be about an 80 percent reduction in bat  
 3 fatality. There's other research that operating at five  
 4 meters per second.  
 5 MS. COLEMAN-GRAHAM: Okay. And excuse me if  
 6 you had already answered this as part of that answer,  
 7 but I want to ask the question.  
 8 How far from the turbine of 591 foot tip  
 9 height do you examine for bats, song birds or raptors?  
 10 How far out from the turbine of that height?  
 11 MR. PHILLIPS: Great question. A lot of  
 12 that is basically determined by the agencies. But,  
 13 there's a lot of research that we rely on to evaluate  
 14 that and it can depend on the focus of the monitoring.  
 15 So most bats, believe it or not, fall very  
 16 close to the nacelle, within about 40 meters or so. So  
 17 if we are focusing our monitoring on bats, it's really  
 18 kind of almost wasted effort to search out beyond that  
 19 to pick up a few potential steady targets where some of  
 20 the larger birds, particularly raptors, can fall even  
 21 beyond the rotor radius.  
 22 One of the things that I mentioned the  
 23 biases in the fatality monitoring studies. One of the  
 24 correction factors that is applied is called an area  
 25 correction factor. So, if we do a survey say out to 60

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 2 So, very good question. And it kind of goes  
 3 into that kind of evolving science of fatality  
 4 monitoring. Some of these questions we are asked after  
 5 some of the early studies were completed. The way the  
 6 data was interpreted, the evaluation of those biases  
 7 that need to be addressed has evolved substantially.  
 8 MS. COLEMAN-GRAHAM: Okay. Would you  
 9 consider turning off the turbines during bird migratory  
 10 periods or to turning off the turbines at night to  
 11 protect bats?  
 12 MR. PHILLIPS: Actually, yes. That's the  
 13 curtailment or the feathering up to five meters per  
 14 second is an example of turning off turbines at night to  
 15 protect bats. We do that in periods of higher activity  
 16 and which are June -- July, August and September in this  
 17 area.  
 18 For birds, I think that, you know, if there  
 19 was an avian impact concern documented during a  
 20 particular time period, I think that would be a viable  
 21 approach. Other measures, which have been tried, are  
 22 actually deploying avian radar. So that you are  
 23 actually recording passage rates of birds during those  
 24 higher use periods.  
 25 And, when they reach certain thresholds

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 2 meters or out to a 100 meters, then we have to  
 3 compensate for those areas that we haven't studied.  
 4 I also mentioned that in some -- we will  
 5 often study just roads and pads for a subset of the  
 6 project because we can study those very quickly. We  
 7 have super high search efficiency. But we have a very  
 8 kind of small area that's represented by that study. So  
 9 we can study roads and pads really as far out as we  
 10 want, you know, but then we sacrifice the other area  
 11 that would not be otherwise evaluated.  
 12 So it's a long answer. It depends what DEC  
 13 and Fish and Wildlife Service recommend. A standard is  
 14 about 80 meters. But that's not consistent across all  
 15 projects.  
 16 (Indiscernible comment by audience member)  
 17 MR. PHILLIPS: So the question was the  
 18 turbine is 200 meters tall. So we -- that's the area  
 19 correction factor that I'm considering.  
 20 We will often study one or two turbines out  
 21 to that kind of a distance and then you actually get a  
 22 project-specific basically area distribution. So you  
 23 understand that when you go out two, 300 meters how many  
 24 targets you are actually missing when you only study out  
 25 to 80 meters.

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 2 within the rotor swept area, then you could curtail your  
 3 turbines. So you really minimize your curtailment, but  
 4 you do it in a time period that would potentially have  
 5 the most effect.  
 6 MS. COLEMAN-GRAHAM: Okay. I have got two  
 7 more for you. You are on a roll here.  
 8 Why do you buy - quote - kill permits - end  
 9 quote - for endangered species such as bald and golden  
 10 eagles?  
 11 MR. PHILLIPS: So there are permits for what  
 12 is called nonpurposeful take for bald and golden eagles.  
 13 Unfortunately, the cost of those is -- unfortunately  
 14 it's not as simple as buying them. We go through a  
 15 study process to evaluate the risk and the standards  
 16 required by the State for permitting take of eagles and  
 17 required by the feds, the Fish and Wildlife Service, are  
 18 very different. The studies that are required, the  
 19 process that goes into mitigating those impacts is very  
 20 different.  
 21 But at a site like this, we know we have  
 22 bald eagles, we document them in our surveys. Fairly  
 23 low levels compared to a lot of areas in the State. But  
 24 because they are present there's potential that over the  
 25 life of the project some may be killed. So we need to

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 2 offset that.  
 3           The State standard is that we ensure a net  
 4 conservation benefit to eagles. As I mentioned, if we  
 5 are going to take three out of the air we want to be  
 6 responsible for putting six, or something to that  
 7 effect, in the air.  
 8           We can do that by working with the State to  
 9 identify important mitigation projects that could be  
 10 protecting a nest that may be potentially at risk of  
 11 future development. So putting a conservation easement  
 12 on the land near and around it so that that nest remains  
 13 viable for life of the project or even in perpetuity.  
 14           There's other techniques that could be used  
 15 for mitigation, such as lead shot abatement to reduce  
 16 lead toxicity, funding wildlife rehabilitation that  
 17 would potentially be rehabilitating injured or sick  
 18 birds, that kind of thing.  
 19           MS. COLEMAN-GRAHAM: Okay. We are moving on  
 20 to Rob now there. It looks like our house will have  
 21 nine proposed turbines within about a mile of us. How  
 22 do you know what the total sound will be? That's the  
 23 first part.  
 24           MR. O'NEAL: Okay. Great question. So the  
 25 way the modeling is done is we assume that all 47

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 2 Clinton County. Obviously Lewis County, and other  
 3 places. So any one of those would be potentially  
 4 representative.  
 5           MR. WILLIAMSON: To address the question  
 6 more specifically, the -- this is a more advanced model,  
 7 a newer model, and a larger model than what you see at  
 8 the additional or the existing operating projects.  
 9           At the same time, this is actually a much  
 10 lower noise generating model than the previous. So with  
 11 every generation of these turbines that are being  
 12 created, the technology is improving, sound levels are  
 13 going down, blade technology is improving, including  
 14 putting serrated edges on the following portion of the  
 15 blade, which helps reduce the amount of noise.  
 16           And Rob might be able to talk a little bit  
 17 more about how some of that technology is evolving. And  
 18 so these turbines that we will be installing will  
 19 actually be lower noise models than anything that you  
 20 currently see in New York.  
 21           MR. O'NEAL: It's worth expounding a little  
 22 bit about what Paul said. He's right in terms of this  
 23 new, the Vestas V150 4.2 that was the current potential  
 24 turbine under consideration for this project has been  
 25 submitted in other permit applications in New York.

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 2 turbines, including the nine around the questioner's  
 3 house, are operating at full production, full power  
 4 simultaneously. So we are going to assume all nine of  
 5 those are producing their highest possible sound levels  
 6 and calculate those at every residence in the study,  
 7 including the questioner's.  
 8           MS. COLEMAN-GRAHAM: Okay.  
 9           The second part of that is: Where can we go  
 10 to hear what that sounds and feels like, someplace that  
 11 has the same size turbines?  
 12           Might be more Paul.  
 13           MR. O'NEAL: Might defer to Paul if he knows  
 14 of any four megawatts that are up and operating today.  
 15           MR. WILLIAMSON: There's a number that are  
 16 currently in the permitting process that are in advance  
 17 of this project and I'll kick it back over to Jim to see  
 18 if he can specifically talk about it. He may or may not  
 19 be able to identify any.  
 20           MR. MUSCATO: There's a number of operating  
 21 permit projects in New York. I was just saying there  
 22 are a number of operating projects in New York.  
 23           New York has approximately 1,700 megawatts  
 24 permitted wind projects. There's projects in Steuben  
 25 County, Wyoming County. There's operating projects in

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 2 Most recently the Blue Stone Project is looking at that  
 3 turbine as well.  
 4           So I have seen the sound spec sheets and I  
 5 can confirm what Paul said that the sound levels from  
 6 this turbine, even though it's larger than some of the  
 7 existing turbines here in New York, because of the  
 8 technology of the serrated edges that Vestas puts on  
 9 these now it is actually quieter than some of the older  
 10 turbines.  
 11           Even though you can't see a 4.2 operating  
 12 right now in New York, the sound profile of that is  
 13 actually a little bit quieter than some of the older  
 14 ones.  
 15           MS. COLEMAN-GRAHAM: Okay. This is a  
 16 question that might pertain to one of your slides, Rob.  
 17 Is the worst case sound map an average over time or is  
 18 it a peak sound?  
 19           MR. O'NEAL: So, it's generally what you  
 20 would expect to see if you measured for an hour or less.  
 21 So the worst case wind blowing that time turning. As I  
 22 said, the sound level from the turbine, once it reaches  
 23 a certain wind speed, isn't going to increase any more.  
 24           You may get increased sound from a gust of  
 25 wind itself which may raise the sound a little bit due

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2 to the wind gust, but not from the turbine sound. So

3 the map that I showed before in the example, the ones

4 that you will see in the Article 10 application, are

5 going to be short-term, highest sound levels.

6           MS. COLEMAN-GRAHAM: Okay. This is a series

7 of three short questions that appear to deal mostly with

8 stuff that's going on during construction and noise.

9           What infrastructure is required to install

10 the towers, like roads, et cetera? And next part of

11 that, so you know what it is leading to, is what is the

12 impact on the noise level? I have read it can increase

13 as much as four times.

14           MR. BUTLER: Okay. So I'll talk about the

15 infrastructure that needs to be built and then Rob can

16 talk about the sound, I suppose.

17           As I mentioned, you know, to get the turbine

18 components to the project site we will have to do some

19 road upgrades as well as build our own private access

20 roads. So there's obviously some construction noise

21 with building roads.

22           The other infrastructure is the collection

23 system, which I mentioned is the trenching of the cable

24 through the field. There, again, there's some

25 construction equipment. So that would be a typical

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2 used, such as farmed?

3           MR. WILLIAMSON: I'll actually partner a

4 little bit with Tracy on this, the answer to this

5 question.

6           But, generally speaking, yes. And we have

7 operating projects where right up to just a small buffer

8 around the foundation or around that pedestal that comes

9 up above the foundation can continue to be farmed.

10           So, again, if you recall that diagram that

11 Tracy showed, it's kind of an upside down mushroom and

12 where that upside down mushroom gets deep enough, as

13 long as there's appropriate soils in excess of about 18

14 inches or so, then that can be farmed and it is.

15           Typically speaking, and this is somewhat

16 rough math, and Tracy might refine this a little bit.

17 Typically speaking, when we build a wind turbine, we are

18 utilizing about one acre of land actually to build and

19 that includes the laid out space around the turbine

20 where the base is sitting, etc. But then once we have

21 completed that we decompact the soils and the turbine

22 itself is actually occupying a little bit less than a

23 quarter of an acre.

24           And so when you look at how wind projects

25 operate, in particular, in rural areas where there's

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2 construction noise.

3           And then the project substation, which would

4 be pretty standard-issue construction as well. But

5 that's the infrastructure that has to be built.

6           MS. COLEMAN-GRAHAM: Okay.

7           MR. O'NEAL: I can try to tackle the last

8 part of that question.

9           So, once we have a general sense from Tracy

10 and his team about the expected equipment that would be

11 use in construction, which is generally your standard

12 diesel-powered construction equipment. They are

13 required, as part of the Article 10, is a construction

14 noise analysis.

15           We will take that information and we will do

16 sound level calculations of this diesel-power

17 construction equipment at various locations within the

18 project area on the nearest homes to the construction of

19 those turbines and roads and so forth. So we will have

20 expected construction sound levels as part of the

21 application.

22           MS. COLEMAN-GRAHAM: Okay, Rob. Thanks.

23           I think the third part of this card is

24 really for Paul.

25           Can land under and around the towers be

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2 agriculture, it's just a really wonderful, compatible

3 activity to happen in an agricultural rich area because

4 it allows diverse revenues for the land owner for the

5 farmers.

6           And, as we all know, farmers, the pressures

7 upon farmers are continuing to increase while their

8 revenues are not increasing. So having that additional

9 diverse revenue coming in from a wind turbine that's

10 really not taking up a whole lot of space and allowing

11 them to continue to use a huge majority of their space

12 to continue their farming activities is really a

13 fantastic benefit for a community like this that is an

14 agricultural community.

15           MR. BUTLER: Okay. You have got it right,

16 Paul. So, as I mentioned in that diagram of the

17 foundation, the pedestal comes up out of the ground.

18 That is about 18 feet in diameter. And then there is a

19 gravel beauty ring is what we call it where the access

20 road comes to the turbine and there is a gravel ring

21 around the bottom that is about ten feet wide. So

22 that's pretty much the only ground surface that's

23 occupied and you can farm right up to that.

24           MS. COLEMAN-GRAHAM: Thank you.

25           These two questions deal with

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 2 decommissioning. Okay. So I don't know if that's Paul  
 3 or if that's maybe Tracy or Steve.  
 4 Can you please reiterate what happens to a  
 5 turbine tower at the end of its service life?  
 6 MR. WILLIAMSON: I'll start with that and  
 7 before we get to the end of its service life, I'll just  
 8 talk a little bit about both our practices, as a  
 9 company, and also the requirements within the State of  
 10 New York are that we come up with a full decommissioning  
 11 plan. That decommissioning plan needs to include  
 12 financial security, that it is aligned with any costs  
 13 associated with decommissioning.  
 14 That financial security is pledged for the  
 15 lifetime of the project so that if we, as a company,  
 16 ever go away, there is still the financial resources  
 17 needed to decommission that project and that  
 18 decommissioning plan needs to be revisited every several  
 19 years and any changes in market forces, cost of  
 20 materials, cost of labor, expected cost of  
 21 decommissioning is updated. And, if needed, that  
 22 financial security that goes along with decommissioning  
 23 plan is updated as well.  
 24 So that's what we do on the forefront of the  
 25 entire thing. And I'll let Tracy then talk a little bit

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 2 underground collection lines may be underneath the  
 3 amount of soil that we are planning on decommissioning,  
 4 we have contemplated whether or not we would remove  
 5 those lines, largely because of the value of the copper.  
 6 MR. BUTLER: Yes. So, that's a great  
 7 question.  
 8 So I think that's really going to depend on  
 9 the regulations and on the value of the copper at the  
 10 time. Because if it's, you know, deep enough that it  
 11 doesn't have to be decommissioned and the copper prices  
 12 have it not being worth that much it would stay and  
 13 effectively be, you know, three and a half or four feet  
 14 deep and just sit there.  
 15 If it was such that it did have to come out,  
 16 it's surprisingly easy to take out. A dozer basically  
 17 hooks on to it and just pulls it out of the ground.  
 18 MS. COLEMAN-GRAHAM: Have any turbines been  
 19 decommissioned in New York State as of this date?  
 20 MR. BUTLER: I don't know of any.  
 21 MS. COLEMAN-GRAHAM: Okay.  
 22 Two questions here for Jim. At least, I  
 23 think they are for Jim.  
 24 Since both towns have opted out of the tax  
 25 code 487, how will the turbines affect land owners

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1 Lighthouse Wind Energy  
 2 about how we actually take them apart.  
 3 MR. BUTLER: Sure. So the decommissioning  
 4 itself is really just the reverse of the construction  
 5 process. Cranes will be brought in and the turbines  
 6 would be taken down piece-by-piece and then hauled off.  
 7 And then, depending on what the regulations  
 8 are, the foundation would be removed down to a certain  
 9 depth. So the whole thing probably wouldn't come out.  
 10 But I believe here it is the top four feet would be  
 11 busted out and removed so that you could restore that.  
 12 The access roads would also come out, unless  
 13 the land owner or farm owner wanted to keep it, then it  
 14 would just stay there. But, you know, if it was not  
 15 desired to be kept, the stone gets taken off, then it  
 16 gets decompacted and you can farm right over that as  
 17 well.  
 18 MS. COLEMAN-GRAHAM: Okay. Have any  
 19 turbines --  
 20 MR. WILLIAMSON: Real quick, I actually have  
 21 additional question for Tracy that I have kind of  
 22 wondered about and some of my colleagues and I were just  
 23 recently talking about.  
 24 In the case where we are decommissioning and  
 25 we have underground collection lines and those

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 2 assessments?  
 3 MR. MUSCATO: Well, so I'm not the tax  
 4 counsel. So I don't know that I'm the best person to  
 5 answer the question actually.  
 6 MS. COLEMAN-GRAHAM: That would be one then  
 7 that will be researched and answered and posted on the  
 8 website.  
 9 Okay. Another one that Jim, we will try  
 10 this. Has Article 10 been tested Constitutionally given  
 11 New York State's home rule?  
 12 MR. MUSCATO: Well, so if the question is  
 13 has there been a challenge filed against Article 10 in a  
 14 civil court challenging its Constitutionality, the  
 15 answer is no. There has been no Constitutional  
 16 challenge by anyone in a civil case in New York.  
 17 MS. COLEMAN-GRAHAM: Okay. The next  
 18 question is a little bit more loaded than that one. Do  
 19 you believe Article 10 should preempt home rule?  
 20 MR. MUSCATO: I'm not certain what I believe  
 21 really matters.  
 22 I think the fact is the State law, as it is  
 23 right now, and projects that are going through the  
 24 Article 10 process don't have the opportunity to either  
 25 opt in or opt out. It's a mandatory provision of the

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2 Public Service Law that if a project is proposed that is

3 25 megawatts or greater in size that it has to go

4 through the Article 10 process.

5           And so up until the time that the

6 legislation is changed or something else happens

7 that's -- there's really no choice in the matter.

8           MS. COLEMAN-GRAHAM: Okay. These are ones

9 from the other box. So we are not sure which of you

10 will be answering them. These deal with property tax

11 and land values.

12           Are the wind mills taxable as property to

13 the homeowner? And, if so, who would pay that tax?

14           MR. WILLIAMSON: I'll add a little bit of

15 information to that based on our agreements with the

16 land owners. I don't know, Jim may or may not be able

17 to add anything else based on State Law.

18           But with all of our lease agreements, we

19 verify that any additional taxes assessed onto a

20 property that are specifically due to the wind power

21 project, any facilities or assets that we put on the

22 property, we are fully responsible for.

23           The company, the wind power project is fully

24 responsible for any of those additional taxes. We are

25 not responsible for the base level taxes for the real

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2 earlier, you need to have community renewal investment.

3           Community can't just be stagnant. You need

4 to have a diverse tax base. You need to have diverse

5 businesses and job opportunities for a community to be

6 healthy. You have to have low and consistent taxes and

7 you have to have healthy infrastructure and a good

8 educational system.

9           As I illustrated before, this project is a

10 fantastic vehicle to help accomplish all of those goals

11 in both of these communities. And if all of those goals

12 are really focused on, we can partner with you to make

13 sure that this area is a high valuable area to live and

14 work.

15           MS. COLEMAN-GRAHAM: Okay. The next

16 question -- that was finished, right?

17           Okay. The next question is probably to

18 Paul. Will Apex make these slide presentations

19 available possibly online from tonight?

20           MR. WILLIAMSON: Cat? I just wanted to kind

21 of verify with our coordinator for the event, Cat Mosley

22 over here. Our plan is to take the slide materials,

23 take the meeting transcript and also the video from this

24 meeting and make it all available through our website to

25 the public.

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2 estate itself that already existed. But we are

3 responsible for any added assets and the land owner is

4 not responsible for those additional costs.

5           MS. COLEMAN-GRAHAM: Okay. There seems to

6 be several, four, five questions here that deal with the

7 possibility of a negative impact -- so I'm going to read

8 this one first -- to property values.

9           If you truly believe an industrial wind farm

10 will not negatively impact our property values, why not

11 sign a property value guarantee?

12           MR. WILLIAMSON: So it's really difficult to

13 look at any one area and determine what causes property

14 values to go up or down. There's so many different

15 market forces. And trying to identify one specific

16 activity or one specific business that is responsible

17 for increases or decreases of property values is

18 somewhat difficult because there are so many different

19 activities. There are market forces within the

20 community. There are market forces outside the

21 community.

22           And so -- but one of the things we do know

23 that is absolutely true is that a healthy community

24 continues to have high-value properties. In order to

25 have a healthy community, as the slide that I showed

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2 It will also be entered into the official

3 State record as part of our Article 10 process as well.

4           MS. COLEMAN-GRAHAM: Thank you. I've

5 started back around here now. So I'm actually back up

6 to you, Paul.

7           What is the setback from homes, from houses?

8           MR. WILLIAMSON: So, again, as I

9 illustrated, we, as we work through the design on this

10 project, we were able to achieve relatively high

11 setbacks. And so instead of really -- first we looked

12 at standards of other projects that are operating in New

13 York and then we took that and we said, can we achieve a

14 greater distance from properties and from homes.

15           And so we really challenged ourselves to

16 locate the turbines as far from all homes as possible

17 and in doing so none of the turbines located are any

18 closer than 1,800 feet from nonparticipating homes and

19 none of the turbines located are any closer than 1,500

20 feet from any participating homes. And, again, 1,800

21 feet is greater than one-third of a mile.

22           MS. COLEMAN-GRAHAM: Okay. A wind mill is

23 planned on my property line without my permission plus

24 or minus two to 300 feet without my permission. What

25 are my rights if I don't want it there?



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1           LIGHTHOUSE WIND ENERGY  
 2           MR. WILLIAMSON: So unless there's -- maybe  
 3 there's an inaccuracy in the way the maps were printed,  
 4 but based on all the parcel data that we have from the  
 5 County, the deeds, et cetera, we have ensured that all  
 6 turbines -- I wish I had the slide up right now because  
 7 I just want to make sure I'm a hundred percent accurate,  
 8 but I believe all turbines are greater than 650 feet, I  
 9 believe, from any nonparticipating property line.  
 10           And so if you look on the map, again, that's  
 11 a pretty broad map. Those dots are obviously much  
 12 bigger than what would actually be, you know, at scale  
 13 in place.  
 14           So you might see a little bit of a  
 15 variation. But there are no turbines that are located  
 16 on property lines, including no turbines located on  
 17 participating property lines and no turbines located on  
 18 the property lines where there are two different parcels  
 19 and the same property owner owns both parcels. So all  
 20 turbines are actually located away from the property  
 21 lines.  
 22           And so if you are seeing that on one of the  
 23 maps, then it's simply a, you know, a misalignment in  
 24 the printing itself. As we move forward in the  
 25 permitting process, there will be specific high level

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1           LIGHTHOUSE WIND ENERGY  
 2 thing we want to do, as we start talking about a  
 3 community benefits agreement for the host communities,  
 4 we don't want to come into the town and say, here's the  
 5 money and you shall do this with it.  
 6           What we really want to do is we want to talk  
 7 to you and we want to understand what are your most  
 8 highest needs and highest interests. In some of our  
 9 discussions, just talking in and around different  
 10 citizens in both towns, high speed internet is one of  
 11 the ideas that has come up.  
 12           So, by all means, if we can make investments  
 13 that help forward that and that's truly, you know, a  
 14 high interest in the community, that would be something  
 15 that we would want to continue to explore and make  
 16 investments in. Some other ideas that have been  
 17 forwarded to us is investments in local hospital  
 18 capacities. Investments -- well, lower tax rates.  
 19 Investments in education.  
 20           But, again, it's really preliminary and it's  
 21 early for us to really -- it's too early for us to say,  
 22 we shall do this. What we really want to do is we want  
 23 to have a healthy dialogue with the towns and with all  
 24 the citizens that live in the town to understand what's  
 25 your highest value and your highest interest so that we

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1           LIGHTHOUSE WIND ENERGY  
 2 detailed map showing the specific location of those  
 3 turbines and we will verify, including through deed  
 4 records and title research to make sure that we have  
 5 full right for use and access to all the lands that we  
 6 have under lease.  
 7           MS. COLEMAN-GRAHAM: Okay. It seems there  
 8 are no houses visible in your preliminary presentation.  
 9 How does the housing density in this project compare to  
 10 most wind farms and is there an accepted level of  
 11 density?  
 12           MR. WILLIAMSON: I am not able to answer a  
 13 question on comparative density levels to other projects  
 14 I am afraid. Maybe that's something we could look at  
 15 and post answers to later on. I don't know if anybody  
 16 else on the panel can answer that.  
 17           MS. COLEMAN-GRAHAM: Last one for Paul, then  
 18 I'll move on to Tracy.  
 19           Would Apex consider contributing to high  
 20 speed internet service for Lyndonville/Barker students  
 21 as part of the host community agreement?  
 22           MR. WILLIAMSON: That is a great point. As  
 23 I said before, we really want to engage the communities  
 24 in dialogue and discussion about how we can use our  
 25 investment to best benefit your communities. The last

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1           LIGHTHOUSE WIND ENERGY  
 2 can align the investments to meet those goals.  
 3           MS. COLEMAN-GRAHAM: Okay. This is probably  
 4 Tracy.  
 5           How does the new turbines compare to the old  
 6 as far as power output?  
 7           MR. BUTLER: Sure. So the turbines that we  
 8 are contemplating here have 4.2 megawatt generators and  
 9 that is, you know, larger than the older technology.  
 10 Ideally new technology, as it's progressed with wind  
 11 turbines, turbines have been, you know, more efficient.  
 12 Cutting larger generators, typically a little taller  
 13 where they can capture the faster wind speeds.  
 14           So, yeah, this plan generators 4.2 megawatts  
 15 at name plate and, yeah, that's bigger than old  
 16 technologies.  
 17           MS. COLEMAN-GRAHAM: Okay. Now, this deals  
 18 with transportation problems during construction. How  
 19 will Lighthouse manage and minimize any transportation  
 20 problems for my commute based on large trailers bringing  
 21 equipment in?  
 22           MR. BUTLER: Sure. So we will do a  
 23 transportation study of the existing roads out here to  
 24 determine, you know, their make, their width, whether  
 25 they are adequate for the component trucks and then we

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1           LIGHTHOUSE WIND ENERGY

2 will have a transportation plan designed that shows the

3 routes that the trucks will take to get to each of the

4 turbines and it will show those improvements that need

5 to be made.

6           So this plan will, you know, be part of a

7 road-use plan, a road-use agreement that will dictate,

8 you know, what our responsibilities are for maintaining

9 the roads and fixing things as they get damaged. And,

10 also, those agreements typically dictate, you know,

11 things like interference with vehicles like you are

12 discussing.

13           So, you know, sometimes our work is limited

14 to where we can't transport during school, you know, bus

15 routes or, you know, we can't move things at night. So

16 it usually gets coordinated in that process.

17           MS. COLEMAN-GRAHAM: Okay. How many

18 construction jobs would be created if this project

19 proceeds and for what duration? And would any of these

20 be a local work force?

21           MR. BUTLER: Sure. So during the peak

22 construction, a project of this size would probably

23 have, I would say, two to 300 construction workers

24 working. The duration, for the project duration would

25 be six to eight months.

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1           LIGHTHOUSE WIND ENERGY

2 to cure. It stays there. There's not really a leaching

3 or anything like that in typical concrete.

4           I think if the soils were super acidic maybe

5 that could be possible. But that's not the case here.

6           MR. WILKINSON: During construction your

7 concrete trucks need to be washed out. So there's wash

8 pits at each turbine location. So the concrete trucks

9 are rinsed out there and contained in those wash pits

10 until concrete sets up and then they can dispose of it.

11 So there is no free discharge of concrete anywhere.

12           MS. COLEMAN-GRAHAM: There is so many here

13 for you, Dave, I'm trying to figure out which one to ask

14 you.

15           Why aren't you following the guidelines set

16 forth by the U.S. Fish and Wildlife Service regarding

17 setbacks from the Great Lakes? And it goes on to say,

18 no turbines should be near them three to five miles due

19 to the area being a major migratory flyway.

20           MR. PHILLIPS: So the U.S. Fish and Wildlife

21 guidelines, there's -- there are land-based wind energy

22 guidelines for siting wind turbines. There is also

23 eagle conservation plan guidance which is specific to

24 eagles. I believe that's a misrepresentation of the

25 guidelines.

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1           LIGHTHOUSE WIND ENERGY

2           So, you know, not that whole 300 is not

3 working the whole time because you are going to have, as

4 I mentioned with the sequence of construction, you have

5 the earth work guys come in first and start working on

6 the roads, and then foundation guys, then turbine

7 direction guys. So that will all come in.

8           And then the locality, you know, the local

9 people versus people from other places doing the work,

10 really it's, you know, the contractor that gets selected

11 typically does use local work where it's available

12 because, you know, that's going to be the best, I guess

13 the best priced to contractors.

14           MS. COLEMAN-GRAHAM: Okay. This question

15 pertains really to what are quality issues.

16           What is the impact of a thousand cubic yards

17 of cement for each wind turbine foundation on Lake

18 Ontario? DEC frowns on concrete runoff into the lake

19 and you are posing 47,000 cubic yards of it.

20           MR. BUTLER: Well, I guess the concrete is

21 not running off into the lake. It's getting built into

22 a foundation that's then underground at each of the

23 turbine locations. So, you know, the concrete, once

24 it's cured -- well, it's kind of always curing its whole

25 life, but it's pretty inert. It gets poured. It starts

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1           LIGHTHOUSE WIND ENERGY

2           However, what each does recommend is a

3 process of coordination, coordinating with the agencies

4 where you basically, as I describe, work with them on

5 identifying is the area appropriate to proceed.

6           Completing the studies that are necessary to evaluate

7 risk and inform siting and project operations, as well

8 as project monitoring, identifying the periods that may

9 be more of concern than others that warrant those

10 operational studies.

11           So we are, as a company, that work, we are

12 very committed to adhering to those guidelines and

13 coordinating with the agencies on all of our projects.

14 So the question, why aren't we, is inaccurately posed

15 actually.

16           MR. WILLIAMSON: I might add that, again,

17 our work, our studies, our analysis and our project

18 design all goes into a permit application and that

19 permit application is reviewed by the agencies and the

20 permit is awarded as long as we can demonstrate that the

21 project can operate safely, safely within the

22 environment, safely within the habitats.

23           And so when it comes to following the

24 guidelines, the agencies who are reviewing our permit

25 application have the final say on whether or not we are

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1 Lighthouse Wind Energy  
 2 following the guidelines and whether or not the projects  
 3 can be conducted or operated in an appropriate manner.  
 4 MS. COLEMAN-GRAHAM: Okay. A wind turbine  
 5 expert shared with us that new research shows  
 6 infrastructure noise travels 20 miles. What will be the  
 7 effect on the fish along Lake Ontario?  
 8 This is a international tourist area for  
 9 fishing. Is this studied? Because they see no fish on  
 10 your studied species.  
 11 MR. O'NEAL: The question said  
 12 infrastructure sound. I'm assuming that's infrasound.  
 13 I'm going to assume that was an infrasound  
 14 question. And, you're right, we don't study that. But  
 15 what I would suggest is, yes, infrasound travels long  
 16 distances. However, infrasound generated by boats and  
 17 marine traffic on the lake is going to generate much  
 18 more sound in the water than a turbine based on land.  
 19 MS. COLEMAN-GRAHAM: Okay. When will we see  
 20 the actual results of your environmental studies?  
 21 Probably Dave.  
 22 MR. PHILLIPS: I'm going -- I'm actually not  
 23 certain. I assume -- I know when the application is  
 24 submitted those studies are provided. However, there  
 25 are sort of nuances to the Article 10 process. So I'm

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1 Lighthouse Wind Energy  
 2 So there are siting considerations. There's  
 3 also the operational curtailment, wind speed related  
 4 curtailment that I mentioned.  
 5 MS. COLEMAN-GRAHAM: Okay. Another  
 6 mitigation-type question. How do you mitigate against  
 7 impact to nesting eagles and how many nesting pairs are  
 8 here?  
 9 MR. PHILLIPS: There's one bald eagle site  
 10 documented on the project site. It's in the coal plant  
 11 property. And our nearest turbine to that eagle's nest  
 12 is about 1.4 miles away in this current layout.  
 13 Basically the studies are designed to  
 14 identify important use areas or periods of concentrated  
 15 activity. We would expect, prior to those studies, that  
 16 most of the movement from that nesting pair would be  
 17 from the nest towards the water and along the shoreline.  
 18 The studies that we have done within the  
 19 project area kind of support that because we have very  
 20 low levels of kind of scattered use throughout the site  
 21 without actually much use around the nest itself  
 22 documented at all.  
 23 So the nest, certainly we would be adhering  
 24 to the New York State conservation plan for eagles,  
 25 which I believe was released in 2016 with regard to

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1 Lighthouse Wind Energy  
 2 not sure when they are actually made public.  
 3 MR. MUSCATO: They are made public. They  
 4 are made public as part of the Article 10 application.  
 5 The Article 10 application will include 41  
 6 exhibits and the related studies that support those  
 7 exhibits, unless they are not applicable, and all of  
 8 those studies and the information that supports the  
 9 application would be submitted at one time.  
 10 MS. COLEMAN-GRAHAM: Okay. Dave, this is  
 11 probably you.  
 12 You show bat habitats and turbines south of  
 13 Golden Hill Park. What mitigation steps start up at  
 14 five to six MPS radar sensing or red lights, et cetera,  
 15 would be used? So it is what mitigation steps would be  
 16 used.  
 17 MR. PHILLIPS: With regard to bat habitat in  
 18 the park?  
 19 MS. COLEMAN-GRAHAM: Right.  
 20 MR. PHILLIPS: Well, we basically avoid the  
 21 summer bat habitat or impacts to those habitats. We  
 22 strive to avoid it by a minimum of a 1,000 feet because  
 23 protected bats, which may occur there, tend not to  
 24 forage greater than that distance. They do move greater  
 25 than those distance during migration.

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1 Lighthouse Wind Energy  
 2 construction setback, siting setbacks, et cetera.  
 3 We also would monitor the effects of the  
 4 turbines on eagle mortality over the life of the  
 5 project. If we were to have mortality that was not  
 6 authorized or that was greater than what would be  
 7 granted through a permitting process, we would be in  
 8 violation of both the Federal Eagle Act and the State  
 9 ESA, Endangered Species Act. I'm sorry.  
 10 So we take a lot of precautions to go  
 11 through that process and establish kind of a regulatory  
 12 compliance framework.  
 13 If we were to -- those permits actually have  
 14 what are called adaptive management triggers. So you  
 15 monitor mortality. Let's say we estimate three eagles  
 16 would be killed over the life of the project for 30  
 17 years. If for some reason we killed three in the first  
 18 year, you know, or three at year 15 we would be very  
 19 much at -- we would expect to violate our permit.  
 20 So we would have a system set up so that if  
 21 we estimate fatalities that may start to approach that  
 22 threshold, we would then need to either amend our  
 23 permit. But, more likely, take some sort of measure to  
 24 prevent future mortality from occurring. At least at  
 25 the rate that it was appearing to occur.

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1           LIGHTHOUSE WIND ENERGY

2           But, as I mentioned, any predicted take of a

3 species is fully mitigated in advance of it occurring.

4 So we actually are in a position to provide a lot of

5 conservation funding when the project is approved to

6 help the Fish and Wildlife Service and DEC accomplish

7 some of their conservation regional landscape level

8 conservation goals around those species through the

9 permitting process.

10          MS. COLEMAN-GRAHAM: Okay. Two questions

11 that sort of go along with what you were just saying.

12 And I think this one deals with transparency.

13          Do you hide the number of raptor kills from

14 the public?

15          MR. PHILLIPS: In New York State our

16 fatality, fatality monitoring and all studies is public

17 data. So, no. We cannot or would not.

18          Generally, that's fairly sensitive

19 information. As you can imagine, it is often used

20 against the wind industry. So when the fatality of

21 anything can be misinterpreted and misrepresented fairly

22 easily. So that's an unfortunate problem with some of

23 the wind industry data that we have access to. It's

24 very privately held by the owning entities, mostly as it

25 relates to liability risk.

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1           LIGHTHOUSE WIND ENERGY

2           The precautions that we take for that

3 species actually also have the benefit of kind of

4 minimizing risk for many other bat species that do

5 occur.

6          MS. COLEMAN-GRAHAM: Two more questions for

7 you and then I'll go on to some sound questions.

8          I'm going to change this one. This one

9 begins with the word, "will," so it would be a yes or

10 no. And I'm going to change it to: How would you prove

11 to us that you mitigate or replace for each bird killed?

12 So how do you prove to people that you are doing that

13 mitigation?

14          MR. PHILLIPS: Well, through the Article 10

15 permitting process there's actually an Article 11 which

16 addresses State endangered or listed species. The

17 permitting, kind of the conservation plan and the

18 mitigation that would be proposed would be clearly laid

19 out in that plan, evaluated and adjusted and/or approved

20 by the agency.

21          So, typically, that's kind of the best

22 available science. So, you know, if we were predicting

23 the take of 13 northern long-eared bats there are, kind

24 of, resource equivalency analyses that are available to

25 us. In other words, models to determine kind of how

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1           LIGHTHOUSE WIND ENERGY

2           Drives me crazy because I'm a biologist. I

3 kind of, you know, live on data, make decisions based on

4 environmental data. But there's a lot of data out there

5 that is not available both to us, as a company, from our

6 competitors and to the general public.

7          So it's a good thing in New York, and some

8 other states have the same policy where through the

9 State permitting process monitoring plan is required and

10 that data is required to be disclosed.

11          MS. COLEMAN-GRAHAM: Okay. Dave, what

12 species of bats are in the area?

13          MR. PHILLIPS: There's quite a few. I have

14 to pull out my -- the studies from the work that we

15 completed. I can tell you that the two State listed

16 bats that, you know, are generally of consideration in

17 this part of the State are Indiana bat and northern

18 long-eared bat.

19          We are just actually out of the Indiana bat

20 range. The northern long-eared bat, which is both State

21 and Federally threatened, the studies that we have done

22 have demonstrated probable absence during the summer,

23 during the summer roosting period. But we do know it's

24 likely to migrate through here. So that's where we take

25 those precautions during the migratory period.

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1           LIGHTHOUSE WIND ENERGY

2 many caves should we gate to ensure protected caves

3 result in winter hibernacula protection to the bats.

4          How many acres of habitat would we need to

5 protect, restore or enhance to offset that number of

6 bats? You know, frankly, to the unaided reader or like

7 non kind of wildlife-statistician-type it's a little

8 bit, you know, statistical hocus pocus. But the minds

9 behind it are generally people that are reputable

10 scientists, usually from the USGS, United States

11 Geological Survey, or U.S. Fish and Wildlife Service

12 that have helped develop those models. So we rely on

13 best available science and those kind of techniques.

14          Some mitigation projects can have a

15 monitoring component where you actually collect baseline

16 data. In other words, you are taking a habitat and

17 converting it or managing it for a particular species.

18 You may collect baseline data to document what's there

19 and then monitor at annual or five-year intervals to see

20 what's there in five, ten, 15, 30 years, i.e. was your

21 mitigation effective?

22          Kind of like property values, that is really

23 hard to gauge. So if you have three bats in a hundred

24 acre parcel one year, you go back ten years and you have

25 30, you don't really know if it's because of the trees

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1           LIGHTHOUSE WIND ENERGY  
2 you planted or trees you cut. Would certainly take  
3 credit for it in that situation.  
4           But, if you have zero, you know, and you do  
5 all these effective habitat measures, you don't know if  
6 it went three to zero because of the work you had done  
7 or because of disease or some other factor. So it's a  
8 very hard thing to measure.  
9           MS. COLEMAN-GRAHAM: Okay. This part of  
10 this question plays off of a little bit what you are  
11 talking about there.  
12           When was your most recent avian survey and  
13 are more planned? I think the reason the person is  
14 asking is because in 2017-2018 there was a significant  
15 eruption in snowy owls in this particular area. So  
16 wondering when the most recent survey was and if more  
17 are planned.  
18           MR. PHILLIPS: Most recent, we did two years  
19 of avian survey and they ended in December of 2016. The  
20 reason those are multiyear surveys is to try to address  
21 that annual variation that does occur.  
22           So I'm actually trying to think back on the  
23 snowy owl data that we do have. We did identify areas  
24 of concentrated activity with a couple of State-listed  
25 species; short-eared owl, northern harrier and I don't

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1           LIGHTHOUSE WIND ENERGY  
2 curtailed to generate lower noise, but also less power,  
3 which is obviously not desirable. But there are  
4 remedies available in extreme cases.  
5           MS. COLEMAN-GRAHAM: Okay. What happens if  
6 they are found to exceed the 45 decibels?  
7           MR. O'NEAL: Then the applicant is required  
8 to fix it. They have to make it less than 45. That  
9 will be part of the permit condition.  
10           MR. MUSCATO: I was just going to expand on  
11 that and say, that, you know, ultimately, if the project  
12 is approved, it will be approved with a number of  
13 conditions. A lot of the conditions will reflect  
14 mitigation measures and other regulatory standards that  
15 have been mentioned here tonight.  
16           And, ultimately, if the project is not in  
17 operation in the compliance with those permit conditions  
18 or certificate conditions, then there is enforcement  
19 mechanisms that are built into the certificate as well  
20 as under the law that would force compliance with those  
21 certificate conditions.  
22           MS. COLEMAN-GRAHAM: Okay. And this is  
23 another sound one. It might be a clarification.  
24           Rob, 45 decibels per 30 days per year was on  
25 one of the slides. What about the other 335 days?

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1           LIGHTHOUSE WIND ENERGY  
2 recall if snowy owls were included in that. But those  
3 are areas that we take into consideration with our  
4 layout so as not to disturb those important wintering  
5 habitats.  
6           MS. COLEMAN-GRAHAM: Thank you. As you see,  
7 my timer went off saying it was 9:25. But I would like  
8 to finish off the panel here. If you bear with me a few  
9 minutes, add a little bit more time for the questions,  
10 so we can have gone through a cycle.  
11           This is for Rob. What are the remedies for  
12 residents who are exposed to more than the maximum 25  
13 decibel sound levels?  
14           MR. O'NEAL: You said more than the maximum  
15 25 sound decibels?  
16           MS. COLEMAN-GRAHAM: I'm sorry. 45. Sorry,  
17 that was my mistake.  
18           MR. O'NEAL: Right. I mean, I think we feel  
19 pretty confident that that will not be the case with  
20 properly designed and modeled project.  
21           Hypothetically speaking, if one of the  
22 turbines, for example, was not performing properly and  
23 sound levels were over 45 decibels there are -- there  
24 are curtailments that are possible in a turbine called  
25 noise reduction option where the turbine can be

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1           LIGHTHOUSE WIND ENERGY  
2           MR. O'NEAL: So the question was 45 decibels  
3 for maybe 30 days a year?  
4           MS. COLEMAN-GRAHAM: Yes.  
5           MR. O'NEAL: So the other days of the year,  
6 if 45 is the maximum, the other days of the year will be  
7 less than that.  
8           I could refer you back to -- and since these  
9 slides will be available, it will be useful. There is  
10 hypothetical graph that showed hypothetical sound levels  
11 over the course of a year where they, I would expect, a  
12 typical range of a turbine is more than 10 decibels from  
13 the loudest sound. So what we model when we calculate  
14 to get to that 45 or less. So it could be anywhere from  
15 35 to 36 to 37.  
16           MR. WILLIAMSON: I'm going to add a  
17 correction, because I think the question misunderstood  
18 the slide that was part of what I provided. And the  
19 decibels at residence will not exceed 45 decibels.  
20           Shadow flicker, an entirely different  
21 subject, as a turbine is spinning and the sun is shining  
22 through that turbine and the shadow that is created by  
23 that turbine. Shadow flicker, that shadow going over a  
24 person's residence, will not exceed 30 hours within an  
25 entire year at any residence.

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2           So when you look at the greater than 8,000

3 hours in a year, less than 30 hours will -- or no house

4 over that 8,000 hour period will receive shadow flicker

5 for any greater than 30 total hours for the entire year.

6           MR. O'NEAL: Okay. Thank you, Paul. I

7 misunderstood the question.

8           I think the proper answer to the question

9 will be sound level cannot be over 45 any of the 365

10 days per year.

11          MS. COLEMAN-GRAHAM: Okay.

12          Rob, what does 45 decibels sound like and is

13 it louder than a whisper?

14          MR. O'NEAL: Yes, it's louder than a

15 whisper. I tried to give you the example when I was

16 standing up there, if we are all quiet in here and

17 nobody talks, we just listen to the HVAC system here and

18 nothing else, that is between 48 and 50 decibels, what

19 you are hearing right there. So the highest sound level

20 will be less than that. But it is louder than a

21 whisper, yes.

22          MS. COLEMAN-GRAHAM: Okay. Another noise

23 question here.

24          Are noise levels measured from the turbine

25 blades? And how is that different from the noise from

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1           LIGHTHOUSE WIND ENERGY

2           Why are you only addressing decibel levels

3 of nonparticipating properties? Aren't decibel levels

4 for participating properties higher?

5           MR. O'NEAL: So that's a fair question.

6 Yes, every property, whether participating or

7 nonparticipating, will be modeled and evaluated as part

8 of the application. The limit that we have been talking

9 about of 45 decibels is true, that's at a

10 nonparticipating residence.

11          At a participating residence there will also

12 be a limit. It is higher. It has generally been 55

13 decibels in other applications.

14          So, but participating residence will be

15 modeled and included in the application as well.

16          MS. COLEMAN-GRAHAM: Okay. With that, that

17 will conclude the question and answer session. But,

18 like I said earlier, Apex has agreed that they are going

19 to answer all the questions. And there are remaining

20 questions there. And they will be posted on the project

21 website. And the date they gave me would be November

22 2nd, which is basically a 30 day time period on that.

23          And just as a wrap up for next steps, as

24 Paul mentioned earlier, Apex will be providing visual

25 simulations of the wind turbines in the future and

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2 the turbine? Actually the blades versus the whole

3 structure.

4           MR. O'NEAL: Yeah, I'll do my best, and if

5 questioner is still in the room and they want to come

6 down and talk afterwards, I'm happy to try to -- I'll

7 see if I have got the question right.

8           So the sound that's measured on the ground,

9 if you will, or at somebody's house, that's total sound.

10 That's the sound from everything. The three blades

11 spinning, which is the aerodynamic sound.

12          Any mechanical noise that could be coming

13 from the turbine, from the nacelle, which is generally

14 very minimal these days. They are very well insulated,

15 very well controlled.

16          So that -- what we measure with that sound

17 instrument that I showed you is everything from the

18 turbine, everything that could possibly be generated

19 from it and it's measured at a point on the ground in a

20 community typically relatively near a house. I'm not

21 sure if that was the intent of the questioner. That's

22 my best answer. I will try to answer it again later.

23          MS. COLEMAN-GRAHAM: Okay. The last

24 question, and then I'm getting the signal we need to

25 wrap it up. We have gone over here on the questions.

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2 there's going to be additional public information

3 meetings. And, with that, I want to thank you all so

4 much for coming out here tonight and for your

5 participation and the wonderful questions and the great

6 penmanship and your cooperation.

7           Thank you.

8           (TIME: 9:33 p.m.)

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1           LIGHTHOUSE WIND ENERGY  
2 STATE OF NEW YORK:  
3 COUNTY OF MONROE:  
4           I, MEREDITH A. BONN, CSR, RPR, NYRCR, do  
5 hereby certify that I reported in machine shorthand the  
6 above-styled cause; and that the foregoing pages were  
7 produced by computer-aided transcription (CAT) under my  
8 personal supervision and constitute a true and accurate  
9 record of the testimony in this proceeding;  
10           WITNESS my hand in the City of Rochester,  
11 County of Monroe, State of New York.  
12  
13 *Meredith A. Bonn*  
14 \_\_\_\_\_  
15 MEREDITH A. BONN, CSR, RPR, NYRCR  
16 Freelance Court Reporter and  
17 Notary Public No. 01BO4967526  
18 in and for Monroe County, New York  
19  
20  
21  
22  
23  
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