STATE OF ILLINOIS
PIATT COUNTY ZONING BOARD

GOOSE CREEK WIND, LLC
APPLICATION FOR A SPECIAL USE PERMIT
11/17/2022, 2022
6:01 P.M. - 9:12 P.M.
Held at Monticello, IL, Community Building

PIATT COUNTY ZONING OFFICER:
Keri Nusbaum

HEARING FACILITATOR:
Scott Kains, Esq.

PIATT COUNTY ZONING BOARD MEMBERS:
Loyd Wax - Chairman
Dan Larson
William Chambers
Paul Foran

PIATT COUNTY STATE'S ATTORNEY:
Sarah Perry

PIATT COUNTY BOARD MEMBERS:
Jerry Edwards
Shannon Carroll
Ray Spencer
Gail Jones

COUNSEL FOR THE PIATT COUNTY BOARD:
Andrew J. Keyt, Esq.

COUNSEL FOR THE APPLICANT:
Ben Jacobi, Esq.

APPLICANT - APEX CLEAN ENERGY:
Alan Moore, Senior Project Manager

COUNSEL FOR THE OBJECTORS:
Phillip A. Luetkehans, Esq.

COURT REPORTER: Holly Wingstrom, CSR, RPR, CRR

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MR. WAX: Call the meeting to order, please.

First order of business would be I would ask you to join me in the Pledge of Allegiance to the Flag.

(PLEDGE OF ALLEGIANCE.)

MR. WAX: Could we have a rollcall, please?

MS. NUSBAUM: Mr. Larson?

MR. LARSON: Here.

MS. NUSBAUM: Mr. Harrington?

Mr. Lovin?

Mr. Wax?

MR. WAX: Here.

MS. NUSBAUM: Mr. Chambers?

MR. CHAMBERS: Here.

MS. NUSBAUM: Mr. Foran?

MR. FORAN: Here.

MS. NUSBAUM: State's Attorney Perry?

MS. PERRY: Here.

MR. WAX: Would you like to call the county board members?

MS. NUSBAUM: Yes, please.

Mr. Spencer?

MR. SPENCER: Here.

MS. NUSBAUM: Mr. Carroll?

MR. CARROLL: Here.

MS. NUSBAUM: Mr. Edwards?

MR. EDWARDS: Here.

MS. NUSBAUM: Ms. Jones?

MS. JONES: Here.

MS. NUSBAUM: Mr. Henrix?

VOICE: Here.

MS. NUSBAUM: Mr. Shumard?

Thank you. That was not Mr. Henrix; that is why I asked.

MR. KAINS: Again, if you are going to say something, Holly needs to hear. Thank you.

Folks, welcome back for the third night of this public hearing regarding a special use permit.

Mr. Jacobi, when we last met, Mr. Duncan had testified by way of giving a PowerPoint presentation, and we left off with in the order of questioning.

Do you have any questions of Mr. Duncan?

MR. LUETKEHANS: Mr. Hearing Officer, as a preliminary matter -- and it's not on, so I'll be loud -- I had promised both you and Mr. Jacobi's

office a list of clients. I am going to -- I provided that to him and am going to submit that as Objectors' Exhibit 19, understanding that that is often fluid in these types of cases, but that is my current one.

MR. KAINS: Very good. Thank you. Thank you, Mr. Luetkehans.

By the way, folks have been curious what issues are going to be discussed on a given night. I have spoken with Mr. Jacobi and Mr. Rayford, counsel for the applicant.

Besides Mr. Duncan tonight testifying about the sound issues relating to this wind energy project, they also will have a witness who will be testifying with respect to shadow flicker, and another witness is on the schedule for tonight, if we get to him or her, regarding the issue of safety.

But for right now, Mr. Jacobi, do you have any other questions of Mr. Duncan on direct examination of your witness?

MR. JACOBI: Yes, sir, I do.

First, though, if it pleases the hearing officer here, I would just like to briefly introduce myself to the ZBA. I know that you are familiar

with Mark. He has been sitting here the last couple of nights. He has a little bit more gray hair than me. I am an attorney. I work with Mark.

On a personal note, I grew up in Mahomet, right down the road. I have spent a lot of my teenage years driving the country roads of Piatt County, so it's an honor for me to be here tonight to help with this process.

We do have some additional questions for Mr. Duncan.

First, though, a housekeeping matter for you, Mr. Hearing Officer. We note that procedural Rule 7C limits the cross examination to interested parties who are not represented by licensed attorneys.

We now have Mr. Luetkehans' client list, Objectors' Exhibit 19. There are a number of individuals on there, some familiar faces I would say.

So, we would ask for a clarification on Rule 7C that those individuals identified on Mr. Luetkehans' client list should not be able to cross examine the witnesses.

The reason, I think, for this rule is

because Mr. Luetkehans is speaking for them. If there are cross questions for the witnesses, then Mr. Luetkehans can conduct that cross examination effectively as a licensed attorney. This doesn't preclude them from testifying later, of course. But in terms of cross examination here, that is our interpretation of the rule. And, Your Honor, we would like a discretionary ruling on that.

MR. KAINS: Very good. I understand your point.

Mr. Luetkehans?

MR. LUETKEHANS: I am not sure what Mr. Jacobi is getting at. I have not seen anything in the rule that prohibits people I represent from cross examining. That is not what the rule says. If that is the ruling of the chair, I will drop them as clients and let them proceed on their own. So, either way, you are going to hear from them.

MR. KAINS: That is a very good point. Here is what I am inclined to do and what we are going to do: We want this to be a public hearing where we hear from everyone. We are going to take ample time listening to testimony from witnesses for the applicant, and I think that folks are entitled

to cross examine them.

But as I said last night, this cross examination is going to have to be done by way of just questions rather than people testifying and then asking a question. So, I am going to be a little more strict as far as reigning in the questioning by some folks on cross examination of the witnesses.

There is also going to be ample time for people in opposition to this application for special use permit. They will have ample opportunity to testify as well, and there will be opportunity to cross examine them for members of the applicant's legal team. And, also, other folks who are in support of this, they are able to ask questions in cross examination of people who are testifying in opposition.

So, Mr. Jacobi, I understand your position. I do, but I want this public hearing to be as wide open as public hearings are intended to be, so I am going to allow for cross examination.

And I understand what the rule states here, Mr. Jacobi. And in black and white, you are absolutely correct. But I think in the interest of

this being a full public hearing where the public has the right to be able to comment and testify, I think they also should be able to ask questions, so that is my ruling.

MR. JACOBI: Mr. Hearing Officer, then does that allow the applicant's interested parties, including applicant representatives, to question those interested parties who testify later?

MR. KAINS: Yep. Level playing field for everybody. So, if for some reason Mr. Moore wants to cross examine someone who testifies in opposition, he will be allowed to.

MR. JACOBI: Very well. Thank you.

MR. KAINS: Very good. Thank you.

All right. Now are you ready to proceed with questions for Mr. Duncan?

MR. JACOBI: Yes, sir.

MR. KAINS: Very good. You may go ahead. Thank you.

EDDIE DUNCAN,

a witness herein, called by the Applicant, after having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. JACOBI:

Q. So, Mr. Duncan, you testified last night on your modeling report located at Exhibit -- Appendix 5, correct?

A. Correct.

Q. That is F5 in the application?

A. Correct.

Q. And does your modeling report confirm that the project meets all IPCB standards?

A. It does.

Q. In turn, does the modeling report and in your model confirm that the project complies with all of the Piatt County Wind Ordinance standards?

A. All of the noise standards, yes.

Q. The maps were a little hard to read last night when they were displayed by projector, the maps of the model noise. Is the raw data generated for the model in your report located at Appendix F5?

A. Yes. Those maps are in the report along with tables of all discrete receptors.

Q. And the raw data includes -- the raw data shows exactly what the measurement was at each receptor that is included in your report?

A. Correct.

Q. And the raw data demonstrates independently that the project complies with IPCB regulations in the Piatt County Wind Ordinance; is that accurate?

A. Yes.

Q. Now, the IPCB regulations were adopted in the 1970s; is that correct?

A. Yes. Yeah, in the 1970s.

Q. Is there any reason to think that the qualities of noise, how they travel or how they are measured have changed since the standards were implemented in the 1970s?

A. No. They haven't changed.

Q. Does your model show and demonstrate that the sound levels at the receptors measured are lower than the sound levels studied in the more recent Health Canada study that was referenced both by you and by Dr. Ellenbogen?

A. Yes. The sound levels that are modeled and reported upon in the report are lower than the levels that Dr. Ellenbogen was speaking about from the Health Canada study.

Q. Thank you. I want to address one data point that you displayed yesterday, and that is that

you assigned a porous value to the ground of .5. Can you explain that a little bit more?

A. Yeah. So, 0.5 is the ground attenuation factor that is applied in the model. It is a semi-porous ground. Typically, for farm fields, which is fully porous, it's suitable for vegetation. One could use a ground factor of 1. We used 0.5 because that is what is specified in the ANSI standard for modeling sound propagation from wind turbines, and so it aligns with that standard for conservatively modeling the sound levels. And by conservatively, I mean higher to be safe, to make sure that we are not going over the IPCB limits.

Q. So that assumes a certain porous level of the ground that's reflected as a number .5?

A. That's correct. Yeah.

Q. And the standards you referenced, the ANSI standards, are those from -- what years were those published?

A. The ANSI standard specific to modeling wind turbine acoustics was published in 2022, this year.

Q. So, pretty new?

A. Yes.

Q. I want to touch on the receptors which are really important. They are the modeling points that are generating the data on which your model relies.

Can you explain where you place the receptors and why you place the receptors in those locations?

A. Yes. So, there are two sets of receptors. One set of receptors is placed at what we call discrete receptors. They are placed at primary structures throughout the project area.

The second set of receptors are placed in a grid across the entire project area covering all acreage and square miles surrounding the project.

Q. So, quite literally, you modeled sound for the entire project area?

A. That's correct.

Q. And how did you determine the residential use of the properties?

A. So, we modeled all primary structures provided to us by the client, that my understanding is it was ground truth by the client. That includes residential primary structures, but it also includes schools, worship facilities and businesses as well. We assumed that all of them were class A for

evaluating IPCB limits.

Q. Did you locate class A residential use outside of the house or structure itself?

A. Yes, we did.

Q. And did you extrapolate the data for the sound levels for that class A area of property outside of the house itself?

A. Yes, we did.

Q. And that would be like a yard, right?

A. That is correct. Yeah. Since the grid calculates sound levels over the entire project area, we calculated sound levels not just for the discrete receptors at the primary structures but sound levels throughout the entire yard which would be a residential land use.

Q. Your model is able to tell you exactly what the sound level is in a yard outside of the house; is that correct?

A. That is correct.

Q. And did you review the data to make sure that none of those yards, those class A uses outside of houses, pass or exceed the IPCB regulations and that are adopted by the county's ordinance?

A. We did.

Q. And is that accurate then, that all of the class A usage in the project area, including both houses and the yards, are within the IPCB limitations required by the county's ordinance?

A. Yes, that is correct.

MR. JACOBI: Okay. No further questions.

MR. KAINS: Very good. Thank you, Mr. Jacobi.

Now questions for Mr. Duncan from members of the Piatt County Zoning Board of Appeals?

Very good.

Mr. Chambers?

EXAMINATION

BY MR. CHAMBERS:

Q. So, am I on here? There we go.

So, on the sound modeling, do you have -- obviously, you built the model to reflect the sound for the whole area.

Do you have any past projects where you've gone back, say you have your model from before the project was built, and then you go and you build the project, and then you go back and do, you know, verification afterwards to make sure the model matches up with what the sound is in reality after a

build has taken place? Do you have any data on that?

A. Yes, we have. And I think, as part of my presentation yesterday, you saw a list of papers there. I know the text was small, but a good portion of those papers are referencing those types of validation studies that we've done to go back and actually measure and model to make sure that they are matching up.

I guess, in addition to that, to answer that question, the ANSI standard that we are talking about for the modeling standards was also developed in consultation with professionals like myself who have also done those validation studies. So, it's not only reliant on our own validation studies but the validation studies of all the people who were working on that standard.

MR. CHAMBERS: No further questions.

MR. KAINS: Thank you, Mr. Chambers.

Any other questions from the Zoning Board of Appeals?

Questions from the members of units of local government, including school districts?

Questions from licensed attorneys?

Mr. Luetkehans?

EXAMINATION

BY MR. LUETKEHANS:

Q. Thank you.

Could you go to page 6 of your report for me?

A. Just to confirm, you mean the report --

Q. Yeah, the report that is in the application.

A. Yeah, I am on page 6.

Q. Yeah. That is where you talk about the ground absorption factor you used, correct?

A. Yes. We identified the ground absorption factor on page 6.

Q. And you said that farmland is porous; is that correct?

A. Yes. Farmland is porous.

Q. So, it would be a 1.0, if you get it as completely porous?

A. It could be at a 1.0 if we had done it as completely porous.

Q. Okay. Frozen ground, is that still completely porous?

A. Frozen ground is porous.

Q. So, frozen ground and nonfrozen ground. So, farmland in the summer and farmland in the winter is the same; it's both porous in your mind?

A. Yes.

Q. Okay. You went through a thing about you measured -- your first measurements, which is what is in your charts -- correct? -- starting at page 46, those are all primary structures only, correct?

Those receptors are measured at the primary structure, correct?

A. All the receptors identified in Table 6 are at the primary structures.

Q. Okay. And where did you measure the primary structure?

A. I did not measure anything.

Q. Where did you model the primary structure?

A. I modeled it generally in the center of the primary structure.

Q. Okay. So, you modeled at the center. You didn't model at the edges of the home, correct?

A. That is incorrect.

Q. Well, here, the model that I am showing on Table 6 is all at the center of the home, not the

edge, correct?

A. The results that are displayed in Table 6 are at the center of the home not at the edges.

Q. The results that you talk about that you did at the yards, those aren't anywhere in your report; is that correct?

We can't see that in the data anywhere, can we?

A. That is incorrect.

Q. Where is it? Where is the yard measure shown in this report?

A. If you look on page --

Q. Are you talking about these contour maps?

MR. JACOBI: Let him answer the question, please.

MR. LUETKEHANS: I will let you object, but I don't think I am going to let you tell me how to ask my question.

MR. JACOBI: I'll object then and ask that the hearing officer instruct the witness to answer the question.

MR. KAINS: Thank you, gentlemen.

Mr. Duncan, do you recall the question?

THE WITNESS: There were two. If I could

know which one I should respond to.

MR. KAINS: Okay. Mr. Luetkehans, what is the first question?

BY MR. LUETKEHANS:

Q. Where in your report can we see exactly the modeling at the yard that you are talking about?

A. If you look in Figures 2 through --

Q. What page?

A. I will get there. If you look in Figures 2 through Figure 10, on pages 8 through 16, there are maps that depict the sound pressure levels throughout the sound project area, including the yards.

Q. Okay. But I can't read this, can I?

You cannot look at a point on this, as we sit here, and if I point to it, can you tell me the exact measurement at that point from this chart?

A. I can tell you approximately what the sound level is from this map.

Q. You can tell me within 5 decibels, correct?

A. I think I can get closer than 5 decibels.

Q. Okay. Can I see -- how do I see on here, or can I -- I sure can't figure it out, and I'll ask

the board to look at their own copy -- and tell what is a yard and what is farm on Tables -- on page 8? Can you tell me what is farm and what is yard?

A. I am sorry. Were you asking me or the board?

Q. You.

A. From this map and scale, I cannot tell what is farm and what is yard. I know that the yard is immediately around the primary structures, which are shown in this map.

Q. Okay. But looking at this map, I can't tell, and you can't either -- can you? -- as to how big the yard is on these properties, correct?

A. On these maps, I cannot tell the size of the yard around the primary structures.

Q. Okay. So, this board has no way of telling yard at that point either -- correct? -- from the information you've provided so far?

A. That's incorrect.

Q. Okay. Let's go back a second. Show me where. How are they supposed to figure out where the yard starts and stops and what modeling you did?

A. I thought you had just asked me, the board has no way of telling what the sound level is in the

yard, and that was incorrect because I just testified to the sound levels that are in the yard.

Q. Okay. The data -- if you look at the data that you have provided the board, there is no way for this board to look at that data and tell what the modeling is or what the decibel levels are at any particular yard limits, correct?

A. The data is in the report in the maps. It is difficult to see at this scale. But the data, it's been studied, and I have testified to it.

Q. It's not only difficult; it's impossible, isn't it?

A. I am not going to testify to what the board finds to be impossible.

Q. Well, how about can you show me anywhere on this map, park a part, pick a lot and show us exactly where the yard stopped and the farmland in your mind started?

A. I know, from observing aerial photography throughout the site that the yards are immediately around the primary structures.

I also know that the sound levels around the yards, around the primary structures, range from plus or minus 0.4 decibels, and that the sound

levels that are modeled here are more than a decibel away from the limits; and so, therefore, the yards would not be in excess of the IPCB limits.

Q. So, did you come up with a distance of the yard?

What distance did you use for the yards and the house in each direction?

A. I did not use distance. I used aerial photography and observed the yards.

Q. Okay. So, if I had a yard that was 10 acres that I am not -- if I own a piece of property that is 10 acres that is not being farmed, none of those properties had a measured or modeling of more than .04 away or a difference than the receptor?

MR. JACOBI: Objection. That assumes that there is a residential yard of 10 acres or more.

MR. LUETKEHANS: Well, there are because I am going to have someone testify to it, and I am not guessing here.

MR. KAINS: I am going to direct the witness to answer the question if he knows.

THE WITNESS: Could you repeat the question?

BY MR. LUETKEHANS:

Q. Yeah. If I have a yard of 10 acres, did you find -- did you consider any yard to be 5- to 10-acre sizes? Let's start there.

A. I did not measure the size of the yards.

Q. Okay. You said that no yard has a decibel difference of more than .04 between the receptor and the yard. That is what you said, correct?

A. That is not what I said.

Q. Well, what did you say then?

Because that is what I heard, and I think that is what the board heard.

A. I said that the sound levels in the yards varies by plus or minus 0.4 decibels. That is on average, but it is with less than a decibel across the project area.

We specifically observed all of the yards where the sound levels approached the IPCB limits within a few decibels, and none of those yards had levels in exceedance of the IPCB limits.

Q. So, we are supposed to take your word for it?

We don't have any data here; that is what you are saying?

A. That is my testimony. The data is in the report.

Q. That particular data is nowhere to be found in this report, is it?

You show me anywhere where you measured a yard, and tell me how far/how much difference it is between the yard and the house, and I'll move on.

MR. JACOBI: Objection. Asked and answered.

MR. KAINS: It's been asked. I don't know that it has been answered.

Please answer the question.

THE WITNESS: I am not sure what the question is again. Could you please repeat it?

BY MR. LUETKEHANS:

Q. Show me anywhere in this report where you tell me a yard measurement or yard modeling number for a particular property.

A. Yeah. So, if you look at any of the primary structures on any of the maps, there are a number of them where the sound pressure level lines overlap the primary structures. On all of those yards you can clearly see what the sound level is at those primary structures and the yards surrounding

them because that line goes over the top of the primary structure.

What you are referring to is a matter of a couple of a few tenths of a decibel, and that resolution is not shown on these maps.

Q. You said -- well, the only resolution shown in these maps is at 5-decibel differences, correct?

A. At 5 decibels, and you can extrapolate between 5 decibels based on how close or approximately how close those structures are to those lines.

Q. So, we are all supposed to kind of interpolate. You said earlier that none of the yards were more than plus or minus .4, and then I heard you say something about average.

Are they plus or minus .4, or are they average?

A. On an average, it's plus or minus 0.4. Outside of that range, sometimes it's plus or minus 0.2. Sometimes it's 0.7. In all cases that I observed it was less than 1.

Q. Okay. How many acres does receptor 110 have -- I am sorry -- 120? 120.

A. Could you mean -- could you please clarify what you mean by have?

Q. How many acres is the property at receptor 120?

MR. JACOBI: The entire parcel?

MR. LUETKEHANS: Yeah.

THE WITNESS: I don't know the answer to that.

BY MR. LUETKEHANS:

Q. How many acres of receptor 120 is used for farmland?

A. I don't know the answer to that.

Q. Are you telling me that receptors that have 10 acres of non-farmland -- if I live at a parcel that has 10 acres, and none of it is used for farm, did you consider all 10 of those acres?

A. Sorry. Could you repeat that? That was a bit protracted.

Q. Everything I say is protracted.

So, I have a parcel that's 10 acres. I live on it. I don't farm it. Are you telling me that over a 10-acre distance the change in modeling decibel levels is less than 1 decibel?

A. That's not what I said.

Q. Well, that is what I am asking.

A. And I answered, that is not what I said.

Q. Well, I am asking you.

A. You asked --

Q. No. Let me ask the question. Over 10 acres, is it impossible for any of that 10-acre parcel to have more than a 1-decibel difference on it, in your opinion?

MR. JACOBI: I'll object. It's speculative. If we could have the parcel that Mr. Luetkehans is referring to, we can go and check the data on the map and bring back an actual answer, but this is a hypothetical that is difficult to answer under these circumstances.

MR. LUETKEHANS: I don't care if it's difficult or not.

MR. KAINS: Mr. Luetkehans, do you have a specific parcel that you are referencing?

MR. LUETKEHANS: Well, right now let's talk about 120 per --

MR. KAINS: SO --

COURT REPORTER: I can only get one person at a time.

MR. KAINS: Mr. Luetkehans, let's ask

about 120.

BY MR. LUETKEHANS:

Q. Okay. Do you know how large your -- you already determined you don't know how large 120 is, but let's assume 120 is 10 acres and is not farmed. Can you tell us whether that 10-acre decibel level between the edge of the property and the receptor that you measured at in the middle of the house has to be less than 1 decibel because that is what you found everywhere throughout this project?

A. I do not recall the specifics of receptor 120. I do recall that all of the aerial photography that I reviewed for receptors that were closer to the IPCB limit of those yards, all of them were less than 1 decibel, and on average they were plus or minus 0.4 decibels throughout the yard.

Q. But you didn't bother to give us any of those numbers in your receptor -- in your table, correct?

A. What do you mean by those numbers?

Q. The modeling numbers at the edge of the residentially used property, the class A property.

A. No. I did not provide the delta across the yards for all primary structures. I am

testifying to those that are close to the IPCB limits.

Q. Well, you can't tell us the ones that are close to the IPCB limits, such as 120, as to what the modeling showed at the edge of the residentially used property as you sit here today?

A. I believe I reviewed 120 because it is within 2 decibels of the IPCB limit. And my memory from observing all of those receptors that were within that range were that the areas of the aerial photography that appear to be residential use are less than 1 decibel difference from the model levels provided at the primary structure.

Q. You said appear to be residential use. So, you looked at the aerial and you made a determination based on the aerial whether it appeared to be residential use; is that correct?

A. That's correct.

Q. Do you know how to prepare contour maps? Obviously, because you've done so, correct?

A. By contour maps, you mean isopleth lines, yes.

Q. I mean that is what the charts are that

start on that you just mentioned starting on page 8 -- correct? -- those are contour maps?

A. There are many types of contour maps. I was just clarifying sound contour maps.

Q. Obviously, I hope we are talking about sounds. I am not smart enough to talk about that let alone anything else.

So, what we don't have provided to us is those properties that are within 2 decibels. We don't have the contour maps showing those properties even though you know how to -- even though you provided other contour maps, correct?

A. Those contour maps are shown on the larger scale maps. So, the contour maps are there. They might not be at the resolution that you would prefer, but they are there.

Q. Well, they are not at the resolution that anybody sitting in this room can actually tell -- correct? -- at least down to 1 decibel because all you have got are 5-decibel limits?

A. That is correct. I am testifying to the range.

Q. Okay. I noticed that on page 8, or excuse me, page 7 of your report, you list four different

parcels of the summary of highest modeled sound levels by octave band. What were you intending to do there?

A. I was attempting, in reporting Table 2, to make it easier for anyone who is reviewing the report to hone in on the receptors with the highest sound levels rather than having to fish through Appendix D.

Q. Okay. Well, let me ask you a question then. Primary receptor 18 on that chart is 45 and 39, correct?

I mean let me back up. The 500 hertz and 1 kilohertz are usually the two most applicable standards as it relates to wind turbines, correct?

A. Not necessarily.

Q. Okay. Well, I can say that I've never seen that -- every case that I've had has always dealt with 501 kilohertz, so you are the first expert that I've ever had say wind turbines that the issues are somewhere else.

Let's talk about 500 hertz and 1 kilohertz because in this case they are always the ones that are closest to the IPCB limbs or at least the ones that are on the 1 or 2 decibels away. Those are the

one at issue, correct?

A. Yes. So, this turbine model, the critical bands are 500 hertz and 1 kilohertz.

Q. Thank you. So, you pulled out receptor 18 because it's at 45 decibels at the 500 hertz level and 39 decibels at the 1 kilohertz level, correct?

A. We pulled out receptor 18 because it is one of the highest modeled sound levels. We might not have pulled it out specifically for 500 and 1 kilohertz.

Q. Okay. But the only ones that are within 2 of the maximum are the 500 and the 1 kilohertz, correct?

A. That is correct.

Q. Okay. Receptor 19 also is at 45 and 39, correct?

A. Yeah. The projected sound levels at receptor 19 at 500 hertz is at 45 and at 1000 hertz is 39.

Q. Okay. And that is not on your chart, correct?

A. It's on this chart.

Q. It's not on the summary chart that you have as the summary of the highest modeled sound

levels, correct? It's not on Table 2?

A. That is correct.

Q. It's in the amalgam of 1000 or so other parcels at the back, correct?

A. That's correct.

Q. Same thing, if I look at receptor 631, that is at 500 hertz and -- 500 at 45, and at 1 kilohertz it's at 40, correct?

A. No. Did you say receptor 40?

Q. 631.

A. Oh, 631. Excuse me.

Q. I am not trying to trick you.

A. I am just --

Q. Unless I can't read the chart, those are the numbers.

A. So, at receptor 631, the projected sound level at 500 hertz is 45, and at 1000 hertz the projected sound level is at 40.

Q. So, that fits in the middle of the same numbers that are in this chart -- correct? -- this chart of Table 2?

A. It is comparable in those bands to the same chart, the same that are in Table 2.

Q. And receptor 677 and 678 are also

comparable to those in Table 2, correct?

A. You said 676 and 8?

Q. 77 and 78, and 677 obviously.

A. Yeah. They are comparable to receptor 18 in Table 2.

Q. While you are on that same page, receptor 681 is also comparable, correct?

A. That is correct, in the 500 hertz and 1000 hertz octave bands.

Q. And receptor 848 is also comparable on those two bands, correct?

A. 840 --

Q. 848, sir.

A. That's correct. 500 and 1000 are comparable to receptor 18 in Table 2.

Q. How?

I just listed one, two, three, four, five, six different receptors that are not in this chart even though they are comparable, correct?

A. They are comparable in value in those octave bands. Yes.

Q. Okay. You spent a lot of time on page 30 of your report talking about A-weighting sound levels, correct?

A. What page?

Q. Page 30.

A. I don't know that we spent a lot of time, but we talk about A-weighting sound levels on that page.

Q. In fact, the majority of that page talks about A-weighting sound levels, correct?

A. No. That page talks about weighting networks in general, including A-weighting, C-weighting and Z-weighting.

Q. You go on to say the most appropriate weighting for wind turbines is A-weighting.

Do you see that?

A. In paragraph 4, on page 30, I see that text.

Q. Okay. Have you -- you have not provided the A-weighting sound levels for these highest receptors, have you?

A. No. We have not.

Q. Even though you say it's the most appropriate, correct?

A. It's most appropriate unless the jurisdiction regulates something else, and that's the case in this jurisdiction.

Q. Let's talk about that for a minute. How many times have you testified on wind turbines in this jurisdiction, meaning Illinois?

A. In the State of Illinois, one or two times.

Q. Okay. When were your other times?

A. A couple years ago. I don't recall the exact date.

Q. Do you remember the county?

A. I believe it was in -- I believe it was Livingston County, but I would have to double check.

Q. Okay. So, you are familiar with the IPCB regs from this case and that other case, correct?

A. Yes.

Q. Your report sets forth and discusses what I'll call the quantitative -- you would agree -- would you not --

Let me back up. You would agree -- would you not? -- that the hertz level measurements are modeling that you did is what we would call quantitative standards?

A. I am sorry. Could you define what you mean by hertz level measurement?

Q. Well, all these charts you gave us that

start on page 46, those are all what you would call quantitative modeling, correct?

A. Yeah. The sound pressure levels that we model at the full octave bands could be described as quantitative modeling.

Q. Are you aware that the IPCB regs also have nonquantitative regulations regarding noise?

A. I am aware of qualitative prohibitions within the IPCB regulations.

Q. So, you are familiar with Section 900.102 of the IPCB regulations that provide that no person shall cause or allow the emission of sound beyond the boundaries of his property as property is defined in Section 25 of the IEPA so as to cause noise pollution in Illinois or as to violate any provision of this chapter, correct? You are aware of that?

A. I am aware of Section 900.102. I was not able to keep up with the speed at which you read that, so I'll would have to confirm every word, but I am aware of 900.102.

Q. I am sure I was too quick for Holly, too, so I do this a little slower.

Showing you what has been marked as

Objectors' Exhibit 6, Objectors' Exhibit 6 is part 900 of the IPCB regulations, correct?

A. It appears to be that. I have nothing to reference to compare that it definitely is, but I believe I would take your word for it in this case.

Q. I would say that is a safe bet. If you go to 102 in there, which is on -- well, these aren't page numbered, so I apologize -- about the sixth or seventh page back, maybe eighth page.

MR. KAINS: You said 900.102?

MR. LUETKEHANS: Yeah.

BY MR. LUETKEHANS:

Q. It says in there -- does it not? -- that no person shall cause or allow the emission of sound beyond the boundaries of his property as property is defined in Section 25 of the Illinois Environmental Protection Act so as to cause noise pollution in Illinois or so as it violates any provision in this chapter. Do you see that?

A. I do see that.

Q. Okay. Are you also familiar with the Illinois Environmental Protection Act as it relates to noise?

A. I am somewhat familiar with that section.

Q. Would you disagree if I told you that 415 ILCS 5/24 provides that "No person shall emit beyond the boundaries of his property any noise that unreasonably interferes with enjoyment of life"?

Does that sound familiar?

A. It sounds familiar. I wouldn't confirm or deny that that is exact language, but it does sound familiar.

Q. It's pretty similar to the language in 900.102, correct?

A. It is similar. Yes.

Q. You don't cite either one of these provisions in your report, do you?

A. That's incorrect.

Q. Where do you cite them?

A. If you turn to page 4 of the report. Under Section 3.2, State Standard, it lists there Section 900.102 of the code.

Q. Okay. You don't analyze these non-qualitative factors in your report, do you?

A. Yes, we do.

Q. Where?

A. We modeled sound levels, and we know what those sound levels are, and we know that they are

within the practice levels for this type of statement, qualitative statement.

Q. And how do you know that?

How did you make that determination?

How did you personally make that determination?

A. Because we modeled the sound levels, and they are -- the sound levels are 46 decibels or less at 46 at the highest receptors, and that is on an hourly -- a maximum hourly average. That is assuming the turbines are cranking or turning for the entire hours, and that 46 decibels was spoken about a little bit yesterday by Dr. Ellenbogen.

I would clarify, though, that the 46 decibels that I am talking about is an hourly average, and the 46 decibels that Dr. Ellenbogen was speaking about yesterday is actually a long-term annual average, and so the numbers that we modeled in this report are actually much less than the numbers that he was speaking to yesterday.

Q. One thing we do not have in this report, though, is we don't have anywhere where this -- where your 46 dBA you can talk about was the maximum as listed anywhere in this report, is it?

A. We do not add it up and provide a column for it, but all of the data is right there in the octave band data in evaluating the IPCB limits.

Q. That's if every one of these board members and the public knows how to transfer the sound levels that you provide into A-weighting, then they would be able to tell that; until then, they have no idea, correct?

A. I just testified to the fact that they are 46 decibels or less.

Q. Okay. But, again, that is part of the qualitative standard, and that is nowhere in your report, correct?

A. The qualitative standard is listed in Section 3.2, and the sound levels are listed in Appendix D, and both of those support our conclusions of the report.

Q. According to you.

When were the IPCB sound levels set? In the mid-1970s?

A. Yeah. I was asked that earlier, and I answered but, yes, it was in the 1970s.

Q. It sets up the next question, so be patient with me, okay?

Industrial wind turbines were nonexistent in Illinois, weren't they?

A. I don't know for sure, but I would venture to guess that that is probably correct.

MR. LUETKEHANS: Nothing further of this witness. Thank you.

MR. KAINS: Very good. Thank you, Mr. Luetkehans.

Questions from other licensed attorneys for Mr. Duncan?

Now it is time for questions of other interested parties.

Members of the public? Members of the public who are opposed to the application or neutral on the application, are there any questions?

Mr. Gallagher, and then is that Ms. Coil?

MS. COIL: It is.

MR. KAINS: Very good. You'll be next.

Sir, first of all, could you state your name, spelling first and last names for the record?

MR. BILL GALLAGHER: Bill Gallagher. B-i-l-l G-a-l-l-a-g-h-e-r.

MR. KAINS: Very good. Thank you, Mr. Gallagher. You may go ahead and question

Mr. Duncan.

EXAMINATION

BY MR. BILL GALLAGHER:

Q. Mr. Duncan, the discussion I just listened to was pretty much above my head. I am just an old farmer. So, can you explain to me about the receptors?

I mean I have this vision of a microphone being placed somewhere and then you monitor that.

Is that correct?

A. Yeah. That's not correct, but it's a good picture of it. The microphones that you are referring to would actually be in our model. That is a computer calculation, so it's placed in a specific -- it's a geographic model, so it's placed in a specific location within the model, and we calculate the sound level at that location as if there was a microphone there.

Q. If there was a microphone there?

A. That is what I said. Yes.

Q. Okay. In the model, how long is that -- if there was a microphone there, how long is it there in the model?

A. Yeah. The sound levels that we calculate

in the model are a short-term maximum average sound level. So, it assumes that the turbines are operating at their full sound tower level and everybody is downwind of the turbines over the course of 10 minutes to an hour.

Q. And the 10 minutes to an hour that the model is working, is there a specific time of day or night that you model?

A. It assumes that it could happen day or night, so it's the end of daytime or nighttime. The sound levels that we are reporting could occur day or night.

Q. As an example of nighttime, being on the farm, the neighbors half a mile away had a pack of kids, but so did we. We were good neighbors, and I noticed in the evenings you could actually hear the neighbor kids maybe playing outside.

Does sound travel differently at night than from daytime?

A. It can travel differently at night than during the day. During the day you -- it mostly relates to temperature inversion. So, at night you can sometimes get it set up for a temperature inversion which will cause sound to bend down into

the atmosphere as opposed to during the day that might and it would bend up into the atmosphere.

Q. So, would your modeling reflect that?

A. It does, actually. The model reflects a moderate downwind condition or equivalently a temperature conversion that that could occur at night.

Q. So then are you aware, are there any studies of wind farms and the sound that sort of look at the nighttime specifics of it?

A. Yeah. So almost all studies modeling reports look at nighttime because that is usually the lowest limits. So, we are modeling the sound levels at nighttime. That is to say, those sound levels could also occur during the day, but we are modeling the nighttime sound levels.

Q. Has there been any indication that the nighttime sound level is higher that you know of?

A. No. I mean we are modeling that nighttime sound level, and it's validated for the nighttime sound level.

Q. So, you are not aware of any studies that would show otherwise?

A. I am not aware of any studies, unless

modeling parameters were used incorrectly -- and these were not -- or unless a turbine is outside of manufacturer specification or something like that. So, something else other than the model is off.

Q. So, if we assume that your modeling is correct, and modeling that has been done by others who have studied the nighttime effect, and they're correct, what I have here is a study that was done in Australia by Flinders University that shows about a 30 percent increase in the sound in the evenings from wind turbines.

Does that make any sense to you, or does that sound plausible?

A. I think I would have to know or review the specific study that you are referring to. I don't know that one off the top of my head. I may or may not have read it previously.

Q. What I'll do is, I'll present this to the board so they have a record of it. It's not something that I pulled out of thin air. It's not hearsay.

But what they were finding --

MR. KAINS: Mr. Gallagher, are you going to be asking questions based upon this, or are you

just going to read it?

MR. BILL GALLAGHER: I think I'll just stop where I am at and give you this, and you guys can look at it and the board members can look at it and determine it for yourself.

MR. KAINS: Thank you, Mr. Gallagher.

MR. KEYT: Is that your only copy?

MR. BILL GALLAGHER: I can get another one.

MR. KAINS: This will be received by the board. It will be photocopied. Is there objection from counsel on either side to the admission of this particular report? You don't have a copy of it, do you, Mr. Jacobi?

MR. JACOBI: I have not seen the report.

MR. KAINS: Then I can't even ask that question. All right.

During the recess, is there a chance we can make a photocopy of this?

We'll do that tomorrow.

MR. LUETKEHANS: This is something we can deal with.

MR. KAINS: Not tomorrow. We are not going to be here tomorrow, unless everybody wants to

be here on Friday night. We'll take this up, the issue of the admissibility of this, on Monday.

MR. JACOBI: Could I have that copy now? You can make one copy so that we can review it here tonight and address it?

MR. KAINS: Let's do that during the recess.

MR. JACOBI: We can run somebody right now.

MR. KEYT: I'll scan it and e-mail to you two.

MR. JACOBI: I would like a copy tonight so our witness can address it tonight.

MR. KEYT: I'll scan it right now.

MR. JACOBI: No. I mean like right now so that we can look at it over the break and potentially redirect on it.

MR. KEYT: We'll get it.

MR. JACOBI: We have some staff that can go back and run a copy.

MR. KEYT: If you want to, that is fine.

MR. LUETKEHANS: He's able to do it for you here. That is what he's trying to tell you.

MR. KAINS: Mr. Gallagher, thank you.

This document is going to be read by everyone tonight thanks to technology.

All right. Ms. Coil, I think you are next.

Is there anyone else in the room who wishes to ask Mr. Duncan questions?

I see a gentleman back there. Okay, you'll be next.

If you could, please state your name and spell your first and last name for the record.

MS. COIL: Claudia Coil. C-l-a-u-d-i-a C-o-i-l.

EXAMINATION

BY MS. COIL:

Q. Two quick questions: Do you measure infrasound at all?

A. I have measured infrasound. Yes.

Q. Did you measure it for this, for Apex, for this project?

A. No.

Q. Okay. And then, secondly, if someone were to buy a piece of property, like 20 acres, and it was under the zoning standards that it could be purchased and met everything and they wanted to

build a home on it, how would they go about to know if they could be within the Illinois Pollution Control Board standards, or would they be limited, if they wanted to be within those standards, would they be limited as to where they could potentially build?

Does that make sense?

A. Yeah. I think part of that question is a legal question, which would fall outside of my area of expertise; but the part about how would they know the sound level, it would depend on what location they are located at. All of the locations are in the report.

Q. So, they would be able to tell by looking at your reports that you had?

A. By looking at the report, they would know what the sound level is of the primary structure and the sound levels.

What is not explicitly stated there, and I've already testified to it already is the delta across the yard, which is less than a decibel and on average plus or minus 0.4 decibels.

MS. COIL: Okay. All right. That's all.

MR. KAINS: Thank you, Ms. Coil.

And after this gentleman who is approaching the podium, does anyone else have questions?

Okay. Another Mr. Gallagher. Very good.

Sir, would you please state your name, spelling first and last names for the record?

MR. HARTKE: Yes, sir. Ted Hartke. T-e-d H-a-r-t-k-e.

MR. KAINS: You may go ahead with questions for Mr. Duncan. Thank you, Hartke.

EXAMINATION

BY MR. HARTKE:

Q. Good evening, Mr. Duncan. You are an INCE certified-board member, right?

A. Board certified member, yes.

Q. Okay. They have like an ethic standard -- right? -- that they are here to protect. And can you tell us anything about their ethic standards?

A. Yeah. There is a code of ethics for the Institute of Noise Control Engineering that we adhere to when we are working on projects and testifying with projects such as these and consulting with clients.

Q. That ethics, is that a two-way street,

like an engineer or a surveyor who is supposed to be you answer questions truthfully, thoroughly, honestly and you're two-sided, it is supposed to protect the public and also convey your information on behalf of your client?

A. Yeah, but by the code of ethics, we are required to respond truthfully.

Q. Okay. And does the code of ethics include to protect the public portion?

A. Yes. So, that is part of it.

Q. So, your statements tonight, you're here to also make sure that the public is not negatively impacted by the noise of these wind turbines, right?

A. Yeah. And per the code of ethics, if that were the case, I would be required to tell my client that is an issue and that it needs to be corrected. I would have to testify to it here as well.

Q. Okay. We talked about some dBA levels earlier. What is the dBA level outside of the home where a sleep interference may start?

MR. JACOBI: I am going to object. That was outside the scope of the sound modeling testimony. It sounds like a health question that would have been properly before Dr. Ellenbogen. I

am not sure the witness has the foundation to answer that type of question.

MR. KAINS: I am going to overrule the objection and ask the witness: If you know the answer to this question, then you may answer it. If this is something beyond the scope of what you know, okay.

So, Mr. Hartke, could you please ask the question again of Mr. Duncan?

BY MR. HARTKE:

Q. Maybe I could make it less objectionable.

There is a noise level that is reported where sleep interference begins outside the house. Let's say you have a house. The windows are closed. The noise level reaches the house. There is a noise level from the WHO and other reports from acousticians worldwide that begins sleep interference. What is the number and the dBA where that noise level begins interference of sleep.

A. You seem to be referring to a specific document. I think I would need to know what document you are referring to and whether or not I am familiar with that document.

Q. Okay. The World Health Organization

standards, have you ever heard of the noise level of 40 dBA where adverse health effects begin due to some sleep interference?

A. Not exactly with that characterization. No. I am not familiar with that.

Q. Do you have any hesitation or worry that the noise levels that you presented tonight are going to cause any sleep issues for people inside the homes?

For instance, are the people inside the homes going to hear the noise when they are in bed at night?

MR. JACOBI: I just have to object again. To the extent that we are discussing sleep impact and health issues, I just would like the witness to be aware that is outside the scope of his report.

MR. KAINS: I understand your objection, and it is beyond the scope of what Mr. Duncan has testified to; however, in the interest of the public wants to know, this board needs to know in order to consider that as one of the factors, I am going to direct Mr. Duncan to answer the question, if you know.

THE WITNESS: Could you repeat the

question, please?

BY MR. HARTKE:

Q. Sure. Have you heard and read or do you know of any concerns that maybe you've read of reports in the past and in numerical numbers that, at the household where the outside walls of the house are, when it gets to be 40 decibels or higher at the home, do you have any information, doubts, anything that you can perhaps tell us your client concerns that there could be a noise issue in the home?

A. I have to apologize. I think your question is very general and it lacks a lot of specificity that makes it so that I am able to answer it.

Q. I am trying to ask this question kind of different ways here. So, are the noise levels at the homes in the Apex Goose Creek Wind Project in 2022, with your modeling, do those have the potential to cause problems for people in their homes?

Because the noise levels that we have going on here, this is for people and so they can sleep. Are we going to have a sleep issue in the

homes?

A. I mean it's a health-related question, so that's outside of my area of expertise. I can compare it to sleep disturbance guidelines, but that's the most that I can do, is reference another document.

Q. I understood it. We'll take care of some documents later that start references for the noise level for sleep. I don't want to start testifying here again.

Okay. So, what is the noise level we'll have at the homes that is in your modeling? 45? 46 dBA?

A. The sound levels vary across all of the receptors, all of the homes.

Q. I understand, but the highest?

A. Yeah. The highest sound levels are 46 decibels on a short-term Leq basis. So, Leq to 10 minutes to Leq 1 hour, assuming that all turbines are operating simultaneously at their maximum sound emissions.

Q. Great. Now we are getting somewhere.

Can you predict the safety of this 46 dBA at the home, at the worst-case scenario, or 45 or

44?

Do you feel good about the safety in this that we're not going to have issues for noise in the wind farm?

A. Yeah. So that 46 decibels that I am talking about, when translated into the same metric that was used in the Health Canada study, is 43 to 44 decibels --

Q. Okay.

A. -- which is below the levels that Dr. Ellenbogen spoke to yesterday.

Q. I missed yesterday's testimony, so I don't know anything about that.

Okay. I also caught on today that you said the A-weighted is an important way to measure the noise. Does that mean that IPCB standards are less than the best way to regulate wind turbine noise levels?

A. No. I didn't say that.

Q. Okay. But in your report, I think you said that the A-weighted dBA was the most important or the best. I don't remember exactly what your words were.

MR. LUETKEHANS: Page 30.

THE WITNESS: 30, you said? There we go. Thank you.

MR. LUETKEHANS: I had it, and so it was easier for me.

THE WITNESS: Thanks.

So, this page is talking about different weightings for sound level, dBA, dBC and dBZ. It's talking about total sound levels. And when we are talking about total sound levels compared to dBZ and dBC, dBA is the most appropriate metric.

BY MR. HARTKE:

Q. Okay. I agree with that.

Earlier you said -- Phil Luetkehans, the attorney here, asked about the 500 hertz and the 1 kilohertz noise levels. Those were where the octave bands get really close for hitting that maximum noise level for wind turbines on these receptors, and he said that these were the thing to be focused on, but you kind of -- you disagreed with that. You have said there were other wind turbine problem noises other than the 500 and 1000 hertz.

What were those other ones that you were referring to when Phil was asking you about a half an hour ago?

A. I think your question, and not to your fault, but slightly mischaracterizes the question.

Q. That's fine. I understand.

A. But to clarify, I think the question was related to which are the most critical bands for evaluating IPCB limits as it pertains to wind farms.

500 and 1000 is fairly common to be the bands, but sometimes I've seen it so that it's 1000 and 2000 that come up close. So, that is why I didn't answer that question directly; it depends on what the turbine modeled is.

Q. So sometimes you have a 2000-hertz close encounter with the limits, right?

A. It can. It depends on the turbine.

Q. So, do you have any low-frequency noise concerns for wind turbines in this Goose Creek project?

A. The low-frequency sound levels are below the IPCB limits, so I don't have any concerns.

Q. Okay. Don't you think it would be an ethical concern to have that you think it could potentially cause problems for noise for folks because of the low-frequency content for the neighbors?

A. I don't have an ethical concern with the sound levels that are projected at low frequencies for this project.

Q. Okay. So, you think it will be okay?

A. I mean "okay" is a very general term, but it meets the IPCB limits, and it also meets other generally accepted, low-frequency, community-noise guidelines.

Q. So, I am leading down the path that what we are going to do is, we are going to talk about the nonnumerical part of the IPCB regulations.

I understand that you have a numerical number to stay underneath, but what about the comfort, enjoyment, the sleep issue, the nonnumerical part where it interferes with enjoyment of your home, inside your home particularly?

Do you have any -- are we going to have any issues with that type of thing?

A. I mean it's a very general question, right?

Q. Yeah. So, generally tell me, are we going to have a problem with noise issues in people's homes?

A. It meets the IPCB limits. It meets

generally upheld community noise guidelines. That is what I compare to.

Q. Okay. So, in other communities, when you've testified, and they have a much lower threshold, let's say they have a maximum noise level of 40, when you testified in those cases, if you have, did you feel that those were appropriate noise levels to protect the public or are we just at a disadvantage where now it's a much higher noise level, almost 46 dBA?

A. Yeah. I mean it's a hypothetical situation, and I don't recall ever testifying to a project that was required to meet a limit of 40, 2005 you say.

Q. Okay. So, you've not had to testify on a project that had to be limited to 40?

A. Not that I recall. No.

Q. Okay. In one of the paperwork, it said what your experience was. What was the first wind turbine noise project that you worked on?

A. You are testing my memory there.

MR. JACOBI: That he testified for or that he worked on?

MR. HARTKE: Yeah. In his testimony, he

said he had so many years of experience. I want to know, 2005, when that started.

THE WITNESS: When it started is different than what project it was.

BY MR. HARTKE:

Q. Sure.

A. So, I can answer that. I started working on wind turbines roughly around 2004, 2005.

Q. 2004, 2005?

A. Yeah.

Q. So, it was more 200517 years ago?

A. Yeah. It would be about 18 years ago.

Q. Okay.

A. Seventeen, 18 years.

Q. Okay. On the wind projects that you've testified on, that you said or testified that the turbine noise problems were okay, have any of them had any complaints filed due to noise issues?

A. Yeah. I don't recall any projects that I've testified to that have had complaints. That doesn't mean -- the complaints don't come to me, so that doesn't mean they don't exist, but I can't recall any projects I've testified to having complaints.

Q. Or your company RSG?

A. Yeah. So, there have been complaints at some projects that my company has worked on.

Q. Okay. I am here just with the noise concerns and sleep. I am trying to figure out how a way to ask you.

Do you know of any effects that low-frequency noise has been connected with a sleep interference problem?

MR. JACOBI: Again, Mr. Hearing Officer, this is Dr. Ellenbogen's testimony.

MR. KAINS: This, again, is beyond the scope of this gentleman's expertise and his direct testimony, but I am going to again ask the witness to answer the question, if you know, based upon your experience.

THE WITNESS: Yeah. I am not familiar enough with the topic to really testify to it. I mean I am familiar as everyone else was in this room listening to Dr. Ellenbogen yesterday field questions about, you know, whatever it was. And, you know, I may have read some things here and there, but that is not a common part of my area of expertise.

BY MR. HARTKE:

Q. Okay. Do you go to conferences, 2005 wind turbine noise conferences, ever?

A. Yes, I do.

Q. At those conferences, do they ever talk about sleep, as in reaction to the noise?

A. I believe they do.

Q. Okay. Have you ever been to a conference where they talk about sleep as to the reaction of the noise and what dBA that that sleep reaction starts at, at a conference about wind turbine noise?

A. I believe they might talk about something 2005 that. I don't recall any specific section on that.

Q. Okay. So, you don't know the number of dBA that you go to the conferences and they are trying to keep it down, the dBA to a low frequency -- I am sorry -- dBA of turbines for having low-frequency noise content complaints?

MR. JACOBI: Mr. Hearing Officer?

This is no disrespect to you, because I know you weren't here yesterday, so you didn't hear Dr. Ellenbogen testify. But, you know, we are now trying to qualify the witness as an expert in this

area. This is just not the purpose of his testimony.

MR. KAINS: Again, Mr. Jacobi, you are absolutely correct.

Now, Hartke if you could ask that question again, I am going to direct the witness to answer the question if he knows the answer based upon his expertise.

BY MR. HARTKE:

Q. At the noise conferences, at the Institute of Noise Control Engineers, they put on and respond or, at the conferences, have you been there when they have said at a certain dBA low-frequency noise causes any complaints from people?

A. I don't recall. No.

Q. Okay. Is low-frequency noise a pretty big item discussed at these noise conferences?

A. "Pretty big item" is a relative term I would say.

Q. Is it a bullet point listed item that they include low-frequency noise when they talk about wind turbine noise?

A. I don't know the answer to that question, if it's part of a bullet point list.

Q. Okay. This is probably going to be health expert related.

As the noise expert for Apex, do you have any hesitation or concerns just from your experience and exposure to the conferences you go to, the things you've measured that RSG has done measurements for people, is there a noise level in this project that you have predicted on numerical noises, is there a noise level in this project that you think could probably cause or have any likelihood of causing complaints for nighttime noise?

A. Complaints are not directly tied to sound levels, so I can't answer that question. Complaints can occur at 0 decibels, so I guess the answer would be yes it could.

Q. I'll qualify to widespread complaints. Do you have any concern that any of the noise levels at the homes in this project would cause widespread complaint levels?

A. Again, complaints can occur for a number of reasons, and even complaints that are about noise can occur for a number of reasons outside of the actual sound level. So, I can't testify to whether

or not there would be widespread complaints or not.

Q. Isn't the whole purpose of having a noise acoustician here to make sure there is not noise complaints?

A. I would say no that is not the purpose. The purpose for me is to evaluate the sound levels from the project and compare to the applicable standards.

Q. And the applicable standards on one of them is item -- hold on one second -- 900.102, the prohibition of noise pollution?

That's not one of the applicable standards in the IPCB noise limits?

A. That's part of the standard, but I don't see the word complaint used anywhere in that standard.

Q. Do you know the definition of noise pollution?

A. I am aware of the definition of noise pollution in the IPCB limits.

Q. Okay. Can you please tell us what the definition of noise pollution is in the IPCB?

A. Not the limits but in the code.

Q. I am sorry?

A. Yeah. The definition is: The emission of sound that unreasonably interferes with the enjoyment of life or with any lawful business or activity.

Q. So, interference with life, would that include interference with sleep?

A. It could, presumably. That is a health question, but I believe possibly.

Q. Okay. Do you have any concerns that the noise levels are too high on this project?

A. No.

Q. When you measure the noise for people's yards, how much land do people own around their home?

Earlier the question was asked what is the distance from the house out to what you call the yard. Were you using any kind of, like, a starting point, 2005100 feet or anything like that?

A. No. I wasn't using a specific distance. I was using aerial photography of the yards.

Q. Okay. So, would it be fair to say that you traced, on your photo, the edge of the cultivation line that's along the edge of a yard as your noise measuring prediction place?

A. In a lot of cases but not in all cases.

Q. Okay. The IPCB noise level, does it talk about the residence or the residential use in the IPCB noise limits -- or the regulations? I am sorry.

A. The IPCB limits refer to different classifications of land -- excuse me -- classifications of land use, including residential.

Q. Okay. Does the IPCB, Noise Pollution Control Board, mention property lines in the standards for property lines?

A. I believe the word is used in the standard for, 2005, property line noise receptor or something 2005 that. It comes up as a description for the noise receptor.

Q. Okay. So, there are some instances where the noise is coming from an item that's pretty close to the property line? 2005, let's say an air-conditioner or something, is that the part you're referring to that there is a property line reference? Is that what you are talking about, where the noise source is near a property line?

It's what you just came up with. What is the purpose of when that is used?

A. One second, please. Yeah. For example, it's used in the regulation in the sentence that says, in the application of this subsection: The applicable numeric standard for sound emitted from any existing property line noise source to receiving class A land for both daytime and nighttime operations is found in Section 901.

Q. Okay. Do you go back to the 900.102 where it says no person allowing emission of sound beyond the boundaries of his property? You got that part, right?

A. Yeah.

Q. So, when did the neighbor property that is leased to the wind company -- it says no emission of sound beyond the boundaries of the property -- when did the leaseholder get property leased beyond the property line of the participating farmer or whatever?

MR. JACOBI: I have to object and ask for clarification on the question. I think it seeks legal conclusion, but I didn't quite follow it.

MR. KAINS: Okay. What I am going to do is I am going to sustain the objection.

Please ask a question and just maybe break

it down into smaller parts.

MR. HARTKE: No problem.

MR. LUETKEHANS: Before he does?

MR. KAINS: Mr. Luetkehans:

MR. LUETKEHANS: Mr. Duncan, you cited this section of the IPCB. Just so she has got it and we will have it in the record, what section were you quoting?

THE WITNESS: Thank you. I don't know that I actually have the number right here. It is on page 5 of the report.

MR. LUETKEHANS: Sorry. I thought you were looking at one of the charts, so I apologize.

THE WITNESS: It is on page 5 of the report, the sound modeling report near the bottom of the page.

MR. LUETKEHANS: Okay. Thank you.

MR. KAINS: Thank you, Mr. Duncan and Mr. Luetkehans. Thanks for the point of clarification.

Now, Mr. Hartke, your questions are all very good. Just maybe break it down a little bit.

BY MR. HARTKE:

Q. You know what property lines are, right?

Property lines?

A. Yes.

Q. It's what people own, right?

A. It defines the boundary of a property line. Yes.

Q. Cool. That is the boundary of what people own. Or a deed line, property line; we understand that is understood by everyone here, right?

A. I don't know if it's understood by everyone here, but yeah, I understand what a property line is.

Q. That is what you own.

Now, in the Noise Pollution Control Board definitions it says: You don't cause or allow emission of sound beyond the boundaries of the property of the emitter.

So, when did the property line get moved to the edge of a yard of a neighbor? When did that happen?

A. I can't answer that question, and you also didn't read the full quote there.

Q. I'll read the full quote: No person shall cause or allow emission of sound beyond boundaries of his property as property is defined and to cause

noise pollution in Illinois.

Isn't that the entire thing?

A. Or as to violate any provision of this chapter.

Q. Okay. So, when did Apex's lease of this land where the turbine host activity is going on, when did that lease area on your sound charts and applying our numerical regulations, when did it jump across the property line and go to the edge of the cultivations, the other side of the woods, that got into the yard of these people's homes?

2005, isn't the property line the easiest place to latch onto to measure that noise? Because that is what the IPCB says to do, is use property lines.

A. I don't want to be a lawyer, but it's a compound question. If you could tell me -- 2005, ask me a question, and I'll answer it.

MR. KAINS: Yeah. This witness is here to answer your questions. Mr. Hartke, your questions are very good; however, if you can just perhaps ask about when did it change from the property lines to whatever it is you are talking about. So, let's get to that. And I appreciate it.

BY MR. HARTKE:

Q. Why is the measurements at the edge of the yard instead the at property line 2005 the IPCB noise levels say? How did it get there?

A. What measurements are you referring to?

Q. The noise report that you have --

A. Yes.

Q. -- you are talking about the noise levels measure at the edge of a yard. Okay. And you testified to that tonight.

Why isn't the noise level measured at the property line?

Isn't that where the people own to, and that is how far the easement of the Apex lease of the land goes to?

A. The sound level that I am testifying to and is in the report are modeled and it is not measured values; but, nonetheless, they are applicable. The IPCB limits are applicable to the class A land use. That is my understanding, and that is why it would be the residential land use around a primary structure. That is my understanding.

Q. Okay. Does the IPCB regulations -- there

is 2005 a standard, the rules of recording the noise, and it has in there the following items: It says the measurements have to be observed measurements. Okay?

And on one of the listed items is the measurements should be taken at the property line or the closest thing you can estimate the property line to be. That's one of the standards. That is how they measure noise levels that are in response to complaints and things.

So, does the acquisition go to the edge of the residential use, or do they set it at the property line when they are following IPCB protocol?

MR. JACOBI: I think we need to cite to that provision to respond to the legal -- to respond to the legal argument that is being made.

You can answer the factual question for sure.

MR. KAINS: Mr. Jacobi has an objection that I have to consider before you ask another question.

All right. As I understand it, the question is: Why do you measure from the property line -- correct me if I am wrong, Mr. Hartke -- why

do you measure or model from the property line rather than from --

THE WITNESS: It's the other way around. Why do you measure the yards instead of the property lines 2005 the rules say?

MR. KAINS: That's just the question that I think is the heart of what this gentleman is asking.

MR. JACOBI: I have no objection to the witness answering that question. What I was requesting is the preference was a citation to the regulations that I didn't follow, and I requested that citation if it exists because it's a legal argument, you know, intertwined in this question. But the factual question is fair game.

MR. KAINS: Because Mr. Duncan is not an attorney, he is not going to address any of the issues with respect to the Pollution Control Board regulations.

But the question that I think -- is this the crux of what you are asking: Why is it measured at one spot instead of the other?

MR. HARTKE: Yes. Yeah, at the property line. Why is it not at the property line?

MR. KAINS: Let's answer that.

THE WITNESS: My understandings is the limits apply at the land use, and the land use doesn't necessarily extend to the property line.

MR. KAINS: Very good. Thank you.

Okay. Mr. Hartke, do you have a bunch more questions? Because we are getting close to a recess, but I don't want to interrupt you.

BY MR. HARTKE:

Q. Okay. So, are you trying to maximize your noise abatement zone off across the property line onto a neighbor property to meet your noise maximum limit?

Are you trying to extend the noise abatement zone?

MR. JACOBI: I need a definition of the noise abatement zone.

BY MR. HARTKE:

Q. That would be the part of the noise that exceeds the IPCB noise levels that is beyond the property line of the leased piece of land.

A. I am not trying to maximize anything. I am modeling the turbines where they are proposed. Albeit 71 turbines instead of the 50 that will

actually be built, and I am analyzing it at receptors, which are primary structures, and the surrounding area around those primary structures which are classified as residential land use, that is what I am doing.

Q. Okay. Back to your ethics thing, do you think it's ethical to take a noise level that's higher than the IPCB standard and encroach that noise level onto a person's private property where they could do other things such as sunbathe, garden or build another home for their kid or something? Do you think it's cool to go past a property line with this noise level exceeding?

A. I don't think it's a question of ethics. I think it's a question of applying the standard, which is what I am doing.

Q. But doesn't your ethics say protect the public, and that is on both sides of the property line?

A. But you are talking in hypothetical mode. If there was a specific situation with a sound level that was of concern at a specific location, I could then evaluate whether or not there is -- I have an opinion about ethics, but in that general case I

can't. There is not enough specifics for me to develop an opinion.

Q. Would your fellow board members in the INCE, Institutes of Noise Control Engineering, do you think the fellow board members would think it was ethical to not follow a written rule that says property lines and you attempt to make this determination or a movable crop line the new noise standard location?

A. I can't testify to what the board members would think or not.

Q. Whenever a person of the public or a fellow board member wants to file an ethics complaint against an INCE board member, whenever that happens, how would that go?

Does a person of the public, can they file that objection or complaint against an ethical violation against an INCE board member?

A. I am not aware of the process, but anyone could contact the institute and find out what that process is.

Q. Okay. If you owned a lot of land and you wanted to use it for residential purposes, and it was currently farm ground, and you just so happened

not to have gotten your home or subdivision constructed before a wind turbine came into the community, do you think that that would cause hesitation for a landowner to develop up to a property that was used up with this exceedance level of noise and the noise levels?

MR. JACOBI: There is no foundation for him to know what another landowner would know.

MR. KAINS: I am going to sustain your objection. There is also -- this is far beyond the scope of what this gentleman has testified to.

Mr. Hartke, I would simply ask that you ask questions based upon his testimony with respect to the decibel levels within this particular wind energy project.

BY MR. HARTKE:

Q. Yeah. The reason why I am asking this and spinning this as an ethical thing is because when you come to the board as an expert witness you are supposed to answer all of the questions truthfully, fully, all those things, and we've gotten blockaded on this ethical part where it's not right to cross the boundary if it's unleased property.

MR. KAINS: Would you please ask another

question?

BY MR. HARTKE:

Q. Okay. Just a minute. I got some the notes here I am reviewing here.

There were some properties that are really high in noise: Property Receptor Number 18, 115, 846 and 1104. The noise level -- did you say that those noise levels were 46 dBA at those locations, 18, 15, 846 and 1104? I think it was on the summary page.

A. Yeah. I believe the overall sound levels of those receptors are 46 dBA.

Q. Okay. Great. Would it be ethical to warn people that the 46 dBA might be a noise problem for the people living in those four locations?

A. If I was aware that it was not in compliance with commonly accepted community noise guidelines, then I would tell my client, and I would testify to it here.

Q. Okay. Are any of the people that live in receptors 18, 115, 845, 1104, were any other people in the whole project -- are you aware of any good neighbor agreements that waives a noise part of the equation here?

MR. JACOBI: I'll object. I am sorry. I am sure you'll answer it this way, but that is outside the scope of the witness's knowledge. That would have been subject to Mr. Moore's testimony a few days ago.

MR. KAINS: I am going to overrule the objection and direct Mr. Duncan, if you know of any agreements, you personally have any knowledge of any agreements with any participating property owners with respect to those four numbers that Mr. Hartke just recited on several occasions, that I still can't remember all of them, do you know if there is any good neighbor agreement?

THE WITNESS: I do not.

BY MR. HARTKE:

Q. Does a good neighbor agreement include a release or a noise complaint item in the good neighbor agreement?

A. I am not aware of any good neighbor agreements.

Q. In this project?

A. I am not.

MR. HARTKE: Okay. After -- this is a question. What's the next time that we have

opportunity to redirect? I am going to have -- I have some more follow-up questions here that I --

MR. KAINS: There is your time, sir.

MR. HARTKE: This is it. Okay.

MR. KAINS: With this witness.

THE WITNESS: If I could, I could also use a restroom break sometime soon, having gone through two bottles of water.

MR. KAINS: We are getting there. Hang on, Mr. Duncan.

Any further questions, Mr. Hartke?

MR. HARTKE: I think we want to quit before we have an emergency.

MR. KAINS: All right. Mr. Hartke, thank you for your questions.

Mr. Duncan, you are still on the witness stand.

We will be in recess. It is 7:41, and 14 minutes from now is 7:55. We are in recess until 7:55 p.m.

(BREAK TAKEN.)

MR. KAINS: Let's go back on the record.

And, Dylan Gallagher, if you would, please step forward and spell your first and last name for

the court reporter, please.

MR. DYLAN GALLAGHER: Dylan Gallagher. D-y-l-a-n G-a-l-l-a-g-h-e-r.

MR. KAINS: Go ahead, sir.

EXAMINATION

BY MR. DYLAN GALLAGHER:

Q. On your sound modeling report, I noticed that a temperature was listed for the molding, which is 10 degrees Celsius, which, for everybody, that is 50 degrees. As that temperature increases, what does it do to the decibels, and as that temperature decreases, what does it do to the decibels?

A. Yeah. That is a good question. You're testing my memory of the ISO standard on that one. What I can tell you is that that temperature is the temperature that results in the highest sound levels, the one that we are modeling. It's also the temperature that is specified in the ANSI standard for modeling wind turbine sound propagation. So, whether or not it goes up -- it goes down on both ends. I just don't remember, you know, how far. I couldn't give you details on it.

Q. Okay. And then the porous value, which you spoke about earlier, as that value changes, do

the decibels go up and down also?

A. Yeah. So, if you were to use a ground factor of 1, then they would go down. If you were to use a ground factor of 0, it would go up. The recommended value that is in the ANSI standard is 0.5, and that is what we used here.

Q. Okay. You don't take into effect the timing during the year or how the porous value would change?

A. No. It's just ground that is porous.

MR. DYLAN GALLAGHER: Okay. Thanks.

MR. KAINS: Thank you, Mr. Gallagher.

Any other questions?

Ms. Vetter, please step forward.

Any other questions from the public for Mr. Duncan after Ms. Vetter?

Ma'am, if you, again, could state your name and spell your first and last for the record, please?

Kelly Vetter. It's K-e-l-l-y, and then V-- as in Victor -- e-t-t-e-r.

MR. KAINS: You may go ahead and ask questions related to Mr. Duncan's testimony.

EXAMINATION

BY MS. VETTER:

Q. Okay. A question was brought up in my mind when you were talking to Mr. Hartke, and I was wondering if you can answer at what decibel or what noise does sound travel through the exterior walls of the house?

When does it start to interject there?

A. It doesn't happen at a certain level. It depends on the structure of the house. And so, you know, theoretically 0 to 120 decibels could travel through the structure of a house.

Q. So, the whole 46 could go through the house?

A. Oh, no. So, the house would provide some attenuation unless it was just outside. Right. If there is not a structure there, then it would be the whole sound level could go through the house. But if there is a structure there, it would be attenuated to some extent.

Q. So, if it was a brick house, it would be attenuated by a certain percentage, or does it work 2005 that?

A. Yeah. Different architectural structures have a different transition model.

Q. But you don't have 2005 a list of how that works and what ones?

2005, if you have a brick house, how it would only get through 30 percent or --

A. Yeah. I don't have the transmission values for different structures off the top of my head.

Q. But there is one available to look at?

A. You could calculate it or measure it for any structure.

Q. So, a homeowner could look at what levels are outside its property and look up their house structure and know what was going to get in?

A. If you calculated the transmission loss of your specific construction, you could calculate what the sound level from outside to inside is. Yes.

Q. Okay. Thank you. I was wondering if I heard this correctly or not. So, you said, on average, it would not go above 46 dBA's?

A. No. I didn't say that.

Q. No? Okay. Okay. So, let me rephrase the question. Around structures, it will be limited to 46?

A. No. I didn't say that as well.

Q. Okay. Give me an idea what you are saying then.

A. So, it would be limited to the IPCB limits.

Q. Which is?

A. Which are the octave band limits that are on page 5 of the report.

Q. Which is?

A. Which is -- would you 2005 daytime or nighttime?

Q. Both.

A. Daytime is 75 at 31.5 hertz, 74 at 63 hertz, 69 at 125 hertz, 64 at 250 hertz, 58 at 500 hertz.

Q. Is this daytime you are still looking at?

A. Yeah.

MR. LUETKEHANS: I don't mean to interrupt but, Mr. Duncan, I can give her the chart and maybe that will make it easier.

BY MS. VETTER:

Q. So, you are saying it's higher during the day because you are assuming people aren't home during that the day and they wouldn't have that?

A. I am not assuming anything. That is just

what the limits are for the IPCB.

Q. Okay. But you are saying, for human beings, the limit should be, for them to sleep, is at 46?

A. No. I am not saying that either.

Q. Do you know what our ordinance says about it, since you are working with this county?

A. Says about what? Says about what?

Q. About what the dBA should be for the landowner that lives next to it.

A. Yeah. The ordinance in this county specifies IPCB limits, which I believe we just handed to you in Table 1 on page 5 of the report. Those are the limits by octave band.

Q. Okay. Do you not have any information as to what the human limits are? I mean --

A. I mean I am not familiar. You would have to define what you mean by human limits.

Q. So, you talk a little bit about, I was pretty sure, that people are normally able to handle a certain amount of dBA, and this is why you keep it at a certain limit so that -- and around structures that they might be in.

And is there a certain limit within that

structure that you try to keep it to so that you don't hurt them with noise levels that you have?

A. No. So, you are referring to the overall total sound pressure level dBA.

Q. Right.

A. That is the sound levels at octave bands A-weighted and then some together to give a total sound level. The regulation is not dBA based. The regulation is dBZ based by octave band, and that is what we are evaluating in this assessment.

Q. So, what is your evaluation number?

A. It would be we are evaluating to the limits that are in Table 1 of the report that I believe you have in front of you now, the noise report on page 5.

Q. So, all your levels up and down throughout all of this, just daytime, nighttime, it's coming and going, is that what you are saying?

A. All the modeled sound levels are below the nighttime limits that are listed in Table 1.

Q. The nighttime limits, which is -- oh, nighttime, 69 through 32?

A. That is correct. From 31.5 hertz up to 8 kilohertz, and just to by clear, those are

un-weighted or Z-weighted per regulation.

Q. Very clear. Being a layperson, I don't understand most of that, but I am trying to figure out if you are trying to take into account people who live -- that you've taken into account that people who live close to the turbines off their properties, especially people who are actually living on and not owning a turbine, that you are trying to limit the noise level to their homes.

A. Yes. I am applying the IPCB limits to those.

Q. So, you are just staying within this, right? Okay.

Do you understand that there are animals who roam among this property, too, and that they are much more sensitive than humans are to sound levels, since you testified about sound?

A. I am not familiar with any animals that are on the site. I haven't done any studies related to animals on the site.

Q. Okay. Are you familiar that animals are sensitive to this kind of thing, to noise levels, compared to what human are?

A. I am aware that various species of animals

have varying sensitivity to sound just 2005 the human species does. So, it's very species specific.

Q. And do you understand that a lot of these animals are the livelihood of the landowners?

A. I understand that there are farmers that have animals. I would assume so.

Q. And they will be affected by the noise levels that are on the property, right?

A. I can't testify as to whether or not they would be affected by it.

Q. They will hear it, right?

A. It will be audible to them.

Q. Yeah. So, it will be audible to them.

A. The animals that is.

Q. Right. So, you think that all these levels here that are nighttime and daytime are totally acceptable to animals as well?

A. I didn't say that.

Q. I am asking that, though.

A. Yeah. I haven't evaluated that.

Q. So, you've never seen or testified to any damage that could be done to an animal because of these noise levels?

A. I didn't say that either.

Q. I am asking that then.

A. Could you repeat the question?

Q. Have you ever testified or known any information that claims that these kinds of noise levels would be damaging to animals?

A. I am not aware of any of that.

Q. You've never heard any information on those kinds of things?

A. I am not aware of any of the sound levels that we are talking about here affecting the animals.

MS. VETTER: Okay. Good enough. Thank you.

MR. KAINS: Thank you, Ms. Vetter.

Any other questions from --

Yes, ma'am?

MS. COILE: I just have a quick question.

MR. KAINS: Please come forward to the microphone. Ma'am, if you could, please state your name, spelling first and last names for the record.

MS. COILE: My name is Sandy Coile. Not related to the other Coil.

MR. KAINS: How do you spell your first and last names?

MS. COILE: S-a-n-d-y and C-o-i-l-e.

MR. KAINS: So, yours has an E on the end. Very good. You may ask questions.

EXAMINATION

BY MS. COIL:

Q. I just have a quick question. I am new to this, and I am trying to understand all of this. We've talked tonight a lot about a noise and dB levels and what is acceptable and what is not.

Let's say that these wind turbines come in, and they are in place, who monitors the dB levels?

Is there some board or some group or someone who comes back later to make sure that these dB levels are appropriate?

A. Yeah. I am not aware of who would monitor the sound levels from this project once they are constructed.

Q. Okay. So, if people were having problems with whatever and they wanted to complain, who would they complain to?

A. I think we would have to check with Apex on that. I can't -- I don't know the answer to that.

Q. I didn't know if there was, 2005, a noise pollution board or if there was somebody else that we would complain to.

A. Yeah. For this county, I am not sure what the standard procedure is for that type of thing.

MS. COILE: Okay. I'll find out. Thank you very much.

MR. KAINS: Thank you, Ms. Coile.

Any other questions for Mr. Duncan from the public? Very good.

Questions for Mr. Duncan from Piatt County staff and consultants?

Redirect, Mr. Jacobi? Do you have any questions for your witness?

MR. JACOBI: Just briefly.

MR. KAINS: Yes.

MR. JACOBI: First, housekeeping. The study that was or I should say the article that was presented to the ZBA is not marked, at least my copy is not marked.

MR. KAINS: Mr. Jacobi, we are going to mark that as Gallagher Exhibit 1, and we will take up the admission or admission of that document at a later hearing after everybody has had a chance to

review it. So, let's call it Gallagher Exhibit 1.

MR. JACOBI: Very good.

FURTHER EXAMINATION

BY MR. JACOBI:

Q. So, referring the witness to Gallagher Exhibit 1, titled Wind Turbine Night Noise, Mr. Gallagher, did you have an opportunity to --

A. I am Mr. Duncan.

Q. I am sorry. Mr. Duncan, have you had a chance to review the exhibit marked as Gallagher Number 1?

A. I have read through it. Yes.

Q. And you did that over the short break that we took?

A. Yes. It was over the break.

Q. Do you have any preliminary comment on the exhibit?

A. Yes, just two comments: One, to qualify what the document is, the document is not the study itself. It is a news story about a study. So, I just wanted to clarify that, to say what the document actually is.

And then it's reporting on a study that was done and the observation, especially in the

context of the questions that were being asked about it, is that amplitude modulation can occur more frequently at night than during the day. It doesn't talk about sound levels being different at night than during the day, which I think is what the line of questioning was about. But it does talk about this research study saying that amplitude modulation can occur more during the night than it can during the day.

Q. So, the exhibit's not a peer-reviewed study?

A. I have no way to verify whether or not it's a -- well, actually, it's a news story, so it's not a peer-reviewed study itself because it's a news story.

Q. Just to confirm, your model does model nighttime sounds?

A. It does. And to clarify, the results are representative of my nighttime sound levels. It's not that the model -- it does represent what the results are.

Q. There was a question about infrasound. Does the model model infrasound?

A. The model does not model infrasound.

Q. Can you tell us why not?

A. Infrasound is not -- well, for a number of reasons, but infrasound is not regulated by the IPCB limits, so it's not included in the model for this project.

Also, ISO 9613-2 does not include regulations or standards for modeling and for sound. It's not done regularly.

Q. Can you confirm -- I think you said this earlier. Can you confirm that your model was validated with real world examples?

A. I can confirm that. Yes.

Q. That is true?

A. Yes.

Q. Is it your understanding that the county's wind ordinance was adopted pursuant to section IB1 was adopted for the purpose to assure that any development in production of wind-generated electricity in Piatt County is safe and effective?

A. Yeah. I've reviewed the ordinance, and I recall that language. Yes.

Q. And that is effectuated and adopted by the county of the IPCB regulations?

A. That's correct.

Q. And your model confirmed, in your review of the data, confirmed that the project as designed will confirm to the IPCB regulations?

A. That's correct.

Q. Is it true that -- is it true that participating and nonparticipating landowners are subject to the same IPCB standards everybody is subject to the same IPCB standards?

A. That is my understanding. Yes. All of the residences are subject to the same standards.

MR. JACOBI: Okay. Nothing further.

MR. KAINS: Thank you, Mr. Jacobi.

Final questions from the board?

Any questions from the members of the Zoning Board of Appeals for Mr. Duncan?

MR. LUETKEHANS: Mr. Hearing Officer, I do have a follow-up. I think I am before the board in the order, or am I after?

MR. KAINS: You are before the board.

MR. LUETKEHANS: I just don't want to wait. It's going to be very quick.

MR. KAINS: I'll allow it.

FURTHER EXAMINATION

BY MR. LUETKEHANS:

Q. You said that Gallagher Exhibit Number 1, the story talks about amplitude modulation can occur more frequently during the time than during the day. Is that what you said?

A. That's correct.

Q. The one question I wanted asked is: Is that your understanding as well?

A. It's not. I think it -- but I don't have a defined understanding of that off the top of my head. I would have to go back and review the literature.

MR. LUETKEHANS: Thanks. Nothing further.

MR. KAINS: Thank you.

Now, final questions from the board? Any questions?

Yes, Mr. Larson?

EXAMINATION

BY MR. LARSON:

Q. Talking about the porous soil, does the sound level change if that ground is saturated with water?

A. The absorption level porosity would change if it was less absorptive because of the saturation. Yes.

Q. So, it could raise the level?

A. It could, yes. But the ANSI standard is 0.5 whether or not it's rained or not.

MR. LARSON: Okay. That's all I have.

MR. KAINS: Thank you very much, Mr. Larson.

Any other questions from the board?

All right. Mr. Duncan, you may step down, and you are released from this hearing.

Now, Mr. Jacobi, you had indicated to me prior to this hearing, tonight's session of this hearing, that your next expert is an expert in the area of shadow flicker?

MR. JACOBI: That is correct, sir.

MR. KAINS: However, this witness is not available next Monday and Tuesday when we are scheduled to be here next; is that correct?

MR. JACOBI: That is correct. We do have -- he is. So, if we start him and do not finish him tonight, he will be available to come back I believe on the 29th.

MR. KAINS: Here is my question, Mr. Jacobi: You have a safety expert here also. Is that witness able to be here on Monday?

MR. JACOBI: Unfortunately, no. Both the witnesses here tonight are not available next week. We do have a full slate that can come in next week, but either witness that we start with tonight will have to be continued assuming that they need a continuance to the following week.

MR. KAINS: I am not going to tell you how to present your case and which witness to call, but perhaps the one who might be shorter on direct, and we could get more done with that witness, but I will leave that up to you.

MR. JACOBI: Yeah. I think we've got to stick with the shadow.

MR. KAINS: That's fine.

MR. JACOBI: For the applicant, we'll call Jake Runner.

MR. KAINS: Sir, would you please raise your right hand to be sworn by the court reporter?

JAKE RUNNER,

a witness herein, called by the Applicant, after having been first duly sworn, was examined and testified as follows:

MR. KAINS: All right. Would you please state your name, spelling your first name and last

name for the record?

THE WITNESS: Yes. Good evening, everybody. My name is Jacob Runner. J-a-c-o-b R-u-n-n-e-r.

MR. KAINS: Thank you, Mr. Runner. You may proceed.

PRESENTATION BY JAKE RUNNER

MR. RUNNER: Let me get my presentation up here and hit the right bottoms.

My name is Jacob Runner. I am the GIS Services Practice Lead.

MR. LUETKEHANS: I apologize. Could I have a copy of the PowerPoint, please? I apologize. Thank you.

MR. KAINS: Go ahead, Mr. Runner.

MR. RUNNER: So, just for -- GIS might not be a term that's readily known by all. So, that is a geographic information system. So, think about the maps on your phone; those are -- that is a GIS system. It is a geographic system. So, it's relating to maps and special data, that sort of thing.

So, I will continue and then this will show up here.

So, yeah. I am the practice leader for the GIS Division at EDR with about ten years of experience, professional experience, in the geo spatial field. I am responsible for spatial data for all of our products, projects along with, you know, analyses, data analyses, those sorts of things.

As it relates to this project and this topic we are talking about tonight, I am specifically responsible for conducting shadow flicker analyses.

I have conducted about probably over two dozen studies for projects across the US, and I have also provided technical expertise to the State of Vermont Department of Public Service. I've also testified orally once in New York and then provided written testimony on a handful of projects in New York to the New York State Department of Public Service.

MR. KAINS: All right. Thank you, Mr. Runner. I am going to interject.

MR. LUETKEHANS: No objection.

MR. KAINS: All right. He is an expert. He's in as an expert witness.

You may proceed.

MR. RUNNER: All right. Next slide.

So, just a quick background on the firm I work for. So, EDR is a landscape architecture engineering and environmental consulting company. We were founded in 1979. We have about 200 employees, a variety of different, you know, skill sets and suites working for both public and private clients.

We have offices in upstate New York, Ohio, and Pennsylvania.

So, next slide.

So EDR has been working, along with other things, in the renewable realm for about 25 years providing, you know, permitting services. There is a list of, you know, milestones, different permitting projects, for instance, in different states to zoning boards and then also providing, you know, services to public entities as well.

So, next slide.

So, the meat of this. So, what is shadow flicker?

So, the phenomenon of shadow flicker occurs when you have a shadow that is cast, and I am

going to relate it to turbines in this discussion. When a turbine casts a shadow over an opening, and that happens, you know, when the turbine is between the sun and the structure, so it occurs early in the mornings or in the evenings when the sun is low on the horizon.

A couple things to note: The sun needs to be shinning. That makes sense. And the wind needs to be blowing and blowing in the right direction so that the turbine blades are perpendicular to the sun.

So the graphic here that is shown, I am going to try to keep focusing this way so you can hear me on the mic.

But, you know, the turbines located between the house and the sun, and if you can picture the sun rising and moving across the horizon, the shadow is going to get bigger or smaller and move across the landscape.

So, next slide.

So, as it relates to Piatt County, you have a wind energy, you know, ordinance here, and specifically Section 7 of that describes, you know, the standards that have to be met as it relates to

shadow flicker.

So, the analyses shall identify locations of the shadow flicker and expected duration of the flicker over the course of the year.

And then, the shadow flicker shall not affect a primary structure in excess of 30 hours per calendar year and with the exception that a landowner may waive that requirement on their structure.

The shadow flicker report that was submitted to you all as Appendix F4, that analysis was based on the zoning requirements and general industry standards.

Figure 2 shows the location of the turbines and receptors.

And Figure 3 shows the results of the shadow flicker modeling.

And there is a nice long table at the back that gives hours for every receptor.

So, I'll talk about the modeling a little bit, too. So, we use WindPRO Modeling Software, and we utilized various inputs into that modeling software.

So, the next slide.

So, there are three main inputs of categories of inputs. You have your turbines, which in this case was 60 Vestas V162's. Those locations and those dimensions were provided by Apex. You have the receptors, and those are, you know, all the locations. I think there was 1213 primary structures provided by Apex to me, and then the project involvement status was also provided so we can include that in the tables.

The model, you know, the receptor was placed in the model, and this is kind of how the model works. You picture a glass box sitting at a point on your property, and it's meters, so 3.2 feet cube, if you will, about a meter off the ground, and what that does is it allows it to see everything around it in every direction, regardless of, you know if there is windows there or if there's other structures or trees or those sort of things.

And then there is some base data that we put into the model for everything to sit on and run with. So, the elevation data was based on county available contours, elevation data.

We had the wind direction frequency. So, that kind of allows you to generally understand

which way the wind is blowing and if the turbine is in the right direction towards it.

And then the monthly sunshine frequency, which we acquired from a NOAA dataset from the Springfield airport.

The last two allow us to what we call provide a real case scenario. It's still somewhat conservative, which I'll talk about in a couple slides here, but it gives you a little bit better understanding of, you know, what atmospheric conditions might allow throughout the year and what the shadow flickers might be.

Next slide.

So out of the WindPRO, the modeling software, you kind of get two results of data results. Tabular data, which could be hours per year of shadow flicker that might occur, and then you get the graphical data so you can kind of understand how, you know, where this -- where your residence is compared to the turbine and what the shadow flicker, you know, the hours, the contours, if you will, might be, and they look like these nice butterfly or handlebar mustache kind of things.

So, go to the next slide.

So, I ran the model. Apex provided turbines and receptors and showed that there are no nonparticipating receptors over the 30-hour threshold for the county. There was one participating receptor, so someone has waived their requirement over that 30-hour threshold.

So, I would give a breakdown here. This is also in the report of, you know, kind of the different categories.

So, you know, 90 percent of the nonparticipants won't/aren't modeled to receive any shadow flicker throughout the year.

Ninety-five percent of all structures are modeled to receive less than ten hours a year.

Go to the next slide.

So, to summarize the analysis report, the modeling was conducted to demonstrate compliance with the Piatt County zoning requirements.

The model utilized the wind direction and monthly sunshine probability.

The model is still conservative because we don't take into account the factors when the wind isn't blowing. The model assumes the turbines are always spinning, which we all know that wind doesn't

always blow, which at times is nice.

So, to recap on the model results, there is no nonparticipating receptors over 30 hours; just the one participant that has signed a waiver.

The final turbine layout: So, we did model 61 model turbine locations. I might have spoke earlier and said 60, but I meant 61.

There is only 50 turbines to be constructed, is what Apex has informed me.

And I think the third part of the county ordinance is that, prior to the building permit application, or as a part of the building permit application, an updated shadow flicker report will have to be submitted.

So, I guess to kind of summarize those pieces, the numbers we presented here are accurate with the information available but yet still conservative because not all the turbine locations will be built, and it also assumes the wind is always blowing.

So, that is what I have for my presentation.

MR. KAINS: Thank you, Mr. Runner.

Any additional questions from counsel?

Mr. Jacobi?

MR. JACOBI: Give me just one second, please.

MR. KAINS: Certainly.

EXAMINATION

BY MR. JACOBI:

Q. I think you said this, but I just wanted to make sure. Pursuant to the wind ordinance, the applicant will provide an updated shadow flicker analysis at the time of building permit applications for wind turbines; is that your understanding?

A. Yes.

MR. JACOBI: Okay. Thank you. That is all I have.

MR. KAINS: Very good. Thank you.

Questions for Mr. Runner from members of the Zoning Board of Appeals?

Mr. Chambers?

EXAMINATION

BY MR. CHAMBERS:

Q. So, on the mapping where you have what comes out to be a butterfly emblem there with the different levels, so when the sun gets to its lowest point in a sunset, you are going to have the longest

shadows. So, when the sun is, you know, almost all the way down and in a tower of that height you could have a shadow basically for miles in one direction.

How do you determine where to -- you know, you can see where the modeling stops at a certain point. So, what goes into determining how far that is accounted for?

And I know you are not accounting for miles down the road here. You are accounting up to a certain point.

A. Yeah. A great question. So, this has been studied a few times, and I have the references in my report. I don't know them all off the top of my head, but people have looked at, you know, there is a theoretical maximum for shadow -- right? -- it could be 2005 you said miles, you know, but there is also an intensity factor of that -- right? -- whereas, if you are really far out, you are not going to have as an intense of a factor that might, you know, produce this phenomenon of the dimming effect inside your house.

So, generally they found that ten rudder diameters, so ten times the blade kind of diameter is the realistic kind of maximum for shadow flicker

to occur. So, this project that is 1620 meters -- so, my conversion isn't great, but you are getting close to a mile at that point. I think it's 20051.8 or 1800 meters roughly is a mile, somewhere in that, you know, that is kind of how they project that. So, the bigger the turbine the larger the study area is going to be.

Q. Okay. And one additional question, which may or may not apply with turbines that are more tightly spaced together: Do you have any mappings that, you know, where those boundary lines for different hours per year are overlapped, so where say a cluster of turbines or two turbines that are aligned properly, would you have, where if the sun is in a certain position, that you have overlap in those values go up in certain direction?

A. Yeah. That is correct. So, I chose this graphic because it's a nice kind of -- one of the locations here, and it was nice and clean kind of by itself and showed that, but yes multiple turbines together. The model is cumulative by nature, so it automatically adds up those totals.

MR. CHAMBERS: All right. No further questions.

MR. KAINS: All right. Thank you, Mr. Chambers.

Any other questions from members of the Zoning Board of Appeals?

Mr. Larson?

EXAMINATION

BY MR. LARSON:

Q. One quick question. Of the ones that signed the waiver that was higher than the amount, the 30 hours or whatever, is that residence where someone lives there?

A. I am assuming it was a primary structure. So, I don't know what the terms of the primary structures are. I am just given, you know, the list of the receptors and told to run it. So, my understanding is they are all primary structures and based on other discussions on how it could be a business and that's the primary structure or it could be a house.

Q. Okay. It wasn't specified as a residence?

A. No. It was just a primary structure.

MR. LARSON: Okay. All right. That's all I have.

MR. KAINS: Thank you, Mr. Larson.

Any other questions from the board?

All right. Questions from members of units of local government, including school districts?

Questions from interested parties by licensed attorneys?

Mr. Luetkehans?

EXAMINATION

BY MR. LUETKEHANS:

Q. Mr. Runner, could you take that to page 7, if you would, the PowerPoint. Keep going. It's the one -- I think it's the -- it's that one -- I am sorry. You might have been there and I screwed it up, so I apologize. I was looking at the right side. There, I was looking at the left. So, my apologizes.

All of my questions are really going to relate to this page.

A. Sure.

Q. If you go to the receptor's column on the right, I think it's the third bullet point, 1 meter by 1 meter above the ground in a greenhouse mode, where is that 1 meter? Is that the middle of the home?

A. That is my understanding.

Q. Okay. And then, if you go to base data, the wind direction and frequency data and tabular data provided by Apex, do you understand that to be an annual average?

A. Yeah. I understand that to be an annual average.

Q. Okay. And then the monthly sunshine frequency data derived from NOAA, do you know what NOAA is?

A. Yeah. NOAA. So, the National Oceanographic Atmospheric Administration.

Q. Okay.

A. Again, I am not going to testify to my correction on that, but I think it gives us an idea.

Q. I know you are a lot closer than I was, so we'll leave it at that.

That also is based on an average?

A. Correct.

MR. LUETKEHANS: I have no further questions of Mr. Runner. Thank you.

MR. KAINS: Very good. Thank you, Mr. Luetkehans.

Any other licensed attorney in the room

with questions for Mr. Runner?

Very good.

Questions from other interested parties? These would be members of the public opposed to the application or neutral on the application.

Mr. Bill Gallagher?

EXAMINATION

BY MR. BILL GALLAGHER:

Q. My question is about the hours of flicker that is allowed. At one time Piatt County had their zoning ordinance was 15 hours. The county board members made a ruling that allowed 30 hours.

Can you tell me why 30 hours would be better than 15 hours and who would it benefit?

MR. JACOBI: Before the witness answers the question, I have to object to the mischaracterization. I don't believe that 15 hours was ever actually adopted by the county. It may have been proposed at one point, but it was not part of the county ordinance. Thirty hours is most certainly, though.

But the witness can answer the question.

MR. KAINS: Let's have the answer to the question first, Mr. Gallagher, before you ask the

next one.

THE WITNESS: I am not -- I don't have an answer to that.

MR. KAINS: Okay. Go ahead, Mr. Gallagher.

BY MR. BILL GALLAGHER:

Q. For the sake of the argument, would 30 hours of operating time benefit Apex?

A. So, my expertise is in the modeling.

Q. Yes.

A. The financial benefits of one threshold or another is outside my expertise.

Q. But if the turbine is spinning more often it's making them more money?

A. That logic makes sense to me.

Q. Does that make sense?

A. Yeah.

Q. So then 30 hours is better for Apex than it is for the homeowners that have to suffer from the shadow flicker.

A. Can you maybe formulate that into or repeat that question?

MR. LUETKEHANS: I think I can ask it pretty quickly.

MR. KAINS: Mr. Luetkehans, I am going to give you the floor, and if you want to ask the question that we think Mr. Gallagher is getting to, go ahead.

MR. LUETKEHANS: I think it may be similar. I think the question he's trying to ask is: Is 30 hours better for Apex than 15 hours of shadow flicker? I think that is the question you are trying to ask.

MR. BILL GALLAGHER: Yes.

MR. KAINS: If you know the answer to that please, answer.

MR. JACOBI: Foundation objection, but I know that the witness will have to answer it anyway.

MR. LUETKEHANS: It's a simple question.

MR. KAINS: I am going to overrule the objection. We are not all about foundation here. It's a public hearing.

Mr. Runner, if you know the answer: Is 30 better than 15 for the company?

THE WITNESS: If there was a different threshold, a lower threshold, then the turbines would not be able to operate as much.

MR. KAINS: That's fair.

BY MR. BILL GALLAGHER:

Q. Were you aware there was an option for a participating landowner to sign a waiver to be able to increase the flicker? Did I understand that correctly?

A. Yeah. So, what I get from the modeling, you know, the information that I am provided to conduct my work is just merely a list of the receptors and the status and the threshold that they have to meet, so I am not privy to, you know, that sort of information.

Q. In your modeling, do you have, over the years, an average hours of flicker that is sort of common or allowed?

Is there a number that you've worked with before?

A. Yeah. So, I can answer that. So, generally there isn't a national standard, right? It does vary by states and municipalities and organizations generally cross the state. The states and counties and those sorts of things the threshold that I've seen most common is 30 hours.

Q. Is 30 hours?

A. Yes.

Q. So, once again, we go back to the 30 hours benefits the wind company more so than the landowner. You said that was true. So, it's still true?

MR. JACOBI: Asked and answered.

MR. KAINS: I am sorry?

MR. JACOBI: Asked and answered.

MR. KAINS: It has been. He's answered the question.

MR. BILL GALLAGHER: I just want to make sure.

MR. KAINS: Mr. Gallagher, thank you.

Any other questions for --

Okay, Ms. Vetter.

Just so we know, are there any other questions, after Ms. Vetter, for the shadow flicker expert?

Mr. Reed, all right. Very good.

You don't have to state your name or spell it or anything. We know you. We are used to you.

MS. VETTER: I have got a lot to learn tonight.

MR. KAINS: We appreciate questions. Go right ahead.

EXAMINATION

BY MS. VETTER:

Q. So, the 30 hours is averaged out over a year, right? Is it 30 hours per turbine?

A. No.

Q. It's for the whole group?

A. Yes.

Q. For the whole 50 --

MR. LUETKEHANS: You got to wait until he finishes.

BY MS. VETTER:

Q. I am sorry. I am trying to identify what my question is.

A. Do you want to start with one?

Q. I thought that was all one question. Sorry.

A. There are several there.

Q. My mind just -- go ahead. Sorry.

A. Do you mind repeating your question?

Q. Are you sure you want that?

A. Yes.

Q. Okay. Is the 30 hours for all 50 turbines?

A. The hours that were modeled, they are

modeled at the receptor, and it's all the turbines, all -- it was 61 turbines that were modeled for the project, so it's cumulative hours at that receptor.

Q. So, all the turbines spinning at once over a year can only do 30 hours of shadow flickering? Each one doesn't get 30 hours?

A. Correct.

Q. So, this 30 hours is stretched out over a year, or is there a certain particular season in which there will be more hours?

2005, oh, well, it's going to end up because of the sun being 10 hours in July and 5 hours in June. I mean how does that break down?

A. Yeah. That's a good question. So, it depends on where the receptor is located adjacent to the turbine.

So, if you want to go to the next slide, maybe that is kind of easiest, and I'll do my best to get the directions right.

On the lower tips of the turbines, those are kind of the solstice. So, as the sun is raising in the east on the right-hand side, the shadow would be cast on the west side of the map, right?

Q. Well, I am directionally challenged.

Would you come up here and point for me?

A. I am stuck to the mic.

But if you get the idea of the sun rising --

Q. Right.

A. -- then, if you're on the -- you know, if you are on this side of the turbine and the sun is rising on this side, then you will receive the shadow in the mornings.

Q. Right.

A. And if you are on this side, and the sun is setting here, then you would be receiving the turbine in the evening.

Q. Of course.

A. And then it depends on where you are located along that, kind of oriented to that turbine --

Q. Right.

A. -- as to, you know, the seasons where it may occur.

Generally, it occurs, you know, kind of looking at a few of the calendars for this project, you know, in the morning and evenings, 2005 I discussed, but also, you know, the spring and the

fall.

Q. So, you are going to see more shadow flickering in the spring and in the fall?

A. Yes.

Q. Okay.

A. That was a generalization not specifically.

Q. So, in your modeling, and you looked at -- it's your blade, your turbines for this project, it's about a mile out that you'll have shadow flickering?

A. Yeah. It's 1620 meters.

Q. Well, I am American, so I have to go with the miles.

A. I am too. So, that is why I can't do the conversion.

Q. Exactly. So, are there any properties that are a mile? Closer than a mile?

I mean you looked at all the structures, right?

So, are there any properties that are closer than a mile?

A. Sure. Yeah. Yeah. So, as you can see in the graphic that is up on the screen, where it's

called out for receptors, right?

Q. Are these the turbines here?

A. No. Those are the receptors. So, the turbine is right in the middle of the butterfly.

Yeah. So, as you can see, this has an -- obviously, I just picked this at random, but that has a receptor that is within the boundary.

Q. A receptor is a home?

A. That is a primary structure. Yes.

Q. Receptor receiving the shadows; would you say that?

A. Yes. That is a good way to refer it to.

Q. So, that is why you call it a receptor?

A. Yeah.

Q. So, it is likely that these folks will get shadow flickering?

A. Yeah.

Q. At least 30 hours but not more?

A. Correct.

Q. And who monitors that?

Is it, 2005, already plucked into the turbine as it goes and you do it remotely, or how does that work?

A. So, you know, we have a pretty good grasp

over a couple thousand years of how the sun moves on the horizon and the mathematical equations of that, so it's pretty well understood of how the sun moves and those sorts of things. So, it's, you know, you know, the modeling, you know, says kind of what it's going to be, and then we adhere to that.

Q. No. I am saying is there a mechanism which is in the turbine that shuts it down after the 30 hours have been reached? How does that work? That is my curious question.

A. Yeah. So, there is, you know, for this project they are modeled to be under the threshold, right? So, there is no mechanism in place.

Q. So, somebody has to come out and turn it off? I am just asking.

A. I don't know how all that works.

Q. Well, I mean you are the shadow expert. I thought you would know.

So, there is no mechanism that is going to automatically shut it down after 30 hours? You're testifying to that?

A. I am not testifying to that. I am saying that I am not aware of, you know, that sort of information.

Q. So, somebody, some worker is going to have to keep track of the 30 hours and he's going to have to come down and shut that off after 30 hours?

Or are we citizens going to monitor that and then let you know, well, you guys have exceeded your 30 hours?

I am just curious how it's all going to work because that's what we have to live with. That's why I am asking the question.

MR. KAINS: If you know.

THE WITNESS: I don't have an answer to that.

MS. VETTER: Is there somebody in your group that can answer those questions? Is that coming up?

MR. KAINS: Do you know?

THE WITNESS: I don't know. I would have to confer with, you know, counsel.

MR. KAINS: You know, folks, "I don't know" is okay as an answer. If you don't know the answer, that is okay.

MS. VETTER: I don't know a lot of things. That is why I am up here.

MR. KAINS: Do you have any more questions

for the witness?

MS. VETTER: I do not.

MR. KAINS: Mr. Jim Reed?

After Mr. Reed, Mr. Dylan Gallagher will be next after Mr. Reed.

Mr. Reed, go ahead with the questions for Mr. Runner, please.

EXAMINATION

BY MR. REED:

Q. Mr. Runner, relating to the one receptor or primary structure that has the waiver to allow for more than 30 hours, were they aware that their structure was going to have over 30 hours of flicker when they signed the waiver?

A. As I described earlier and testified to earlier, I was provided a list of the hours, the receptors, and their participation status. That's as much as I know.

Q. Okay. So, you have no idea whether they knew prior to their signing whether they are affected is what you are saying?

A. That is outside my understanding.

MR. REED: All right. Thank you.

MR. KAINS: Thank you, Mr. Reed.

Mr. Dylan Gallagher?

And any other members of the public wishing to question Mr. Runner after Mr. Gallagher? Very good.

Okay, this gentleman.

All right. Go ahead, Mr. Gallagher.

EXAMINATION

BY MR. DYLAN GALLAGHER:

Q. The receptor, if I read that right, is 1 meter by 1 meter?

A. Yes. One meter off the ground.

Q. Okay. What's the footprint of the receptor of the residence?

A. I don't know.

Q. So, you're assuming -- how do you calculate the shadow flicker on something you don't know the size of?

A. So, to explain this in a couple ways, the threshold that we are adhering to is 30 hours for this project, right? That is the county ordinance requirements.

Q. Okay.

A. So, the modeling software, it's a model. You have to make a point and a place. And, you

know, what it's doing is it's analyzing that as a window, right? Because you need -- you need the light to come over an opening to create that effect inside.

So, if you made it, you know, 50 feet by 100 feet, it would think that there was a really big glass window that it was trying to look through. So, the modeling says, you know, that if you were in that room at that place and that space, then this would be the accumulation over the year.

Q. How big is that space?

A. So, the space could be infinitely -- I don't know how big the space is, but I am saying, you know, the window coming through would be, you know, that size, the window it's looking for this to occur with it.

MR. DYLAN GALLAGHER: Okay. Thanks.

MR. KAINS: Thank you, Mr. Gallagher.

Sir, please step forward. I know you asked questions the other night, but I can't remember your name. Could you please state your name, spelling first and last names for the record, please?

MR. GANTZ: Steven Gantz. S-t-e-v-e-n

G-a-n-t-z.

EXAMINATION

BY MR. GANTZ:

Q. I just got a quick question.

A. Sure.

Q. I am going to have shadow flicker where I live. I found out today. One of their windmills are to the west of me, so it's going to be at sunset.

One of the windmills is half a mile away approximately, but on farther to the west there is also more windmills, which I guess aren't. You said they aren't probably going to be built because they are just too close together.

But I guess from what I understand, even though they are about a mile away, I guess that can still cause flicker -- is that right? -- in these with these size windmills?

A. Yeah. So, we modeled up to that ten-rudder diameter and roughly 600 meters. So, if those turbines kind of pass that threshold, then the intensity of the light could be reoccurring.

Q. Okay. While asking what the flicker was caused by the windmill that was just a half mile

away or the one on farther west, he said, well, he couldn't really tell me that.

So, I guess my question is: Is there ever a situation that you know of where there has been, 2005, two windmills involved in the flicker and it's 2005 a double flash instead of a single flash?

A. I'm not aware that -- the model just calculates, you know, a maximum. It doesn't, you know, produce any sort of rate factor.

MR. GANTZ: Okay. I was just curious about this.

MR. KAINS: Very good. Thank you, Mr. Gantz.

Any other questions from the members of the general public for Mr. Runner?

Questions from Piatt County staff and consultants?

Any last questions from you, Mr. Jacobi?

MR. JACOBI: Yes, sir. Just a few.

FURTHER EXAMINATION

BY MR. JACOBI:

Q. Okay. Mr. Runner, the model you described modeled the entire project area; is that correct?

A. That's correct.

Q. And that included 61 turbines?

A. That's correct.

Q. And the project will build 50, correct?

A. That is my understanding.

Q. Okay. There was some discussion earlier of the cumulative effect of those turbines. Do you recall that?

A. I do.

Q. Okay. The model that you analyzed, included that cumulative effect, correct?

A. Yeah. I'll say the model I ran included that. It includes all turbines operating.

Q. And your model generated the conclusion that none of the receptors would receive more than 30 hours of shadow flicker, save the one that signed the waiver?

A. Correct. Correct.

Q. And that conclusion included all 61 turbines in the cumulative effect of all 61 turbines, correct?

A. Correct.

Q. The receptors you've described as 2005 a box?

A. Cube, box, yeah.

Q. Cube?

A. Yeah.

Q. And it's your understanding that that cube is located at the center of the primary structure?

A. Yeah. And to clarify, I didn't generate the receptor file. But in the past when I have and generally looking at the project, it's, you know, in the center of the structure.

Q. You could place the cube at the walls of the residence if you knew where those walls existed; is that correct?

A. That is correct.

Q. Would doing that have changed the ultimate conclusion of the model that any of those primary structures would have exceeded the 30-hour requirement?

A. So, the closest nonparticipating receptor hours wise was about 30 minutes off. In doing these sorts of analyses in the past, in doing other projects, in trying to help clients fine tune/move turbines to reduce, you know, potential of being over thresholds, that sort of 5, 15, 20 feet moving around doesn't change things more than, you know, 5 minutes, 10 minutes max.

Q. So, you are confident that even had the cube receptor been moved to the far edge of the house, the model still would have generated the same result, compliance with 30-hour limitation; is that accurate?

A. Yes.

Q. And taking one step back, the cumulative effect that you discussed a moment ago, that's demonstrated in Figure 3 of your report, which is included as F4; is that accurate?

A. Yep.

Q. Okay. Your model makes a number of other conservative assumptions. By conservative, we mean it assumes the worst case, right?

A. Yeah.

Q. Can you explain a few of those conservative assumptions or those assumptions that your model has made that generates the worst-case scenarios?

A. Yeah. So, there is -- I wouldn't use the term worst case here because that's implying maybe a theoretical maximum, which is a little different than what we are talking about. But, you know, it does assume that the turbines are always turning,

which we talked about, and it also doesn't account for any sort of other structures, vegetation and other sort of things that exist in landscape, right? It assumes perfect visibility right to that turbine all the time and that turbine is always spinning. We all know those things just don't exist.

Q. So, in my terminology, and my terminology is maybe not great, but your model is assuming no walls, no trees, no topography, straight turbine and straight cube, right?

A. Correct.

Q. And it's also assuming it's always spinning, so it doesn't slow down when there is less wind or when the weather precludes it?

A. That is correct. I will maybe take one step back on the topography piece. Elevation is a factor into the model. However, in this case, it is relatively flat out here so, you know, it's not much of a factor.

Q. That's fair. Thanks for that clarification.

A. Yeah.

Q. So, you do consider the topography. So, if the turbine is higher, it might cast a longer

shadow?

A. That's correct. Yep.

Q. And even with all those assumptions your model still generates the conclusion that no primary receptors will experience more than 30 hours of shadow flicker, save the one with the waiver, right?

A. Yeah. That is what the model shows. Correct.

Q. The turbines referenced by the gentleman earlier, those turbines were included in the model, correct? If you know. If you don't know, you don't know.

A. Could you maybe clarify a little bit more on which gentleman?

Q. Good point. Yeah. Sorry. Let me put it this way. Kind of a restatement, but all turbines in the project area have been included in your model?

A. Yes.

Q. Okay. I want to go back to the question on the 15 hours versus 30 hours for one moment. I think we heard earlier WECS, that the wind ordinance, you know, assumes a purpose, to assure that the development is safe and effective. You are

familiar with that provision?

A. I am not, but it sounds plausible from what I've heard in the last two minutes.

Q. You are familiar, though, that the county adopted in its wind ordinance section VIII-E, limitation of 30 hours per calendar year on shadow flicker, right?

A. Yes.

Q. So that is the standard that the county set and the standard that you set out to test?

A. That's correct.

Q. And that's the standard that you found the model meets?

A. That's correct.

Q. If there were a different standard in place, for example 15 hours, could the turbines be relocated?

The question is: Would that impact the amount that turbines spin or, to your knowledge, the location of the turbines?

MR. LUETKEHANS: Objection. Speculation.

MR. JACOBI: I'll state it another way. I'll withdraw it.

MR. KAINS: Thank you.

MR. JACOBI:

Q. If the limitation were different, the project would be designed a different way; is that accurate?

A. Yeah.

Q. The project could be designed -- well, I'll strike that.

In any event, we know the WECS Ordinance sets the standard at 30 hours and that your model demonstrates the project compliance with that, right?

A. Yep. Correct.

Q. And the 30-hour limitation is in reference to shadow on the primary structure, right? Not shadow created by a turbine, right?

A. That is correct. Yeah. We discussed that earlier.

MR. JACOBI: No further questions.

MR. KAINS: Very good. Thank you, Mr. Jacobi.

Clarification from, Mr. Luetkehans?

MR. LUETKEHANS: Yeah, real quick.

FURTHER EXAMINATION

BY MR. LUETKEHANS:

Q. You said you have done this analysis in other places, about the actual edges of the primary structure, correct?

A. No. What I said was I --

Q. For other projects, I thought you said you had done that?

A. No. What I said was we were -- the term is called micrositing. So, they were adjusting turbine locations to try to understand if they can meet a threshold.

Q. I am sorry. Maybe we are talking about two different things.

A. Yeah.

Q. I believe you said, to the question of if you model the shadow flicker 10 to 20 feet in a location 10 to 20 feet different than what it is in your model, you had found in other projects that it changes 5 to 10 minutes maximum of shadow flicker. Is that what you said?

A. I used 5 to 10 minutes as an example, but it does change in a small amount.

Q. Okay. And I am just trying to get to that. I am not worried about the 5 to 10 minutes at this point. Sorry. Just trying to make sure we are

talking about the same thing.

A. Yeah.

Q. But that is not something you did for this particular project, correct?

A. Correct, when we ran the analysis.

Q. So, we don't have that in front of us right here?

A. That's correct.

Q. Okay. And as you said, you did not do a theoretical maximum -- correct? -- on shadow flicker?

A. We did not provide a theoretical maximum, no.

MR. LUETKEHANS: All right. Thank you. No further questions.

MR. KAINS: Thank you. And the last questions come from members of the zoning board for this gentleman.

Anybody have any questions from the front tables?

Mr. Larson?

EXAMINATION

BY MR. LARSON:

Q. Okay. With the primary structure, we are

assuming, if you have a big property, that's the house?

A. Yeah. Let's go with that. Yeah.

Q. Well, I mean a lot of these properties have more than one structure.

A. Sure. Yep.

Q. So, say you put the cube on the very edge of a three-acre property, is it possible that that cube would pick up more than 30 hours on the edge of a property, three-acre property?

A. Sure. Depending on the way you move that cube and where it was placed, the hours would be different. Yes.

Q. So, if there was a barn on the edge of a property, that barn could experience more than 30 hours?

A. Theoretically, depending on where that structure was in comparison to the turbine, those hours would be modeled differently.

Q. But it is possible that that property could have places on the property that would have more than 30?

A. Yeah. And to be clear, we are talking about structures.

Q. Right.

A. Not just, you know.

Q. Right. I am saying that a structure on the edge of a three-acre property could be 200 yards away from the house. It is possible that structure could have more than 30 hours of flicker?

A. It's not likely, but it is possible. Yes.

MR. LARSON: That's all I have.

MR. KAINS: Thank you, Mr. Larson.

Mr. Foran?

EXAMINATION

BY MR. FORAN:

Q. Is it possible, or in your modeling, are there structures that will receive shadow flicker for multiple turbines at the same time?

A. Yeah. That's possible.

Q. Okay. And that's counted as -- say you get that 10 minutes a day, that is just 10 minutes? It's not 20 minutes because it's from two turbines?

A. That's getting deep into the model. I have would have to kind of go back into the data set. I don't know the answer off the top of my head.

Q. Okay.

A. But I couldn't provide an answer on that.

MR. FORAN: Okay.

MR. KAINS: Any other questions from members of the zoning board?

One last question of clarification, if you have to.

FURTHER EXAMINATION

BY MR. JACOBI:

Q. I have one question. I have just one clarification based on that questioning. So, the shadow flicker limitation is on primary structures, correct?

A. That is what the ordinance says. Yes.

Q. And primary structure is defined in the wind ordinance, correct?

A. Yes.

Q. And that includes residences, commercial buildings, hospitals, churches, schools and day care facilities and excludes hunting sheds, storage sheds, pool houses, unattached garages and barns, and I am just reading straight from Roman numeral II-J. Is that your understanding?

A. That is what it says, yes.

MR. JACOBI: Thank you. That is all I

had.

MR. KAINS: Very good. Thank you.

All right. Mr. Runner, you may step down from the witness stand. You are excused. You may go back to upstate New York where I understand you are getting 48 inches of snow coming up.

THE WITNESS: I am not sure I want to go back.

MR. KAINS: You can't stay in Piatt County. You have to go back to upstate New York.

Before we go, Mr. Jacobi, for Monday night, we will reconvene this hearing on Monday night at 6:00, same building, but we want to find out who their possible potential witnesses will be.

MR. JACOBI: To start with on Monday?

MR. KAINS: Yes, Monday.

MR. JACOBI: Monday we'll be calling Property Evaluation Expert Mike Marous.

MR. KAINS: Property Valuation Expert. Should Mr. Marous -- and we are not going to hold you to this, but this is just to kind of to give everyone an idea. Should we finish with Mr. Marous, would it be on to Dr. Loomis?

MR. JACOBI: It will be either Dr. Loomis

or the construction expert.

MR. KAINS: Okay. Dr. Loomis is a financial expert?

MR. JACOBI: That's right.

MR. KAINS: Okay. And potentially a construction expert.

MR. JACOBI: A construction expert.

Is it Mr. Carlson, Andy?

MR. MOORE: Yes.

MR. KAINS: So, on Monday night, we will start with Mr. Marous.

MR. JACOBI: That's right.

MR. KAINS: And potentially either Mr. Carlson or Dr. Loomis after that. All right.

So, we are going to be talking on Monday night about money and valuation of property and construction. So, that kind of gives folks an idea of where we are going with this.

Folks, I do appreciate everyone's questions tonight and everyone's patience and attention. We will meet here again at 6:00 Monday night. Have a great weekend. We are in recess.

(END OF PROCEEDINGS.)

CERTIFICATE OF REPORTER

I, Holly Wingstrom, CSR #84-003888, reported in machine shorthand the proceedings had in the above-entitled cause and transcribed the same by computer-aided transcription, which I hereby certify to be a true and accurate transcript of the proceedings had.

Holly Wingstrom

Holly Wingstrom, CSR #84-003888
Official Court Reporter

Dated: 12/7/2022

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