STATE OF ILLINOIS)
)SS
COUNTY OF LEE)

In the Matter of the Petition

of

BSW DevCo, LLC, Big Sky Repower

Lee County, Illinois

Testimony of Witnesses Produced, Sworn and Examined on this 20th day of March, A.D., 2019, before the Lee County Zoning Board of Appeals

Present:

Craig Buhrow
Mike Pratt
Gene Bothe
Rex Meyer
Bruce Forster, Chairman

Alice Henkel, Secretary
Dee Duffy, Zoning Enforcement Officer

Honorable Judge Tim Slavin, Facilitator

APPEARANCES:

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Counsel for the Applicant.

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Witness: AARON ANDERSON

Witness: NATALIE McCUE (Rebuttal)

EXHIBITS

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JUDGE SLAVIN: Good evening, Ladies and Gentlemen. Welcome back. I'll call our Big Sky application for Special Use hearing out of recess from our last session.

I will note for the record, let's see, all the honorable members of the Lee County Zoning Board are present.

CHAIRMAN FORSTER: Mr. Hughes is not here.

JUDGE SLAVIN: I'm sorry. Mr. Hughes is not here. Thank you very much.

So Mr. Hughes is not here. So Mr. Meyer, the alternate, is sitting in for -- to make the Board a complete five members.

Mr. Streicker is here on behalf of the Applicant. Mr. Klahn is here on behalf of the County and some officers of the County.

Is there any announcements you want to make or anything, Mr. Klahn?

MR. KLAHN: No, I'm good. Thank you. Well, actually, since, Judge --

JUDGE SLAVIN: Dee Duffy is present on behalf of the Zoning Board and the Zoning Office.

We have Retired Zoning Officer Chris

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Henkel in the audience. Retired Judge Ron Jacobson is also in the audience.

Welcome, everyone.

When we left off, Mr. Streicker, I believe you were in the midst of presenting evidence, and you may continue.

MR. STREICKER: Thank you, Judge.

Members of the ZBA, it's great to be back with you again this evening.

Judge, a couple of quick housekeeping matters. I did notice that on Page 41 of the day three transcript it references Exhibit 13. I must have misspoke at that point. That would be Exhibit 15 that was being referred to.

And if I could at this time, Judge, move to enter Exhibits 14 and 15, which was Mr. Meyer's CV.

JUDGE SLAVIN: In my notes I already have admitted, and I think I did that on my own at the end of the last session.

MR. STREICKER: Perfect. Thank you.

At this time then, Judge, we would like to call Aaron Anderson to the stand.

JUDGE SLAVIN: Mr. Anderson, if you want

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to step up and raise your right hand for me, please. Up here is fine, anywhere up here.

(Aaron Anderson was duly sworn.)

JUDGE SLAVIN: Have a seat right up here. If you need notes or a binder, bring it on up, otherwise --

THE WITNESS: Is there a binder up here?

MR. STREICKER: I'm going to give you Exhibit -- I'll give that to you.

THE WITNESS: Gotcha. I'm sorry.

JUDGE SLAVIN: I'm sorry.

AARON ANDERSON,

having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. STREICKER:

Q. Mr. Anderson, will you please state your name and spell it for the record.

A. Aaron Anderson, A-A-R-O-N, A-N-D-E-R-S-O-N.

Q. And could you give us your business address, please?

A. 9400 Ward Parkway in Kansas City, Missouri.

Q. And could you give the Board a brief educational history?

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A. Sure. I am a mechanical engineer by training. I have undergraduate degrees in physics and chemical engineering, and a master's of science degree in engineering management.
Q. And how are you currently employed?
A. I am a project manager in the renewable energy consulting management group at Burns and McDonnell.
Q. And what are your job duties in that position?
A. I oversee a number of financial and engineering-type analyses for renewable energy projects, primarily wind farms.
Q. And how long have you held that position?
A. I have been at Burns and McDonnell for 12 years. I have been a project manager, in my current role, for about seven years.
Q. Do you hold any professional licenses?
A. I do. I'm a licensed professional engineer in four states, including Illinois.
Q. And I know you mentioned that you have worked on wind projects in the past. Can you describe some of your specific experience working on wind projects and what that's entailed?
A. Sure. So I have supported wind projects across

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the world in a variety of capacities, from development studies, including shadow flicker analyses like this, all the way through design, construction, and operation on more than a hundred projects across the world, primarily in the United States.

Q. All right. With regard to shadow flicker, you mentioned that, how many shadow flicker studies have you been involved with for wind farms in the past?

A. Approximately 15.

Q. All right. And have any of those been in Illinois?

A. They have. Three have been in Illinois, including this one.

Q. And do you recall which counties those three were in?

A. Bureau and Lee.

Q. Okay. Mr. Anderson, can you briefly describe for us what you would like to testify about today in general?

A. Sure. I'd like to present our results on the shadow flicker analysis for the project and how the study was performed and what the results

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are.

(Petitioner's Exhibit Number 16 marked for identification.)

Q. Mr. Anderson, I'm going to present you what's been marked as Petitioner's Exhibit 16. If you would take a moment to examine that document, please.

CHAIRMAN FORSTER: May I have one more for Glen, who is not here?

JUDGE SLAVIN: Thank you, sir.

MR. KLAHN: Thank you.

Q. (By Mr. Streicker:) Mr. Anderson, are you familiar with this document?

A. I am.

Q. Can you describe for us what this is?

A. This is a PowerPoint presentation, presenting a summary of our methodology and our findings from the shadow flicker study that was performed for the Big Sky Project.

Q. Mr. Anderson, did you personally prepare Exhibit 16?

A. I did.

Q. Thank you.

Then let's start to talk about shadow

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flicker. Can you describe for the Board what shadow flicker is and why it is something we're concerned about?

A. Sure. So shadow flicker is a recurring shadow that happens when a wind turbine is in operation.

So a number of things have to be true for shadow flicker to occur: The sun has to be shining. Of course you can't have shadow flicker in the evening. The turbine has to be in operation, meaning the blades are rotating and spinning. A house or a residence has to be in the line of sight for the shadow.

And those would be the primary things that would have to occur for shadow flicker to accumulate or show here in the study.

Q. Mr. Anderson, I have heard the term receptor. I saw that term used in the shadow flicker report that was part of the application that was presented. Can you describe for us what that term is?

A. A receptor is just an occupied residence, a home. So a location on the map that we would study how much flicker accumulates in a given

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location.
Q. And, Mr. Anderson, I referenced the petition for Special Use in this matter. I'm going to hand you what's been marked as Petitioner's Exhibit 1. If I could take a look at this for a second, please.
Specifically, what I'm interested in, Mr. Anderson, were you involved in the preparation of the shadow flicker portions of this petition?
A. I was.
Q. And is your CV included in the application?
A. It is.
Q. Is that CV up to date?
A. It is valid through, it appears, 2016. There are some additional projects that could be included for 2017, '18, and '19. That would just be additional projects. All of the information that's here would still be valid.
Q. For purposes of the shadow flicker portions of the application -- or the petition, excuse me, Exhibit 1, can you describe for us what those are and what your role was with the preparation?
A. Of which is it?

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Q. Petitioner's Exhibit 1 is the application.
A. Oh, I understand.
Q. Which, as I understand it, contains your CV and also shadow flicker study; is that correct?
A. It does, yes, sir.
Q. Okay.
A. So I oversaw the preparation analysis of the shadow flicker study. So my team prepared those results, and then I personally reviewed and approved those as the responsible engineer from our firm to validate that they were correct. So that includes the study that's within here and the results that are included in a couple spots, I believe, in the exhibit.
Q. All right. Then let's turn, if we could, to the next slide in your presentation. Actually, the next one, please.

Mr. Anderson, looking at your presentation, I think you have already described for us what shadow flicker is. One of your bullet points up here is that it's most common during certain seasons and certain times of the day. If I could get into that topic for us and tell us why that's the case.

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A. Sure. So the way that we analyze shadow flicker is, we use a model called windPRO, and windPRO models the position of the sun over every single day of the year, and it evaluates as it rises in the east and falls in the west and the shadows that are cast from operating wind turbines on sunny days, from the sun rising and falling.

So because of how the sun, particularly in the fall and the spring, rises and falls and where it's at, shadows tend to be a little bit longer and more pronounced during those periods. And especially in the early morning and early evening, as the sun is first rising and first setting, the sun is lower to the horizon, and as a result shadows become a little bit longer, so we tend to see them a little more prevalent.

Q. I think related to that phenomenon that you just discussed, I saw the term in the report the shadow flicker spectrum. Is that an appropriate term to use? And if so, could you describe for us what that is?

A. So by the spectrum, we would simply refer to the accumulative duration of shadow flicker and

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what that looks like when presented. So what you'll see here in a few minutes when we present some of the results is, shadow flicker, when accumulated at a particular turbine location, creates a butterfly-type shape. And, again, the reason for that is, those shadows become -- I should say, that butterfly represents durations, and closer to the turbine is higher, as they get further and further away that duration becomes lower.

So because those shadows are longer and more pronounced in early morning and spring and fall, you'll see that at those four corners of the turbine that's how that butterfly shape starts getting created.

So by spectrum, we're simply talking about the aggregate of all that information and what that looks like presented at a single turbine location.

Q. If we could turn our attention to the next slide, please.

Mr. Anderson, one thing I wanted you to describe for the Board is when you're first -- when Burns and McDonnell is first retained to

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provide a shadow flicker analysis for a wind study, what's your first -- what's the first thing you look at when you're getting involved with a new situation?

A. Sure. So the first thing we do when we get any shadow flicker study, whether this project or any other, is start to collect their inputs. So we determine what sort of wind turbine we have, the height of that turbine, the length of the blades, what sort of terrain is in the area, where the receptors or the occupied residences will be, what sort of ordinances are in effect or not in effect, as the case may be.

All of those are sorts of things that determine what the results of the model will be and what sort of benchmarks the project will be held against for those requirements.

Q. And do any State, federal, local shadow flicker requirements come into your study?

A. Sure. So we consider those on every project. There are no State, local, or federal requirements or limits on shadow flicker.

Q. Okay. Since there are no State, federal, or county limitations in this case, are there any

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default criteria that you use when making a shadow flicker analysis for a wind turbine?

A. So in the absence of any sort of requirements, which happens relatively often, 30 hours per year is a fairly standard industry benchmark, and that's what we used here as a threshold, again, simply a benchmark, a measuring tool of shadow flicker durations on a case-by-case basis.

Q. Okay. When you say 30 hours per year, just to clarify that topic, is that 30 hours of shadow flicker per year to one receptor, as you've defined it?

A. Correct.

Q. And would that be a continuous 30 hours or just 30 hours in three- or four-minute increments added up?

A. It would be over the course of the year. More often than not, those are in relatively small amounts over the course of the year. So ten minutes on that day, ten minutes on that day, and usually long gaps in between.

Like I said, spring and summer can be more prevalent. So you may go, for example, an

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entire summer and have zero accumulation on the entire site.

Q. Let's turn our attention now to the Big Sky Project specifically, which is the subject of Exhibit 1, the petition here.

Tell us how you began working on the Big Sky Project and the type of things that you looked at.

A. Sure. So as I mentioned a moment ago, like any project, we begin to gather information, and we determined, with the Petitioner, what wind turbine model would be used, where the wind turbine locations would be, where the receptor locations were at, terrain information, wind data to determine how often the wind turbines would be in operation, and other sorts of inputs like that, and then ultimately develop a model based on that information and gathered the results.

Q. So you built a customized model for this project; is that correct?

A. Yeah.

Q. And if I recall correctly, there's currently 114 wind turbines that comprise the Big Sky

Project. Did your model account for each and every one of those turbines?

A. It did. So my understanding is that there are a hundred- -- not my understanding. The fact is, there are 114 turbines there currently. My understanding though is that of those 114, 97 will actually be constructed. So we modeled the 114 to provide a conservative view of what shadow flicker durations would be.

As turbines are removed, just by the nature of how -- what is produced, results can only improve from 114 going down to any number of turbines less than that, assuming they're all at the same locations.

Q. Okay. And the study that you conducted for this project, did it require a field analysis on site or is that primarily done at your desk? Can you describe that process for us?

A. It's a desktop analysis. There is no real field investigation that's required for one of these studies. All the information that's required we can get through publicly-available sources, by and large, whether that's terrain data or using aerial imagery to identify where

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homes are at, things like that.

Q. If we can turn our attention to the next slide, Mr. Anderson. This is entitled, Modeling Overview, and you reference the windPRO modeling software. Could you describe for the Board what that software is and how it aided your review with Big Sky?

A. Sure. WindPRO, as I mentioned, is a software product that we use for those analyses. It's very much the industry standard. The overwhelming majority of shadow flicker studies that are submitted by us or any other firm use windPRO as their software choice.

And, again, it models the rise and fall of the sun over every single minute of the year, and where the turbines are at, how often they operate, and what the cast shadows look like at each and every receptor within the model. Those are totaled up and aggregated for every receptor over the course of the year.

And, again, what you'll see here on the image on the left in the packet you have in front of you are those butterfly shapes that I mentioned. The image on the right is just an

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example of what the model itself will look like, and gives a sense of the relative complexity of it and the types of values that will go into that model.

Q. And for purposes of shadow flicker modeling on wind farms, is the windPRO software, is that an industry standard or is that a software that Burns and Mac have developed, is proprietary? If you could describe that for us, please.

A. It's a third-party software. It's created by a company called EMD. It has no affiliation with Burns and McDonnell whatsoever. We purchased the software from them, and it's the industry standard for these sorts of analyses.

JUDGE SLAVIN: Mr. Anderson, can you do me a favor and say the name of that software company again for our reporter.

THE WITNESS: Sure. The acronym is EMD.

JUDGE SLAVIN: Thanks.

Q. (By Mr. Streicker:) So let's talk about, Mr. Anderson, the technicalities of the study that you conducted. If we could turn our attention to the next slide, please.

Take us through what the parameters are --

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and, if I assume correctly, these are inputs that Burns and Mac puts into the windPRO software, correct?

A. Correct. So these next few slides, all walking through what the various inputs are, or at least the key ones that we'll be discussing here today.

The first one is, of course, the wind turbine coordinates and the wind turbine models themselves. So as I mentioned, we modeled 114, so all of the current wind turbine positions, using a wind turbine model from General Electric, the GE 2.3-116. What that means -- and I'll explain it more here in the next slide -- is a 2.3-megawatt turbine with 116-meter rotor diameter, so from blade tip to blade tip.

We also, again, put all of the receptors or the occupied residences. There were 272 in total. And an important thing to note here is that we model each of those in what's called a greenhouse mode, which is just a denominator within the model itself. And what greenhouse mode means, is that every house, every receptor, is modeled as having windows on every single

side, meaning is also susceptible to shadow flicker. Of course, in reality that's not how it happens. People have windows, people have curtains, people have -- et cetera. But we try to create a highly conservative version of reality to give, again, a highly conservative estimate of what the total flicker would be.

So that's why we chose to model every house in greenhouse mode as opposed to a small window here, a small window there. It's windows on all sides. It's basically a glass box.

Q. If we can turn our attention to the next slide, Mr. Anderson. Here you have entitled it, Modeling Parameters and Inputs. And I see what you have here is both the turbines, and as for the operations, I think you covered it, but if you can let us know if there's anything else that you would like to provide the ZBA with regard to these?

A. Sure. There's actually a few slides because there are so many.

This particular slide describes the turbine itself. So we modeled these turbines with a hub height of 82.1 meters, which is what

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will be installed at the project. There's a graphic there at the right if you're not familiar with the terminology showing hub height, which is height to the hub itself. That's what the blades bolt onto. We used 116-meter rotor diameter, which is, again, blade tip to blade tip. If you think of it as a giant circle, that's how -- that's the diameter of that circle itself.

As I mentioned, when -- shadow flicker can only happen when the turbine is operation -- or is in operation. If turbine isn't operating, the blades aren't spinning. It's just a shadow. Flicker itself is when it's rotating.

So we took wind data from the site that we got from the Petitioner. We modeled the actual operation. Again, just like we collect every minute of the year with the sun, we model every minute of the year for turbine operation. So which way it's pointing and how fast it's spinning, or in some cases it may not be spinning at all if the wind speed is too low or too high, as the case may be.

So those are both inputted into the models

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so we can, again, get a conservative and somewhat realistic view of what actual duration and shadow flicker durations would be.

Q. If we could turn our attention to the next slide.

Mr. Anderson, I'm assuming here that certain topography and other geographic features have an impact on the windPRO model. If that's the case, if you could describe what those are for us and how you took account for those?

A. Yeah, very much so. These can be actually one of the larger controlling factors of the model, where -- if you think about it in one of two ways: if you have a hill and a valley, if there's a house down in a valley and a turbine up on the hill, that shadow from the turbine up on the hill may be cast even further, or in some cases could even go just right over the top of the house in very specific geometry. Vice versa, if the turbine is down in a valley and the house is on a hill, the opposite can be true.

So we gathered terrain information for the entire site, modeled the exact elevation of

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every single turbine and every single receptor and what's in between, so that if there were a hill or a valley or whatever the case may be, that would be represented within the results.

We also have the ability to look at what are called obstacles within the model. So this could be, in locations like this, a silo, be a barn next to the house, could be a hedge row, could be a very large, old oak tree, anything else that might block or otherwise prevent a shadow from reaching that house.

We actually don't include those in the model though, because, again, we want this to be as -- we want it to be realistic, of course, but as real-case as possible, as conservative as possible. So any obstacles like that would not be considered in any way.

Q. If you could turn your attention to the next slide, please.

Again, you have this entitled, Modeling Parameters and Inputs. The first bullet there is, Flicker Relevance. Can you tell us the significance of that, please?

A. So intuition will tell you that a shadow can

only go so far. And what the industry has verified is that a shadow can be cast, in wind turbine terms, about 10 rotor diameters. So if you remember the circle a few slides back showing blade tip to blade tip of 116 meters. What we generally model is ten times that amount is how far a shadow can be cast.

So if there were a house 10,000 meters away or, you know, 20 miles away or some other certain number from the house, there's no real need to consider that because at some point shadows just diffuse and they become imperceptible.

So we use 10 rotor diameters, and that's how far we assume a shadow can go, which frankly is very conservative. Most of the time if you go out there, it would be much less than that would actually be visible.

And then there are a number of environmental parameters as well. So when the sun is below 3 degrees above the horizon, it's so low that -- there's so many obstructions that no real, verifiable shadow will get through. So we modeled the sun at 3 degrees and above.

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And these other things mean -- the center obstruction is the blade itself -- you have three blades on the turbine -- that at least 20 percent of that blade has to be basically in the disk of the sun, otherwise the shadow would be so miniscule that it wouldn't be perceptible in any way.

And the last one here is what's called sunshine probability. That's what's in the figure on the right on this slide. And this is taken from -- I forget the exact city. Somewhere -- whatever the nearest town is to the project itself. It shows over the life of the meteorological data that's been collected there over how many decades, what the likelihood of sunshine is in each particular month for that location.

We input that into the model, again, because a worst-case analysis would be modeling the sun as if it shines every minute of every day of every year. We all -- I live in the Midwest, just like you, and we all know that just doesn't happen. So we use these values, we round them up slightly to be even a little bit

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more conservative, and that's the percentage of time we assume in each given month when the turbine is in operation that the sun is actually shining.

Again, all trying to create some sort of real-case, but still conservative view of shadow flicker.

Q. Does this model account for darkness, I assume; is that correct?

A. It does. So because it models every minute, it also, of course, assumes nighttime. That would be excluded. There's no possibility of a shadow being cast at night. Cloudy, foggy days, things like that, that's all factored into that sunshine probability number. It's all based on historical, actual data from the project location.

Q. Okay. Great. Let's turn our attention to the next slide, please.

Now we're getting to the heart of this, which is the results of the model that you ran. If you could describe for us what those results were and how this slide is relevant?

A. These next two slides actually will be a bit

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redundant with what we talked about. This is just intended to give you an idea of what the results will look like. This is that butterfly shape again that we talked about.

Each of these are upsidedown-looking models, let's say, in that figure of wind turbine locations in this model, and what you'll see is, the very dark red lines very near the turbine would be, for example, a hundred hours per year, and then it would go down in ten-hour-per-year increments from there all the way up to zero by the time it gets far enough out.

So this is just intending to give you a visual representation of what the results might look like from a model like this.

Q. Is this a hypothetical picture or is this actually part of the real-world model that you ran?

A. This is actually part of the model itself. We have another one here in a couple slides that shows the actual turbine numbers, et cetera. This was just a zoomed-in view.

Q. If we could turn our attention to the next

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slide, please.

Again, continuing to talk about modeling results, if you could tell us what this slide is, and, again, provide some description, what the colors mean, et cetera?

A. Sure. So same colors, same type of layout as the previous slide. What I wanted to convey with this one is that not only do we get the results graphically or visually like was shown with the butterfly shape, we looked at them numerically as well.

And what model provides is that every single receptor or every single occupied residence, we get an actual duration over the course of the year in terms of hours per year, and that's what we sort of compared against that 30-hour-per-year benchmark that we talked about at the beginning.

And we'll see that in most cases the majority of the receptors or residences have zero hours per year, meaning no shadows occur at all, and in some cases there are a handful where we start to see above 30, as the case may be.

I'll show you results here in, like, two

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slides.

Q. If you could turn to the next slide, please.

If you could describe for us what the chart on this slide, again entitled, Modeling Results, is. I think there's -- looks like there's a correlation of the calendars. If you can get into that detail, it would be helpful.

A. Sure. So this is just an example receptor, Receptor 1 in this case. On the left hand, the Y axis shows the time of the day, and on the bottom, the X axis, shows the day or the month of the year.

And what you would see at this particular receptor, for example, the bluish color, that's when shadow flicker would actually occur at this particular residence.

And what I wanted to convey here is, one, the amount of flicker that would occur at this particular residence stretches out over almost two months, but more importantly, it's really only very early parts of the morning, when the sun is first starting to shine.

So this one, in the middle of the summer looks like it's around 6 to maybe 6:30 in the

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morning over that short month-and-a-half-type time span. Nothing else over the course of the year would contribute at this one.

So this is just an example of the type of graph result we can get for all of the 172 receptors.

Q. Next slide, please.

So you mentioned the 272 receptors, which I see referenced here. If you could describe for us the two charts that you have prepared for this slide?

A. These results are the real meat of the analysis. These are the real takeaway. These are the results in tabular form.

So when we take all 114 turbines, we model all 272 receptors for the entire project, what we'll see is that 90 of those 272 receptors have zero hours per year, no accumulation of shadow flicker at all, and there were a total of 35 that were greater than or equal to 30 hours per year, which is that benchmark we mentioned a moment ago.

Specifically, those numbers change slightly, because of the 114 turbines, about 58

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or so are here in Lee County, and 83 of the 272 receptors. So 19 of those 83 have no flicker at all, and coincidentally 19 of those 83 are at or in exceedance of 30 hours per year.

Q. And, Mr. Anderson, on both of these tabs -- or tabular charts you have the term, Turbine Model Used, and it says GE 2.3-116. Can you describe for us why you chose to use that turbine?

A. That's the turbine that was selected by the Petitioner, and that's the model that will be installed at the 97 turbine locations. Along with 2.3 megawatts, the 82-meter hub height off the ground, and the 116 rotor diameter tip to tip is what that information tells us.

Q. If I could turn your attention to the next slide, please.

What is this slide? It looks like we have got a picture of the whole project here, but I'll let you describe for the Board what it is and why it's significant.

A. Yeah, that's exactly what it is. This shows the 114 turbines that were modeled, the butterfly curve at each one, the receptor location throughout the project, and then,

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again, just an overall graphical representation of what the results are going to look like.

So that's why I gave you a zoomed-in view a few moments ago, because it's a little difficult to see at this scale. But for reference, this is what it would look like over the entire project.

The dark blue border around the very outside is the 10 rotor diameter limit that we mentioned a few moments ago, where it goes out 1,160 meters, or ten times the rotor diameter. So just to give you some context there, that's just how far that goes out relative to where the turbine locations are at. So everything within that blue border we would evaluate shadow flicker and accumulate it at every position in that.

Q. If I could turn our attention to the next slide, please.

I do believe that you mentioned that there were certain receptors that did show an exceedance from the industry benchmark, which is 30 hours per year, and I would like to get into in situations like that how do you mitigate

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shadow flicker?

A. Sure. So even though there was no federal, State or County restriction on how much shadow flicker can occur, we did use 30 as a benchmark just as a measuring stake. When it does occur, that shadow flicker meets or exceeds whatever the regulation is in a particular area, or benchmark in this case. There are ways that can be mitigated.

I guess the thing I would emphasize first and foremost is, we expect any flicker that actually does occur from the project, because of how conservative the model is, to, if anything, be less than the values shown here. So to an extent, our problem will partially take care of itself.

But setting that aside, some of the mitigation techniques include anything that would block shadows from occurring. So that could be planting vegetation, like trees or hedge rows. It could be installing awnings on a home, installing blinds or curtains on behalf of the landowner. Any existing obstructions, barns, silos, things like that. Anything else

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that prevents flicker from hitting the home are, of course, going to mitigate on their own.

And last but not least, there are ways in which turbine operation can be curtailed or modified so that if we know, for example, that flicker is going to occur during a given period of the year or on a given day, as the case may be, there are ways to modify how the turbine operates. Because, again, if the turbine isn't operating, then flicker cannot occur.

So the Petitioner would have the ability to determine the controlled software and basically modify it so that the turbine can move slightly less and get those hours down below 30 hours per year.

MR. STREICKER: Thank you.

With that, Judge, I'll tender Mr. Anderson for questions from the Board.

JUDGE SLAVIN: Very good.

Ladies and gentlemen, interested parties, as we have been referring to you.

Mr. Gonigam, you signed up to cross-examine. So if you have any questions of Mr. Anderson --

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MR. GONIGAM: Yeah.

JUDGE SLAVIN: Please do.

EXAMINATION

BY MR. GONIGAM:

Q. Is there a -- do you have the map of the -- your shadow flicker study?

A. Yes, sir.

Q. The same one that's in this petition?

A. Yes, sir.

Q. And do you have the supplemental copy of the petition for the maps?

MR. STREICKER: That would be Exhibit 9, and I'm happy to present that to him.

MR. GONIGAM: Okay.

MR. STREICKER: Just for the record, I'm handing Mr. Anderson what's been marked previously as Petitioner's Exhibit 9.

MR. GONIGAM: I would also like to hand out an exhibit.

JUDGE SLAVIN: Sure. Have you got them all marked?

MR. STREICKER: I have got some extra stickers.

MR. GONIGAM: I do not have them marked.

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JUDGE SLAVIN: That's all right. We don't need them.

Why don't you hand them to me first.

Do you have any questions of him while I'm marking these?

MR. GONIGAM: Yes.

JUDGE SLAVIN: Yeah, why don't you go ahead and I'll mark these.

Q. (By Mr. Gonigam:) You said earlier that you were able to determine the receptor sites through satellite imagery and figure out how to plug those receptors into your modeling results and that on-site study was not necessary?

A. Correct.

Q. I didn't spend a lot of time, but I noticed a couple receptors, Receptor 121 and 122, there is --

JUDGE SLAVIN: Well, now is not the time to tell him things. If you have got a question, please ask him.

Q. (By Mr. Gonigam:) Is there anybody -- is Receptor 121 and 122 a residence -- occupied residence, one of your 272 occupied residences?

A. I couldn't tell you for certain. I know that

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they're included in the model as if they are. We presented results as if they are. But I haven't -- I'm not familiar with that.

Q. Okay.

JUDGE SLAVIN: I have these marked, if that helps.

MR. GONIGAM: Okay.

JUDGE SLAVIN: One for you, Callie. Mr. Klahn, Mr. Streicker, one is for you gentlemen, and then there's one for each of the ZBA members.

I will just help you get started, Mr. Gonigam. I hand you, I marked it IP, which stands for Interested Party, Number 1.

(IP Exhibit Number 1 marked for identification.)

Q. (By Mr. Gonigam:) In the supplemental annual for the maps, if you can turn to Turbine 74.

A. Okay.

Q. Do you agree that there is a residence across the road to the southwest of Turbine 74?

A. I do, and I understand that that one was unintentionally excluded from the analysis. We have, though, evaluated what the results would

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be in that location, which are approximately 18 hours per year.

Q. On your map, if you look at your results, I know it's hard to interpolate, but if you look at Turbine 74 and look at the southwest wing of your butterfly, that is about where my residence is, and it looks to me as if that would be a hundred.

JUDGE SLAVIN: Not trying to be difficult, but that's not a question. Remember, he's under oath, not you.

Q. (By Mr. Gonigam:) Would that be -- would my residence be over the 30 hours?

A. No.

Q. Would you agree that the other three -- Page 2, 3, and 4, those receptors are similar to my residence?

JUDGE SLAVIN: Page 2, 3, and 4 of which? Of IP Number 1?

MR. GONIGAM: Yes, IP Number 1.

JUDGE SLAVIN: Okay.

A. Similar in what way? I don't understand.

Q. (By Mr. Gonigam:) That they appear to be a residence, that they got --

JUDGE SLAVIN: I'm not sure of the question pending. Can you try and rephrase it for us?

MR. GONIGAM: I'll withdraw my question.

Q. (By Mr. Gonigam:) On my last page, do you agree that --

JUDGE SLAVIN: I think you are referring to IP --

Q. (By Mr. Gonigam:) -- 35?

JUDGE SLAVIN: Excuse me for interrupting. I think he's referring to IP Number 1, last page.

Q. (By Gonigam:) -- does not look like an occupied residence?

A. The one labeled Receptor 35?

Q. Yes.

MR. STREICKER: Just object that that calls for speculation.

JUDGE SLAVIN: Overruled.

A. I don't know. Again, we modeled it as if it's a receptor, so we included it as if it was an occupied residence. Whether it is or not, I don't know.

Q. (By Mr. Gonigam:) And one last question. You

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had in your modeling the input for sunshine is -- you have Amboy. Is that the closest city to the project?

A. I believe it was the closest city that data was available for. It's not available in every location of every state, but that was the closest one.

Q. The closest location.

MR. GONIGAM: I have no more questions.

JUDGE SLAVIN: Thank you, sir.

Other interested parties, folks who have not signed up, if you have questions of Mr. Anderson would you indicate to me that you do have a question by raising your hand? Otherwise I don't know how else to identify you.

Okay. Seeing no hands raised, I will move to Mr. Klahn, questions of Mr. Anderson?

MR. KLAHN: Thank you, Judge.

CROSS-EXAMINATION

BY MR. KLAHN:

Q. Your analysis is an engineering analysis?

A. Correct.

Q. Mathematical in some ways?

A. Sure.

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Q. Okay. But even within that analysis, have you had occasion to study why the shadow flicker is an issue for people that live near wind turbines?
A. We typically do not, because that, to an extent, calls for a certain amount of speculation --
Q. Okay.
A. -- and subjective analysis that -- we try to keep our analysis objective and determine when shadow flicker could occur and draw the line there.
Q. Okay. Have you had occasion, yourself, to ever observe the shadow flicker that's created by a wind turbine?
A. Of course.

MR. KLAHN: No further questions.

JUDGE SLAVIN: ZBA. Mr. Forster?

CHAIRMAN FORSTER: No questions.

JUDGE SLAVIN: Mr. Buhrow?

EXAMINATION

BY MR. BUHROW:
Q. This is one of the several projects this Board has heard over the years. One point that you

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made in your testimony was the possibility of not turning on the turbines during this time frame. Is this something that currently you're seeing in the industry that some of the companies are doing then?

A. Some, yes.

Q. Some are?

A. Sure. And it's very -- it's a very doable thing. It just depends on the project location and, by and large, to be frank, agreements between a landowner and a developer, petitioner, on what's acceptable to them.

Q. Okay. And I notice with this last testimony, the direction of what the turbines are, of course, from the houses is apparently, you know, a big issue. And I saw in your testimony that you take the prevailing winds, so in other words depending on what directions apparently the turbines are sitting is -- gives more shadow flicker, is that the -- your analysis too?

A. It does, yeah. So when -- the turbine always turns to face the wind, because that's what creates enough to make it spin. So we model that over every sector as in, like, a compass.

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So zero degrees all the way around to 360.

And by prevailing, it certainly faces some directions more often than others, but we don't only set it in a prevailing direction. We collect data -- well, in this case the Petitioner collects data onsite over multiple years. We aggregate that and look, in terms of frequency, how often it faces what directions and we replicate that in the model.

Q. So your data then includes all the different directions --

A. Yes.

Q. -- that the turbines -- or the winds would be for turning the turbines?

A. Yes.

MR. BUHROW: Okay. Thank you. That's all.

JUDGE SLAVIN: Thank you.

Mr. Bothe?

MR. BOTHE: No questions.

JUDGE SLAVIN: Mr. Pratt?

EXAMINATION

BY MR. PRATT:

Q. Did you do the analysis of the first petition

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for this wind farm?
A. I did not.
Q. Have you seen it?
A. I have not.
Q. So you did all this analysis based on a 2.3?
A. Correct.
Q. Some of these will be 2.5s. Is there a difference?
A. It will be an immaterial difference. The turbine itself will be identical from a 2.3 to a 2.5. What is -- probably more information than you care about. What the manufacturer does is, the generator within the machine is actually rated for a higher value, and then they just release some of that capacity based on mechanical modes of the turbine itself.

And they operate at a slightly higher capacity, but the operational profile of it is effectively identical. The periods it would operate and for how long would be carbon copies of the 2.3 versus the 2.5.
Q. We heard prior testimony that these models will run more hours per year than the models that are coming down. So does that affect the amount of

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shadow flicker your -- on your analysis is that taken into account?

A. We do model these turbines -- let me say this in two ways. There's no consideration given to how often the previous turbines would have operated. We only evaluate how often these turbines will operate specific to this site.

So, you know, we take the wind data, the sunshine profile, and all of those things with this turbine at these 114 locations, and we say, once this project is built here's how much flicker would accumulate.

Q. So define shadow flicker time. Where I'm going is, two things, are we just looking at residences?

A. We are looking at the 272 receptors, which I assume are occupied residences, it sounds like from the previous testimony. There may be a few that aren't, but houses.

Q. When you say residence, is that the outside wall of the residence? It's not a perimeter of 500 feet around the house?

A. Correct.

Q. It's what?

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A. It's at the house itself.
Q. So there's no property included in that --
A. Correct.
Q. -- for the shadow flicker?
A. It's -- you would be able to decipher that from these results, but in terms of the tabular values that are presented, that's measured at the home.
Q. So shadow flicker, when shadow flicker hits a window, is that the very tip of the shadow or is that a full rotor swipe?
A. So in reality, it would be more of the latter than the former. It would be more of the full rotor casting a large shadow. In our model though, it's the former, where because that house is modeled in the last box, any tip of shadow starts the clock running, whether it's a tiny, little, just the tip barely hitting it or it's the full rotor shadowing the property. All of that accumulates in the same way, when we count this up.

MR. PRATT: Okay. No further questions.

JUDGE SLAVIN: Okay, thank you.

Mr. Meyer?

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EXAMINATION

BY MR. MEYER:

Q. My question is, when you were modeling the 2.3, did you compare it to the Suzlons that were coming down?

A. We did not.

MR. MEYER: No other questions.

JUDGE SLAVIN: All right. Ms. Duffy?

MS. DUFFY: No, Your Honor.

JUDGE SLAVIN: Okay. Any follow-up, Mr. Streicker?

MR. STREICKER: No, Judge.

JUDGE SLAVIN: You may step down. Thank you, sir.

And, Mr. Streicker, do you have any more witnesses?

MR. STREICKER: Yes, Judge. I would like to call Natalie McCue, if I may, for a couple short questions.

JUDGE SLAVIN: She has been on the stand, but the Slavin rule is in effect. That is, the oath goes out of effect overnight. So put you under oath again.

(Natalie McCue was duly sworn.)

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JUDGE SLAVIN: Have a seat.

NATALIE McCUE,

having been duly sworn, was examined and testified as follows:

REBUTTAL

DIRECT EXAMINATION

BY MR. STREICKER:

Q. Ms. McCue, I just have a couple brief questions for you.

(Petitioner's Exhibits Number 17 and 18 marked for identification.)

Q. I'm going to hand you now what's been marked as Petitioner's Exhibit 17 and Petitioner's Exhibit 18. If you could take a moment to review these two documents, please.

Ms. McCue, starting with Exhibit 17, have you seen this document before?

A. Yes, I have.

Q. Can you describe for the Board what it is?

A. Sure. So during our notice process, there were some notice mailers that were returned. This Exhibit 17 is associated with one of those notices that were returned.

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This landowner, Clarence D. Blaine, as Trustee of the Clarence D. Blaine Declaration of Trust, and Marilyn Ann Blaine, Trustee of the Marilyn Ann Blaine Declaration of Trust, they are one of our participating landowners. The notice was inadvertently sent out without a city and state on it.

So we did go ahead and reach out to the participating landowner and have them execute a waiver for waiving the right to object to a public hearing on the grounds of receiving inadequate notice.

Q. And was this waiver secured at your direction?

A. Yes.

Q. Do you know when the waiver was secured?

A. Today.

Q. Okay. And if I could turn your attention to the next exhibit, please.

A. Yes.

Q. Could you describe that for us?

A. Yes. This exhibit is also a waiver that is associated with a notice that was returned, also due to the city and state being left off the mailer. This is a waiver executed by Carol A.

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Long, associated with the Carol A. Long and Ray Long Revocable Trust. They are also participating landowners that we are in regular contact with, and they also executed this waiver for us, waiving the right to object to a public hearing on the grounds of receiving inadequate notice.

Q. And when was this waiver secured?

A. Today.

Q. Okay. And was the waiver secured at your direction?

A. Yes, it was.

MR. STREICKER: Judge, I have no further questions for Ms. McCue. I would offer her up for other questions.

JUDGE SLAVIN: Okay. Interested parties, those that signed up, Mr. Gonigam, any questions of Ms. McCue?

MR. GONIGAM: No questions.

JUDGE SLAVIN: Any other interested parties, if you have a question, please raise your hand so I can acknowledge you.

Seeing none, we will move to you, Mr. Klahn.

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MR. KLAHN: No questions. Thank you.
JUDGE SLAVIN: Okay. Mr. Forster?
CHAIRMAN FORSTER: No questions.
JUDGE SLAVIN: Mr. Buhrow?
MR. BUHROW: No questions.
JUDGE SLAVIN: Mr. Bothe?
MR. BOTHE: No questions.
JUDGE SLAVIN: Mr. Pratt?
MR. PRATT: No questions.
JUDGE SLAVIN: Mr. Meyer?
MR. MEYER: No questions.
JUDGE SLAVIN: And Ms. Duffy?
MS. DUFFY: I don't think so.
JUDGE SLAVIN: Okay. You may step down. Thank you.
Ms. Duffy, by the way, your copy of IP Number 1 is over here.
All right. Further evidence, Mr. Streicker?
MR. STREICKER: Judge, I am happy to say, with wrapping up Ms. McCue's testimony on notice, that is our case in chief.
JUDGE SLAVIN: Okay. Thank you.
Folks, it's -- let's see, it's ten of. I

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think I'll do this, interested parties, are there any interested parties present who want to present evidence? Now, that is your own testimony or the testimony of any witnesses you have.

Mr. Gonigam, do you have any evidence you want to present?

MR. GONIGAM: No.

JUDGE SLAVIN: Okay. Any other interested party having evidence they want to present?

And I always like to make this clear. Evidence means if you're going to testify yourself, you're put under oath and you get on the witness stand, you testify to facts. If you have got a witness to call, I mean, now is the time to do that.

If we don't have any further evidence, we're going to take a break, and then opportunity will be given for a closing statement. That having been said, I emphasize something else again, and that when you give a closing statement, you can make arguments, you can tell the Board how you feel, you can tell the Board what you think it should or shouldn't

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do, et cetera, et cetera, but you can't add facts during that time. So if there's a fact you want to put into evidence, now is the time.

Okay. I think we're going to take a break.

MR. KLAHN: Your Honor --

JUDGE SLAVIN: We'll come back at, oh, let's say five after 8, and we'll hear some closing statements.

MR. KLAHN: Judge, may I just address one --

JUDGE SLAVIN: You know what, that wasn't fair, was it?

MR. KLAHN: Well, no, that's okay.

JUDGE SLAVIN: I apologize.

MR. KLAHN: No, that's okay.

JUDGE SLAVIN: Do you have any evidence you want to present?

MR. KLAHN: The only thing I would request is, I don't know if judicial notice would be appropriate, but just that a record that the ZBA might want to refer to the Lee County Comprehensive Plan in regards to this petition. But other than that, no.

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JUDGE SLAVIN: Okay. Okay. And, Ms. Duffy, you didn't want to present any evidence?

MS. DUFFY: No.

JUDGE SLAVIN: Okay. Break time. Five after.

(A recess was taken at 7:57 p.m. and proceedings resumed at 8:08 p.m.)

JUDGE SLAVIN: All right. Ladies and Gentlemen, I'd like to pick it up again.

Let's see, everybody's -- yeah, okay, Mr. Streicker, you may.

MR. STREICKER: Thank you, Judge.

The first thing I want to say in my closing comments this evening is, again, thank you to all the members of the ZBA. Thank you for your attention, thank you for sticking with us through this four nights of testimony.

Thank you to Judge, Mr. Klahn, the State's Attorney. Thank you to Dee and the Lee County staff, and Callie, thank you to you as well.

It's been a pleasure speaking with you all on this project. I have greatly enjoyed it. And what's interesting is, you know, even in a

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repowering context, it's very much a group effort when you're talking about wind farms, to take these things from start to finish, and we have greatly appreciated the support we have gotten from Lee County. It's been absolutely crucial, and I think it will be crucial to the ultimate success of this project.

And I also want to thank the members of the public for participating in this. We could not have open, honest, and effective ZBA hearings without public participation. So we greatly value the comments that we have gotten from you, and we appreciate your attention and support as well. It's a very important part of the process.

And, you know, I want to really wrap up our presentation where I started. If you remember, and perhaps most important to this project is, we think Lee County is a great place to live and a great place to do business. We wouldn't be looking at this type of investment here if we didn't think that. And that's because of all of you, and it's because of the reception that the original portion -- original

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114 turbines have gotten.

So very much, again, looking forward to making this repowering happen in Lee County and hopefully Bureau County as well.

Also, we think that the repowering is going to be a great thing for this community. We mentioned, and I'll go into that a little bit in some detail, but the jobs it's going to bring here, the investments that it will be bringing to Lee County, the increased property tax revenue that the area and region will benefit, especially the schools, from having the upgraded equipment and turbines.

We also think it's going to be great for the community because you're going to see a reduced project footprint, you'll hopefully be seeing a reduced noise imager from the project. And, you know, most importantly, at least from a Pattern perspective, we're really taking a big step forward with helping the State achieve its renewable energy goal, and at the same time, I think while we're doing that, we're doing some great things local.

So we're excited to talk about this

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project and excited to hopefully bring this project to Lee County.

We intend -- like I talked about again at the beginning, this project is going to be here for a long time, and it's our overarching goal to be a good neighbor and to be a good citizen of Lee County and everything that goes along with that. So I want to make sure that that is impressed first and foremost upon your mind. Those are all goals on a corporate basis for this project, as well.

Through the four evenings of testimony hopefully you have gotten a good feeling about who we are, about who Pattern is as a company, about how much work we put into this project and in preparing the petition that is before you, and that we have taken the time not only to go with what we think are top-flight equipment, these GE turbines that we have been talking about, but also using, you know, top-tier consultants to prepare the needed reports and necessary inputs for this application.

Hopefully what you found, as I have, is this is really a gold standard when it comes to

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putting on -- when it comes to putting together an application, putting together a project, and then putting together the presentation and testimony as you have heard.

You know, you have been able to hear from three Pattern employees. The first was Kevin Wetzel, who was our first witness, who talked about who Pattern is, why we're interested in Lee County, why we're interested in repowering the project, and how Pattern intends to make that repowering a reality, through the securing of the equipment of the turbines of this project all the way through financing.

You have heard from Natalie McCue regarding the extensive amount of work and the environmental studies that had to be prepared for this application to prepare for the project. She also talked about how Pattern's decisionmaking process proceeded with regard to this repowering, and also with regard to how the petition was put together. And, finally, as you heard this evening, about how we went about making sure that notice was appropriately provided. And, you know, we did have these two

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landowners, both participating, whose addresses were not properly noticed, and those were achieved through the waivers.

Finally, from a Pattern perspective, you heard from Paul Crossland, our pre-construction manager. You heard from Paul about how the project will be built, about all the input, the considerations for safety, the other considerations with regard to not only the building of the project but also the decommissioning of the original turbines.

And then you heard Paul talk about the process we went through with the State of Illinois to enter into the Agricultural Impact Mitigation Agreement, which is the State's baseline for the construction and decommissioning of wind turbine projects.

I think that the AIMA was new, at least for purposes of Big Sky Project, because when it was originally constructed in 2011 there was no requirement to enter into an agricultural mitigation agreement. So that was a new wrinkle we brought to the project that I think not only provides additional landowner protection, but

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also provides additional peace of mind at the County level that the project will be constructed and ultimately decommissioned under the guise of not only local but also State regulations.

So those were the three Pattern employees that you heard from, and hopefully you got a good feeling from them.

We also presented three key experts. David Meyer, regarding the steps the project has taken and will take to reduce and eliminate signal interference issues. We know that these are key concerns for area residents that not only rely on emergency management but rely on getting steady and quality TV signals and radio signals. That's certainly something that's first and foremost on our mind, and that's why Mr. Meyer was the first expert that we presented to the Board.

You also heard from Chris Howell. Chris is a noise expert -- or excuse me, a sound expert. I think he described noise as unwanted sound, and I'll get to that. But one of the things that I think was most important about

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Mr. Howell's testimony was that he believes there's going to be benefits from this repowering with a reduction of noise from these new turbines that are going to be better turbines from a power generation standpoint, they're also going to be better turbines from a regional impact standpoint because they're newer technology and they're going to be quieter. And we know that is something that is very important to area residents, that noise signature be reduced to the extent possible, and that's why we presented Mr. Howell's testimony.

Finally, tonight you heard from Aaron Anderson to talk about shadow flicker. Again, we know that shadow flicker is a key concern for residents in and around wind farms. I think what you heard from Mr. Anderson is that shadow flicker is going to be an impact from the wind farm, it will be a managed impact and will only be for certain time periods at certain residents. And, again, while there are not State, local, or federal requirements regarding shadow flicker, we have imposed the industry requirement here, which is not to exceed 30

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hours per year of shadow flicker impact without instituting mitigative actions.

So again, to summarize, we have had testimony from Pattern representatives regarding who Pattern is, why Lee County, why a repowering, about how the application was put together, the key inputs for that application and all the studies, and then how this project -- how the existing turbines are going to be decommissioned, and how this project is going to be built, and three key experts on three issues that we know are very relevant in the community: signal interference, noise, and shadow flicker.

We're now, with my closing comments, at the point where we turn this process over to you, where you have the opportunity to take into account all the evidence that's been presented, either in the oral testimony or in Exhibits 1 through 18 that have been entered into the record.

I know that that all then is going to be applied by you against Section 10-2B-2D of the Lee County Ordinances, and that these are the

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six criteria that are applicable to -- excuse me, seven criteria that are applicable to all Special Uses such as this one that come before the Zoning Board of Appeals.

I'll just go through these briefly, but what you'll be considering is the evidence against the question: What effect does the proposed Special Use have on the character of the neighborhood? What effect does the proposed Special Use have upon the surrounding properties? What effect does the proposed Special Use have on traffic conditions? What effect does the proposed Special Use have on public utility facilities? What effect does the proposed Special Use have upon any regional and environmental concerns? And then finally, how will the proposed Special Use be completed in compliance with the rules, regulations, and standards that in this case would be applicable to wind farm deconstruction and construction?

There is also a seventh criteria which is just hitting under matters pertaining to health, safety, or general welfare of the community.

So those are the standard Special Use

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criteria that I'm going to be considering.

Also, Lee County does, and we're always happy to go into a community that has a wind or WECS, Wind Energy Conversion System, specific portion of the Zoning Code. It's very important for us to know what the community expects coming in. It's also very helpful for us to know how we're going to design our project and make sure it meets the local standards.

In this case, that is Section 10-15-15 of your Ordinance that lays out a number of standards specific to wind farms.

Hopefully what you'll find in the record is that we not only meet the seven SUP criteria that is laid out in your Ordinance, but also all of the wind farm's specific criteria.

So what I thought I would do in closing is just provide you with my quick thoughts on that.

The first SUP criteria that we'll be talking about is the effect of the Special Use upon the neighborhood. We're in a unique situation here, at least for me. I know this is the second repowering, I believe, that Lee County had been through. It's been the first

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that I have had the opportunity to shepherd through the Special Use process.

But I think one of the great things about a repowering when it comes to a number of these criteria, the effect upon the neighborhood, certainly being one of them, is that we have a community that's been used to having wind turbines in the area since 2011. So hopefully this repowering situation will not have any negative or detrimental effect on the neighborhood.

And I believe from the testimony which you have heard, certainly with regard to the reduced noise signature, that this Special Use, if this petition is granted, it will not have any negative impact upon the character of the neighborhood.

The second criteria is the effect of the proposed Special Use on surrounding properties. Here, again, in a decommissioning context, I'm hoping that this project, and it's our expectation, that it will not only not have a negative impact on surrounding properties but actually have a positive impact. You know, we

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have -- there's 114 current turbines that comprise this project; 17 of those are going to be decommissioned to reduce the size of the project footprint. Furthermore, as I mentioned before, these are going to have, again, a reduced noise signature.

Also what you heard in the evidence is that at least two of the turbines that are going to be decommissioned were done with an eye towards, again, reducing the impact on surrounding properties and also sensitive areas. In particular, we're going to decommission two turbines near the Ryan Wetlands and Sand Prairie, which, I think as you heard in the record, that was recommended to us that those turbines could potentially have a negative effect. So those are two that we decided to remove, again, to protect those significant areas.

You know, one thing that I think is also important to mention for public benefit and the benefit of the surrounding properties is that wind turbines are a very steady source of income for local residences. And one thing that I

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didn't mention to the benefits, because it's not necessarily a regional benefit, but certainly when we talk about our participating landowners and surrounding properties, having a steady income from the wind turbine is very important in an agricultural area, where crop prices tend to rise and fall, you know, based on factors that are out of the control of most of the agricultural residences of the area.

So, again, I do not believe that the project will have any negative impact on surrounding properties, and hopefully it will be positive.

The third criteria is the effect of the proposed Special Use on traffic conditions. As you heard Mr. Crossland testify, we will enter into a road use agreement with the applicable county- and township-level road districts.

You also heard him testify to what would be going on in the region during deconstruction and construction, which certainly will have some impact on traffic. There will be a short time period where there will be heavy equipment out there and certainly some increased truck

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activity. I would argue that by the time the turbines are decommissioned and the new ones are commissioned, you will have a traffic situation in the region around the project that is very similar to what it is now.

Again, I don't think there will be any long-term negative impact to regional traffic conditions as a result of this repowering.

The fourth criteria, the effect of the proposed Special Use on public utility facilities. I don't believe there's any evidence in the record that there will be any effect on public utilities. It's certainly not our intention to affect those, and I don't believe that the decommissioning or the repowering would affect any public utility assets in a negative manner.

Next, again, we talked about the effect of the proposed Special Use on the environmental concerns. I mentioned before, one of the criteria we took into account when choosing which turbines to decommission were, in this case, can we actually reduce the project footprint to reduce any negative impacts on the

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environment? And, again, we have done that here.

You know, we're in a situation where we have turbines that have been up and operating for approximately eight years. Based on the repowering, I don't see any way that we're going to have a negative environmental impact.

There's a lot of testimony in the record regarding the bird and bat studies, conservation strategies, all the typical studies that you would see with regard to a greenfield wind project. And here we had the added advantage of, again, having a long operating history with 114 turbines at the exact same location where the new turbines will be going in. So I think it's fair to say that we're very confident that the project will not have any negative environmental impact.

Next Special Use criteria, talking about compliance with the rules, regulations, and standards. You know, one of the great things about having a large, very high-valued project like a wind farm going in, and as you heard Mr. Crossland testify, certainly first and

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foremost in our mind is making sure we comply with federal, State, local construction, deconstruction, decommissioning, and environmental criteria. That is absolutely first and foremost in our mind, which is why so much of the petition here has been dedicated to compliance with applicable rules and regulations, whether that's Illinois Pollution Control Board, whether it's Illinois EPA, Illinois Department of Natural Resources, federal, and, of course, what we're talking about right now, compliance with Lee County regulations.

I can certainly say that from my reading of the compliance with applicable rules, regulations is our number one priority. And hopefully you have the same thought in that regard, because that's absolutely a key thing for us.

Finally, with regard to other matters pertaining to health, safety, or general welfare, you know, one of the things you heard Mr. Wetzel testify to was, we are putting in tier one GE turbines. Again, GE is a very large

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manufacturer in the wind industry. Their products are tried and true. They're very well tested. Our experts are all familiar with these new turbines. We think they're going to be better than the existing turbines.

The record, Mr. Howell's testimony, talked about how these will be quieter than the existing turbines, they're going to produce just as much energy as the existing project, with a reduced footprint.

So I think that this repowering is certainly going to be a betterment to health, safety, and welfare in that regard. We're going to continue to help the State of Illinois make progress to its clean energy goals.

You know, we talked about certainly the economic impact that's going to be to our direct beneficiaries, like our construction workers, our landowners. We have also made it a point, and you heard Mr. Wetzel talk about that we're -- we, and I'm talking about Pattern, as a company, is committed to community benefits, it's sponsored a number of projects in the local community, and it's agreed to fund local soil

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and water conservation district's work that's going to be done by the Ryan Wetland and Sand Prairie Preserve.

Anytime we go into a community we, again, make it our number one priority to be a good neighbor and fit in and support local causes when and where we can.

We're committed to workers' safety. We're committed to safety in the community. And again, just on an umbrella basis, we very much believe that this repowering is going to bring significant benefits, namely the reduced footprint, reduced noise signature, and a significant amount of clean power going onto the grid.

Finally, as you heard from Mr. Meyer, we do not believe that this project is going to have any impact on the comfort of area residents, mainly their ability to get clear signals from the television and radio stations.

Then turning our attention briefly to the WECS specific criteria in your Ordinance. The first one is that blade clearance of no less than 15 feet from the lowest part of the arch of

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the blade on the ground. Mr. Crossland testified on March 12th that the clearance of the proposed turbines is a distance to be over 75 feet, comfortably meeting this criteria.

Second one, and this was an issue that we talked about at some length, that the climbing towers shall have fences of 6 feet in height, appropriate signage, and warning markers on cables, ropes, and wires shall be provided.

This is where we're asking, again, for an exemption from this criteria. Mr. Crossland testified on March 12th that it's no longer industry standard to fence in turbines, and I believe this was an exception that was made for the original Big Sky Project, and therefore the requirement was waived in the 2006 Ordinance. We would be requesting the same waiver here of the tower fencing requirement.

As you may have noted from Mr. Crossland's testimony, that there have been no safety issues stemming from the current lack of fencing. We believe this illustrates that this requirement could comfortably be waived if this project goes forward into its next incarnation with the

repower.

You also heard Mr. Crossland explain that the appropriate signage will be placed in and around the turbines. But with the turbines being freestanding, there's no need for any warning signs because there are no cable, ropes, or wires that support the turbines. We will be solely using the existing foundations.

The third criteria is the tower construction be done in accordance with applicable Illinois law. Again, this dovetails with one of the standard SUP criteria. As Mr. Crossland testified on March 12th, again, all turbines will be constructed strictly in accordance with Illinois State Statutes.

One criteria that we talked fairly extensively about was that a WECS shall not be installed nearer than 350 feet to any property line. This is something that Ms. McCue testified to on March 12th, and it is our intent not to place any turbines within 350 feet of the property line of any nonparticipating landowner. This is, again, in addition to -- and this is your criteria, the 350 feet. But you also heard

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her testify to the self-imposed setback proposals, including 1.1 times turbine height from the primary structure of a nonparticipating parcel, 1.1 times turbine height from any residence on any project parcel, and 1 times turbine height from any public road, third-party transmission, communication tower, and 1 times turbine height from the property line of a nonparticipating parcel in the absence of receiving a waiver from that landowner.

So, again, we're very much committed to not only meeting your minimum requirements, but also the self-imposed setback requirements that were referenced in the testimony.

Next, one of your criteria is that all noise shall conform to Illinois Pollution Control Board regulations. You know, this is one of the key points of Mr. Howell's testimony on March 12th. According to those noise studies, the Petitioner has committed to obtaining a waiver in each and every instance in which an Illinois Pollution Control Board regulation is anticipated to be exceeded. Furthermore, we will do post-construction noise

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studies to make sure that standards are either being met or appropriately mitigated.

The next criteria is that the WECS shall be installed and operated in a manner compliant with the FAA. As Ms. McCue testified, the project has filed for determinations of no hazard -- these are referred to as a DNH -- for each and every turbine. These DNH's should be coming shortly, and they will be secured prior to any construction activity taking place.

Next criteria is that all electrical distribution lines shall be located underground. This was confirmed via Mr. Crossland's testimony.

And finally, that all turbines have the required safety features, such as being designed with automatic overspeed control, having a manually-operated method to render the system inoperable in case of failure, and have an automatic control to render the system inoperable in case of loss of utility power.

Again, referring back to Mr. Crossland's testimony on March 12th, the turbines will have automatic overspeed control to render the system

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inoperable when wind are blowing at speeds that are in excess of what the turbine was designed to handle. There will be redundant braking systems, which include both rotodynamic overspeed controls which utilize variable tip and pitch systems and mechanical brakes. There will also be a fail-safe mode in which those mechanical brakes will be operated in.

So, again, these turbines will have state-of-the-art safety controls placed on them. And, again, another one of the reasons why we chose to go with GE turbines in this instance.

In sum, what our hope to do here is to take a great existing project, repower it and make it better. That is why we are here and that's why we spent the past four nights with you and have drawn up the petition.

I can only think that reducing the regional footprint and noise impact is going to be a betterment to regional residents, while producing the same amount of power and increasing area tax revenues.

In closing, I just want to again thank you for your time, your attention. We hope that you

will provide, of course, a positive recommendation with regard to the petition, the approvals requested therein, the waivers and variations that we have proposed.

And again, thank you so much to everyone for your attention, and we appreciate the opportunity to work with you as this process goes forward.

JUDGE SLAVIN: Thank you, Counsel.

Ladies and Gentlemen, interested parties, those civilians, citizens who would like to give a closing statement, I have been calling it, speech. Anybody want to give a speech?

Mr. Gonigam, come on up.

MR. GONIGAM: Hello, everyone. I'm Bob Gonigam.

And first off, I would like to thank all of the ZBA members, State's Attorney, and Dee Duffy for taking the time to listen and allow me to voice my concerns.

Having served on the Ohio High School Board for ten years, I have a great respect and appreciation for anyone that serves on a public board, because I realize it takes a lot of

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thought and a large commitment of time for what can be an often very thankless job.

I would also like to thank Big Sky Wind for their time and efforts to refurbish their current wind farm and continue to generate jobs and revenue for the community into the future. I saw firsthand as a board member the benefits and revenue it provided the Ohio School District.

So thank you to everyone.

Referring back to Natalie's testimony, the first petition for the wind turbines was 1400 feet to a residence, which is too close to my residence, the Turbine 74. But for the past eight years, I have been a good neighbor to Big Sky Wind and not made any complaints about flicker, vibration, noise, or setbacks. And now, with the repowering of the turbines and decommissioning and removal of 17, I would like Big Sky Wind and the County to take this opportunity to consider removing Turbine 74.

I understand the importance of the Ryan Wetland and the wellbeing of the wildlife that is over 2,000 feet from the two turbines that

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plan to be decommissioned, but I also believe that the wellbeing of me, my wife, and son are equally important.

And, again, thank you everybody for your time.

JUDGE SLAVIN: Thank you, sir.

Any other interested party, indicate you would like to say something by raising your hand, please.

All right. Mr. Klahn, I don't think a closing from you is appropriate, since you're an advisor to the Board.

So Ladies and Gentlemen, that concludes the, what I call loosely, the evidentiary portion of the hearing.

The next part of the hearing is fact-finding and recommendations by the ZBA. I don't think we'll start to delve into that tonight.

So having said that, I will recess this proceeding until -- there's no irony in this, but April Fool's Day, April 1st, beginning at 7 o'clock here in the County Board Room in Lee County.

Everybody have a good couple weeks.

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(The hearing was recessed at 8:37 p.m.)

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Now on this 20th day of March, A.D., 2019, I do signify that the foregoing testimony was given before the Lee County Zoning Board of Appeals.

Bruce Forster, Chairman

Dee Duffy,
Zoning Administrator

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