STATE OF ILLINOIS)
)SS
COUNTY OF LEE)

In the Matter of the Petition

of

GSG Repower Wind Farm

Lee County, Illinois

Testimony of Witnesses
Produced, Sworn and
Examined on this 9th day
of May, A.D., 2022
before the Lee County
Zoning Board of Appeals

Present:

Glen Hughes
Craig Buhrow
Rex Meyer
Mike Pratt (via Zoom)
Bruce Forster, Chairman

Alice Henkel, Alternative Energy Coordinator
Dee Duffy, Zoning Enforcement Officer

Honorable Judge Tim Slavin, Facilitator

APPEARANCES:

LEE COUNTY STATE'S ATTORNEY CHARLES BOONSTRA
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Counsel for the County.

ATTORNEY KYLE C. BARRY
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Counsel for the Applicant.

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Witness: CARTER WELLS

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EXHIBITS

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JUDGE SLAVIN: Okay. Well, good evening, Ladies and Gentlemen. I call out of recess Lee County Zoning Board of Appeals hearing on Petition Number 21-P-1591, GSG Wind, LLC's, request for a Special Use Permit to construct a wind energy conversion system within Lee County -- within, sorry, Lee Center, Sublette and West Brooklyn Townships here in Lee County.

In case you somehow lost it but are also somehow able to hear me, the Zoom meeting ID is 913-3923-9154. The password is 209840.

You can also -- you can also not participate but view and listen to us on YouTube. Go to your browser, www.youtube.com. In the search bar, type "Lee County IL," I-L, short for Illinois, "Zoning Board of Appeals." Don't be concerned with upper- or lower-case letters. Find the session date you want, presumably today, May 9th, and click on it, and you should be seeing and listening to us, although with a bit of a short time delay.

I note the presence tonight of the Chair of the Lee County ZBA, Mr. Forster; its Vice Chair, Mr. Buhrow; Mr. Hughes is present;

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Mr. Meyer is present in person. On Zoom I note the presence of ZBA member Mr. Pratt.

Back in the courtroom, the Honorable Dee Duffy is present, as is her able assistant, Ms. Henkel. The State's Attorney, Charlie Boonstra is present, as is Mr. Barry, Counsel for the Petitioner, and three of his client's representatives. Lee County IT is here helping us run the various technological pieces of equipment. Callie, the court reporter, is here, and himself. Making 14 necessaries in person.

I see one Interested Party in the courtroom, making 15 people total in the courtroom. There are none in the jury room. On Zoom, there are two attendees: the aforementioned Mr. Pratt and another Interested Party. Makes the total attendance tonight 18 people.

When we left off last, we were in the midst of the Petitioner presenting evidence.

And, Mr. Barry, I'll turn it over to you, and you may continue.

MR. BARRY: Thank you, Judge.

At this time, I would like to call the

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next witness for the Petitioner, and that is Ian Brewe. He's going to discuss the sound study.

JUDGE SLAVIN: Do you want to step up here, Mr. Brewe, and I will swear you in and then -- oh, that's right, right here. I pushed that chair too far. My fault.

(Ian Brewe was duly sworn.)

JUDGE SLAVIN: All right. Have a seat.

You may inquire, Counsel.

MR. BARRY: And before we get started, Mr. Brewe does have a PowerPoint presentation. If we could load that onto the screen, please.

IT REPRESENTATIVE: Which one would that be?

MR. BARRY: That's going to be the one called Summary of Sound Study.

JUDGE SLAVIN: Okay. We're all set.

MR. BARRY: Thank you.

IAN BREWE,

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

DIRECT EXAMINATION

BY MR. BARRY:

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Q. Mr. Brewe, could you please state your full name for the record.
A. Ian Brewe.
Q. And could you tell us a little bit about your background?
A. Sure.

MS. DUFFY: Spelling?

JUDGE SLAVIN: Yeah, would you spell it? And these mics are -- you actually have to pull it next to you. You practically have to swallow it, and then I start going like this and then pretty soon you -- so.

THE WITNESS: Okay. I-A-N, B-R-E-W-E.

MR. BARRY: And could you please move the -- to Slide 3, move the PowerPoint to Slide 3? There we go.

Q. (By Mr. Barry:) And if you could, tell us a little bit about your background, please, Mr. Brewe.
A. Sure. So I am a board-certified member of the Institute of Noise Control Engineering. I have my Master's in -- or that should say B.S. in Mathematics with a Concentration in Physics. That's a typo; not trying to mislead.

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I have conducted -- done graduate-level coursework in acoustics, and am a full member of the Acoustical Society of America, been performing noise studies and acoustical analysis for over 20 years. I have done projects all over the world.

I live here -- or I work here in Illinois, and have done power generation, aviation, transportation, oil and gas, and renewable projects both here in Illinois and globally.

I have done numerous wind studies, including, I think, about five here in the state of Illinois.

Q. And who is your employer?

A. Burns & McDonnell.

Q. What's your position with Burns & McDonnell?

A. I am a section manager in the environmental studies department.

Q. And I think you mentioned that you work in Illinois; is that correct?

A. That is correct.

Q. Which office do you work out of for Burns & McDonnell?

A. Our Chicago office.

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Q. Okay. And is there anything else you would like to say about Burns & McDonnell? Is there something on the slide?
A. Sure. We're a fully-integrated engineering company with construction, environmental services, all facets of engineering. It's kind of amazing what all we do.

An employee-owned company with almost 85- -- well, probably over 8500 employees now, we're hiring so quickly, and highly ranked in the engineering journals.

Q. Okay. Thanks.

MR. BARRY: Could you advance the slide, please?

Q. (By Mr. Barry:) Mr. Brewe, are you familiar with the GSG Wind Project?
A. Yes, I am.
Q. And are you familiar with the proposed repower of the project?
A. Yes, I am.
Q. How are you familiar with the project?
A. I have worked on the study. I helped supervise the ambient noise study that was conducted in the area. I also have provided technical review

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and supervision for the performance of the sound study.

Q. And is that sound study Appendix J to the permit application?

A. Yes, it is.

MR. BARRY: Next slide, please.

Q. (By Mr. Barry:) All right. Mr. Brewe, let's walk through the settings. Let's start with the applicant sound rules. Are you familiar with Lee County's -- the Lee County Wind Ordinance's provision relating to noise regulations?

A. Yes, I am.

Q. And the -- that provision references the Illinois Pollution Control Board regulations relating to noise levels. Are you familiar with the Illinois Pollution Control Board's rules and regulations with respect to sound?

A. Yes, I am. I have conducted numerous studies in accordance with that.

Q. Okay. Could you briefly describe and explain how those rules work?

A. Sure.

THE WITNESS: If we could advance to the next slide?

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JUDGE SLAVIN: (Gesturing.)

THE WITNESS: Got to really get in there.

JUDGE SLAVIN: There you go. It's hard.

A. So the Illinois Pollution Control Board limits noise based on land classification, both of the noise source and the receiver.

So here in this example, we have got wind turbines on an agricultural property, which are considered Land Class C, and the impacting residential receivers, which are considered Land Class A.

The Control Board has established daytime and nighttime limits, with the nighttime limits being lower than the daytime limits, since most of us sleep and recreate and want quiet time at night.

And they limit noise in individual frequency bands. So as you can see up on the slide, we have frequencies ranging from 31 hertz to 8,000 hertz, and each frequency band has an individual numerical limit. As I say, for each frequency band, the nighttime limits are lower, and so for our study we focused on making the project comply with the nighttime limits.

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Q. (By Mr. Barry:) Thank you.

Mr. Brewe, will the repowered -- will the proposed repowered GSG Wind Project be required to comply with the noise limits governed by Illinois Pollution Control Board?

A. Yes, it will.

Q. And not to jump ahead here, but did the study you worked on conclude that the sound emissions from the proposed repowered GSG Wind Project comply with the Illinois Pollution Control Board limits?

A. Yes. The study concluded that as currently designed, the project will -- the repower project will comply with the limits in each frequency.

Q. Okay. At this time, I'd like to ask you to walk through the additional slides. And in doing so, if you could please explain the methodology of the step?

A. Sure.

So, okay, perfect. So first of all, we conducted an ambient sound survey, which is required in the Lee County Ordinance -- Wind Ordinance. The study was conducted in January

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of this year, from the 12th to the 14th. We had continuous measurements at four different locations that ranged from 33 to 43 hours. We did have decent enough weather conditions during those hours to get good representative data.

The quietest one-hour average sound levels ranged between 23 and 36 dBA during that time period.

Just to back up a step, dBA is what the human ear basically hears. So when we look at sound levels across all those frequencies, the human ear hears different frequencies differently. So A-weighting is an industry standard method for representing human hearing.

So the sound levels we did have in the study consisted of traffic from both local and distant sources, planes, insects, wildlife, wind noise, and some of the existing wind turbines.

On the next page, we show the four measurement locations in the blue: MP01, 02, 03, and 04. So we tried to cover as much geographic area as we could with those locations.

And then in the yellow, you can see the

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proposed locations of the new repowering wind turbines.

MR. BARRY: Next slide, please.

THE WITNESS: Next slide.

A. The next facet of the sound study that's required by the Zoning Ordinance is noise modeling. So we conducted the noise modeling using CadnaA software. CadnaA is a commercially- available program based on -- that uses ISO, so International Standard of -- Organization of Standardization, I should say.

Standards for calculating outdoor sound propagation. So this is a program that is used widely throughout the world for these types of projects.

It assesses the sound from 31 to 8,000 hertz. You know, same as we saw in the Illinois Code. And it was able to look over a very large area, 3 kilometers, 1.9 miles, from the turbines.

Next slide.

Some of the modeling parameters that were used were, the wind turbine coordinates for the proposed repowering. We have 13 turbines in Lee

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County. Currently I believe in the existing project there are 19.

We have 512 different occupied residences that were modeled in the county.

We incorporated terrain to get elevation changes that would affect any of the sound propagation.

We included a semi-reflective ground attenuation. Ground attenuation can range as a factor from zero to 1; 1 being most absorbed, to zero being totally reflective. Usually in an agricultural or real-world situation, it's probably closer to that 1. We use 0.5 and a conservative measure of a thousand calculate that.

Next page.

So the turbines modeled with were the GE 3.4's with a hub height of 98 meters and an overall sound power level of 106.8.

GE does provide the individual frequency sound levels for those units. So what we did was, take a look at the worst-case frequency sound level under any condition, different wind speeds and so on and so forth, and assumed the

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worst case for each frequency band. We add an uncertainty factor of 0.8 decibels to each frequency band, and we assumed that all turbines were operating simultaneously at their maximum sound level.

There is also options for those turbines to have noise reduction operations, or NRO, and this allows the turbines to be slowed down to lower the sound level to comply with regulations at the various locations.

So throughout the modeling process, there are lots of assumptions that have to go into play, and we have tried to take most of the conservative approaches we can.

First of all, there's atmospheric conditions, where, you know, we're going to select a condition where the wind -- the sound is going to travel further, as far as temperature, humidity and so on and so forth.

Vegetation, we did not include any reduction for trees or foliage, which often provides quite a bit of sound reduction.

We included worst-case directivity factors. The sound is going to emit equally in

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the loudest way it could in all directions.

We assumed a moderate temperature inversion. So there is some reflection from that upper atmosphere.

And the next one is always a little bit hard to kind of wrap your head around, but we assume downwinds for every receiver. So the sound carries a little bit better with the wind. So even though it's not a real-world condition, a house to the north or to the east or to the west, we assume they're all downwind at the same time.

Again, each octave band was worst-case for the turbine.

The uncertainty, as we mentioned earlier.

And the ground, as we previously covered.

Q. (By Mr. Barry:) So if I can just ask you a question then?

A. Of course.

Q. In summary then, the assumptions that were made for the inputs into the study include conditions that are either not real-world conditions or are not regularly-occurring real-world conditions; is that correct?

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A. They are very unlikely conditions to ever occur.
Q. And then on top of that, you added eight-tenth of a decibel to each turbine that would otherwise be projected, correct?
A. That's correct.
Q. So, again, just -- those assumptions were made to give the model a conservative slant?
A. Our goal is usually to have our models overpredict the sound levels.

So the impacts were modeled at all identified receivers. They are cumulative. So we are looking at, you know, the sound that is emitted not only from the closest turbine but from all turbines combined at any one receiver.

Generally speaking, here in Illinois, especially with wind turbines, the 1,000 hertz octave band is the most difficult one to achieve. It's usually the one that drives -- if you get a 1,000 hertz into compliance, most of the other frequency bands fall into place.

And the predicted sound levels at each of the nonparticipating residences did comply with the nighttime Illinois Pollution Control Board

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limits.

We did have to apply noise reduction operations on a few of the turbines, which are identified in the sound study. And if any of those turbines were to move or to change slightly, you know, we would update the modeling to verify whether any of those operations need to be in place.

Then on the final slide --

Q. Before we jump to that one --

A. Yup.

Q. Just -- again, just wanted to clarify that, per that last bullet, on the bottom bullet on the slide, your study concluded that the turbines -- or the repowered GSG Wind Project will comply with the Illinois Pollution Control Board limits? You may have to operate the turbines NRO mode, but the project will comply with those limits; is that correct?

A. That is correct.

And so the final slide then, this is just a graphical representation of all the turbines that were modeled, and with the goal -- again, the residential receivers in the purple and the

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lines being the sound contour levels.

This is an overall sum of all the frequencies. We did look at individual frequencies, both graphically and numerically, to verify at each frequency, at each residence, the project complies with the Illinois Pollution Control Board limits and the Lee County limits, therefore.

I think that concludes my study.

JUDGE SLAVIN: All right. Questions. Going around the horn because it's easier for me.

Mr. Boonstra?

STATE'S ATTORNEY BOONSTRA: No. Thank you.

JUDGE SLAVIN: Ms. Henkel?

MS. HENKEL: Yes.

EXAMINATION

BY MS. HENKEL:

Q. You did your study on the GE 3.4 model; however, the Petitioner has proposed four different models, this one being one of the smaller ones. Why did you choose this model?

A. So for some of the larger ones, the

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acoustical data was not readily available at the time of the sound study. Once that -- if they -- once a turbine is selected, it would need to, you know, go through an iteration of the model to verify that it was still in compliance and if anything else would have to be changed.

MS. HENKEL: Okay. Thank you.

JUDGE SLAVIN: Ms. Duffy?

MS. DUFFY: No.

JUDGE SLAVIN: Mr. Forster?

MR. FORSTER: No.

JUDGE SLAVIN: Mr. Buhrow?

EXAMINATION

BY MR. BUHROW:

Q. You have the maps there. Are those the locations where the company is assuming the new turbines are going to be put then?

A. This is based on the current layout -- or at the time of the study, the most current layout. So if there were to be an adjustment of the locations, they would have to be adjusted in that iteration of the model.

Q. Who determines if the noise level is a little

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too high for some residences? Is that your job to tell them, or do they decide what to do on relocating some?

A. Yeah, so it's usually a back-and-forth process where, you know, we'll run the model based on the provided layout and come back and say, you know, We have got 20 residences here that exceed a limit here or there. So we need to make some adjustments, and we'll move things around to the point where we can get everybody into compliance.

Q. Do you discuss that with the residents themselves or is it just a company situation?

A. It's usually between the developer and the consultant.

MR. BUHROW: Okay. Thank you.

JUDGE SLAVIN: Mr. Meyer?

EXAMINATION

BY MR. MEYER:

Q. Are the GE 3.4's louder than the current Gamesa G87 generators?

A. I do not know the sound levels of the current units. I don't know a whole lot about that previous iteration of the project. So I'm

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afraid I can't answer that.
Q. The sound level and power level on the 3.4, it has 106.8 for your -- on your PowerPoint. Do you know what wind speed that's at?
A. So that is kind of one of those conservative factors we looked at, is we look at every -- because they provide sound power levels for each frequency at each wind speed up to the cutoff.

So we look at -- you know, for example, if 500 hertz happens to be louder at 6 miles per hour versus 10, we'll choose the loudest for each frequency.

Q. But you don't know what that actually was?
A. No. So it may be a mixture of the wind speeds.
Q. Okay.
A. But it would be probably closer to what the highest wind speed is.

MR. MEYER: I have no other questions.

JUDGE SLAVIN: Mr. Hughes?

MR. HUGHES: Yes, a few questions.

EXAMINATION

BY MR. HUGHES:

Q. Actually, I'm going to follow up on Alice's question first. If you're doing a reiteration

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of the study with different -- how do we document that? How do we know what's submitted to the County or the County Zoning Administrator for us to identify that?

A. Not exactly sure of that process myself. You know, certainly that's -- you know, could be -- I don't know, something that could be requested at the time of plan submittal or something like that, final layout.

Q. Okay. There is currently 13 planned but up to 16 possible. You only did the 13 locations?

A. That's correct.

Q. Why not consider -- continue to consider the worst-case scenario with the 16?

A. Yeah, so if we do go up to 16, again, we would just have to do another iteration there of the study and the model.

Q. Okay. And it's indicated 512 occupied residence receptors. Do you have any idea if that would change if there were the 16 turbines?

A. Depending on the location of those turbines, it may -- you know, if they're located in a different geographical area, that number may go up.

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MR. HUGHES: That's all.

EXAMINATION

BY JUDGE SLAVIN:

Q. For a change, my question is very simple. Noise reduction, what's the O? Operation?

A. Operation.

JUDGE SLAVIN: Thanks.

Mr. Pratt?

MR. PRATT: Can you hear me good?

JUDGE SLAVIN: Yeah.

MR. PRATT: Good.

EXAMINATION

BY MR. PRATT:

Q. When you did your ambient sound study, what were the conditions of the windmills up there? Were they running at full capacity? Were they still? Do you know?

A. They were in operation. I can't speak specifically to what levels they were operating at, but they were in operation. Although, you know, as any random day, some may not be operating; most were.

Q. So now that you have that study, how does that fall with what you're going to expect for the

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sound level with the new ones? Is it higher -- a base level higher?

A. We did not run a comparison at those specific measurement points. You know, some of the measurement points were pretty far away from any of the residences or the existing turbines. So we weren't really taking samplings to understand what the existing turbines were putting out but rather what's the existing ambient environment in the area.

MR. PRATT: Okay. No other questions. Thanks.

JUDGE SLAVIN: All right. Keeping it in the room where it happened, Interested Parties, anybody got a question? The two of you, either of you, raise your hands.

All right. Remember, we're a new day. So give us your name and where you live in relation to the proposed project.

MS. KITRAL: Lorraine Kitral, 2180 Richardson Road. I'll have one directly across from my house. Actually, there's three in a row.

JUDGE SLAVIN: Go ahead and ask.

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EXAMINATION

BY MS. KITRAL:

Q. So when you put the new windmills up or turbines up and there's a problem with noise, how are we supposed to go about notifying or getting somebody out to look at it?

A. I believe there is a complaint component.

Q. Okay. So that would be a complaint?

A. Correct.

MS. KITRAL: Okay. That's -- no questions.

JUDGE SLAVIN: All right. Sir? Anybody else?

MR. KLEIN: Yes. Doug Klein. I would be an adjacent landowner.

EXAMINATION

BY MR. KLEIN:

Q. And maybe that answers my question there, she did, but is there continuous monitoring of the noise level once they're up?

A. I don't believe there's a requirement in the ordinance for a continuous monitoring.

MR. KLEIN: That's all.

JUDGE SLAVIN: Okay. On Zoom, any

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Interested Party with a question?

Since there's only one Interested Party, if you have a question, say, Yes, I do.

MS. MAUCH: Yes, I do, please.

JUDGE SLAVIN: Go ahead and ask.

MS. MAUCH: This is Mary Doughty Mauch. We own 111 acres three-quarters mile long on Route 251.

We intended to put an airfield in and didn't know about the turbines going in the first time, and went up to see the property and there were wind turbines on both ends. So that property value is now --

JUDGE SLAVIN: That's a speech. Do you have any questions of this witness?

MS. MAUCH: I'm sorry.

EXAMINATION

BY MS. MAUCH:

A. Mr. Brewe stated that the turbines are slowed down if it exceeds sound limits. Who is monitoring the sound limits? You just said that there aren't active monitoring --

JUDGE SLAVIN: You can only ask him one question at a time. Just ask him a question. I

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know it's hard. You're not used to it.
Q. (By Ms. Mauch:) Who is monitoring the sound levels to do the slowdown when needed?
JUDGE SLAVIN: Bingo.
A. So the slowdown would be, or the NRO operation, would be determined prior to by acoustical studies to determine which ones would require that to comply with the IPCB rules.
Q. (By Ms. Mauch:) So if the conditions changed from what you did the study on, there is no monitoring then if that sound level is higher; is that correct?
A. To the best of my knowledge, there is no monitoring requirement in the County Code.
Q. Okay. So you stated that the turbines are slowed down if exceeding sound limits. Well, if the conditions are such that it's exceeding sound limits, how do residents get a slowdown to mitigate the sound?
A. That would probably have to go through a complaint system, and that's the best I can answer that question as far as --
Q. All right. So you stated that the turbines are slowed down if exceeding sound limits. So in

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other words, there's not a process in place and there's not monitoring in place to know if they're exceeding the sound limits, correct?

MR. BARRY: Okay. Judge, if I can just -- it's not an objection, but he didn't say that the turbines will be slowed down if they're violating the limits. He said if the model shows there will be a violation if the machine operates at full capacity, then it will be operated in NRO mode to make sure that it doesn't violate the limits. Because under the Pollution Control Board Rules, the project is not allowed to violate the limits at any time.

JUDGE SLAVIN: I'm not sure that's an objection, but based on that, do you want to rephrase your question?

MS. MAUCH: No, thank you. I'll save it for the rest of the testimony that's more relevant. Thank you.

JUDGE SLAVIN: Okay. Very good. You may step down.

THE WITNESS: Thank you very much.

JUDGE SLAVIN: I am marking Mr. Brewe's -- hard copy of Mr. Brewe's PowerPoint as

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Petitioner Number 3, and it's submitted.

(Petitioner's Exhibit Number 3 marked for identification and admitted into evidence.)

JUDGE SLAVIN: And you may continue, Mr. Barry.

MR. BARRY: Okay. The next witness we'd like to call is Ella Rose.

While she's coming up to the stand, if you can please load the second PowerPoint presentation?

(Ella Rose was duly sworn.)

JUDGE SLAVIN: Have a seat.

MR. BARRY: If you would go ahead and move it to the next slide, please.

ELLA ROSE,

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

DIRECT EXAMINATION

BY MR. BARRY:

Q. All right. Good evening, Ms. Rose.

A. Good evening.

Q. Could you state your name for the record.

A. Ella Rose. Spelled, first name, E-L-L-A, last

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name, R-O-S-E.
Q. And could you tell us a little bit about your background, please.
A. I am a registered professional engineer in Montana and Missouri. I have eight years of experience in renewable energy projects, ranging from 50 megawatts to 1500 megawatts in size.
Q. And who's your employer?
A. Burns & McDonnell.
Q. What's your position at Burns & McDonnell?
A. I am a project manager in our consulting arm for renewable energy projects.
Q. And have you prepared shadow flicker and decommissioning studies or been involved in the preparation of such studies for wind projects in Illinois before?
A. Yes.
Q. Are you familiar with the repower -- or the proposed repower of the GSG Wind Project?
A. Yes, I am familiar with the repowered GSG Wind Project, and prepared -- under my direction, a shadow flicker study was prepared, as well as the decommissioning plan for this project.
Q. And incidentally, have you worked on any other

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repowered wind projects before?
A. Yes.
MR. BARRY: All right. Let's go to the next -- one more. Thank you.
Q. (By Mr. Barry:) All right. Ms. Rose, are you familiar with the limitations imposed by Lee County Zoning Code on shadow flicker from wind farms?
A. Yes, I am.
Q. And can you tell us what limits the County Zoning Code imposes on shadow flicker?
A. Generally speaking, shadow flicker is not regulated in any applicable State law or federal law. Lee County Zoning Ordinance generally limits shadow flicker on any nonparticipating residents to 30 hours per year, as well as requests commercially reasonable efforts that you -- to be used to remedy shadow flicker on residences that may be impacted between 10 and 30 hours per year, and that is nonparticipating residences.
Q. All right. Thank you.
And I think you already mentioned this, but did you perform or cause to be performed a

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shadow flicker study that examined the projected shadow flicker that may result from the operation of wind turbines at the repowered GSG Wind Project?

A. Yes, I did.

Q. All right. I think you have got some slides that discuss the study's results. So if we can move to the next slide and if you could walk through those.

But before we do that, can you tell us in advance what the study concluded?

A. Generally the study concluded that of the 512 residences modeled in the study, just one was found to have a shadow flicker impact over 30 hours per year, and further, that 10 -- that is a nonparticipating residence impact.

Further, 10 residences were found to have between 10 and 30 hours per year of shadow flicker as modeled in the study.

Q. And is the study you caused to be prepared or prepared Appendix H to the application?

A. Yes, it is.

Q. Again, if you can please walk through the slides.

A. Thank you.

So this is a quick overview of shadow flicker. Shadow flicker has to have a couple conditions in order for shadow flicker to actually occur. It occurs when the turbine blades are spinning and pass in front of the sun, creating an alternating light and darkness, perceived as a shadow flicker at a particular residence.

Like I said, a couple things need to happen in order for shadow flicker to actually occur. One, it has to be sunny out. Two, the turbine has to be in operation. And there can be no obstructions between the receiver, the residence, in the line of the site.

Shadow flicker primarily occurs during certain times of days and certain seasons, primarily when the sun is low in the horizon, as in -- typically in the midwest here, in the winter months, or in the early hours of the morning or in the early hours of evening.

Next slide.

To perform the study, we use an industry standard modeling platform called WindPRO. It

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studies the -- or models the sun's path during every minute of the year. And the results of that model are aggregated by the residence for the entire year.

Next slide.

This is a summary of the modeling parameters and inputs for the study. For Lee County, we modeled 13 wind turbines. That is the GE 3.4-140. As Ian had noted earlier in his testimony, the GE 3.4-140 was the most accurate data we had at the time of studying this layout, and so that is what was utilized as part of the study, and we would have to remodel anything based on that final layout.

The residence coordinates are input into the study. There's 512 models. There was a couple residences that were modeled with obstacles, and the remainder of the houses were modeled in "greenhouse mode," and that is that the location is essentially a glass house, so no obstruction to that shadow flicker. It's a more conservative approach.

Next slide.

The turbine dimensions were included in

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the study, including a hub height of 98 meters and a rotor diameter of 140 meters.

And the turbine operation is a combined factor of the wind data from the site, as well as the wind turbine's power curve.

Next slide.

As mentioned, 16 residences were modeled using obstacles. That is trees and buildings, anything that would get in the way of the flicker and the residence perceiving that flicker.

An initial study was run to identify what residences might be greater than ten hours per year of shadow flicker. And certain residences, based on that study, were modeled with obstacles.

Again, terrain inputs include resolution of 10-meter contours based on the USGS National Elevation Dataset. If you have a turbine higher up, if we're looking at that line of sight, those different elevations will impact how much shadow flicker might be perceived at any particular location.

Next slide.

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The flicker relevance and sunshine has a really big impact on this. Flicker is essentially imperceptible at approximately 10 rotor diameters, or 1400 meters in this case, and that is 140 meters of the rotor diameter times 10.

The sunshine probability, information is utilized to predict if it's sunny enough for shadow flicker to occur. So that sun obstruction needs to be over 20 percent, and the sun angle has to be greater than 3 degrees from the horizon. Less than 3 degrees and the light is diffused and shadow is essentially imperceptible.

Next slide.

The results of the model are aggregated in WindPRO again by the residences. They're expressed visually and numerically. So we have tabular results at all of the residences modeled. The results of that visually include what we call a butterfly shape, and that is caused by the -- both the predominate wind direction and the position of the sun. So this shape might look a little bit different if it

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were studied in Florida versus here in Illinois.

And this butterfly shape is really important because flicker impacts vary greatly based on the house's location relative to that turbine.

In this particular example, this is not a turbine used in the study. This is just a visual example. You can imagine if there was a house directly south of the example here, that it would be a lot less likely to have shadow flicker impact versus if a house was located directly to the east or west of that wind turbine.

Next slide.

Further results include calendar output, which helps us describe what times of day and times of year the shadow flicker might occur, might be possible to occur at any residence.

In this example here, you can see in the early evening and early morning hours is when that shadow flicker is being modeled to occur. The different colors are associated with shadow flicker being perceived by different wind turbines in that particular study for this

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example.

Next slide -- oop. Whoever is doing the slides is very good.

So based on the conservative modeling inputs into the study and the 512 residences modeled, as mentioned, we found one nonparticipating residence which was indicated to have greater than 30 hours of shadow flicker per year. It is my understanding that that particular landowner has been consulted and is going to enter into a waiver agreement for the project.

Further, there has been ten nonparticipating residences found to potentially experience between 10 and 30 hours per year.

Next slide.

Regardless of the model results, shadow flicker can be mitigated. Mitigation techniques include micrositing. That is moving the turbines around in location to get that shadow flicker minimized or mitigated. And insulation of blinds, curtains, awnings, planting of trees or vegetation, modeling of the existing obstructions, barns, trees, vegetation, as well

as a regulated turbine operation. And regulated turbine operation can be modeled -- that can be controlled based on the wind parameters and direction and sunshine at a particular project, if that's something that the project needs.

And that concludes my slides for shadow flicker.

Q. (By Mr. Barry:) All right. Are you ready to switch gears and put on your decommissioning hat?

A. Yes, I am.

Q. All right. So the decommissioning plan for the proposed repower of the GSG Wind Project was prepared under your direction, correct?

A. That is correct.

Q. And is the decommissioning plan that was prepared under your direction Appendix E to the application materials?

A. Yes.

Q. Are you familiar with the Lee County Wind Ordinance's provisions relating to decommissioning?

A. Yes, I am.

Q. Is the decommissioning plan that was prepared

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under your direction -- and that's Exhibit E to the application -- consistent with Lee County's decommissioning provisions?

A. Yes, it is.

Q. Okay. I know you have some more slides. These are on decommissioning. So at this time would you please discuss the plan and the methodology you used to prepare it?

A. Yes. As mentioned, the Lee County Wind Ordinance does regulate the decommissioning plan to provide guidance to that plan in the Ordinance. Generally speaking, prior to issuance of building permits, a decommissioning plan shall be submitted to the County Zoning Administrator.

The facilities shall be removed to a depth of 5 feet below grade.

Next slide.

This is a summary of the inputs and tools utilized in preparation of the plant. We use a proprietary spreadsheet model that inputs labor costs, equipment rental costs, hauling disposal and scrap values.

We take into consideration the wind

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turbine characteristics from the wind turbine manufacturer, including component weights, dimensions and content, especially metals.

And we have discussions on -- with the demolition contractors regarding that plan.

Labor and machinery costs are estimated using the RS Means Heavy Construction Cost Index. Costs are indexed to local markets to be more site specific. In this case, LaSalle, Illinois, was used as that cost index.

Scrap values are taken as a 12-month trailing average from the American Metal Market Report, and indexed to the nearest trading hub. In this case, Chicago was utilized.

And a local company is contacted to estimate landfill tipping charges. In this case, JKS Ventures Landfill was utilized in this study.

Next slide.

An overview of the decommissioning plan. The equipment -- or the removal includes:

Above-grade equipment and structures;

And foundations less than 5 feet below grade;

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Roads, turning radii, crushed rock surfacing or other surface improvements would be removed.

Equipment and materials are recycled where possible.

Equipment is considered as scrap. No resale value of any equipment is considered as part of the plan, which is a conservative approach.

And re-use may be considered where possible. For instance, the crushed rock surfacing may be -- have some value in local projects.

The plan considered environmental cleanup and restoration. This might include some potential oil spills that need to be removed per applicable regulations properly.

And then the land is restored back to its pre-construction condition. Some surface grading would be performed, and reseeding at the project.

Q. Ms. Rose, what is the assumed technique for removal of the equipment that's -- that was addressed by the plan?

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A. In my next slide, it will show you that. Our decommissioning approach is deconstruction. So for the wind turbines and met tower, a crane and crew would be utilized to remove the turbine blades, nacelles, the turbine towers and the met towers.

The blades are cut into manageable-sized pieces and hauled off to a landfill for disposal.

Equipment inside the nacelle will be processed onsite and loaded onto trucks for sale as scrap.

The wind turbine towers and the met tower would be processed, removed -- deconstructed and removed, processed onsite and loaded onto trucks for sale as scrap.

Foundations are removed using a demo crew and a jackhammer to a depth of 5 feet below grade.

And the concrete rubble would be loaded into trucks and sent to a landfill for disposal.

The roads and roadways would be reclaimed with an excavator, the material loaded into trucks and hauled away for disposal.

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Again, noting that this is a common material that could be used as reuse elsewhere.

Next slide.

The electrical collection system that is buried underground connecting between the wind turbines is expected to be buried at least 5 feet below grade and will therefore be retired in place.

Further, the repower project expects to use certain amounts of the underground cable that are currently installed at 3.5 feet. Through the amendment to the AIMA, the Department of Agriculture has approved to allow those existing cables to be retired in place for the repowered project.

The O&M building utilized for the project is expected to be demolished with a demolition crew. Any salvageable material would be processed onsite and loaded into a truck for sale of scrap. All material would be considered debris and disposed of at a local landfill.

The substation and transmission lines of the project, these facilities are located in LaSalle County and therefore not included in the

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decommissioning plan for Lee County. Those facilities will be addressed in that plan for the appropriate governing agencies.

Next slide.

For the decommissioning cost estimate as prepared under this plan, based on the 13 GE3.4-140 turbines at a 98 meter hub height, and including 5 percent owner indirects and 20 percent contingency, the total estimated gross cost for the project for decommissioning of the repower wind project is $2,456,000, with an estimated scrap value of $1,716,000, bringing a total net cost of $740,000, or $56,923 on a per-turbine basis.

That concludes my slide for the decommissioning plan.

JUDGE SLAVIN: All right.

Q. (By Mr. Barry:) Ms. Rose --

MR. BARRY: I have one more question.

JUDGE SLAVIN: Oh, sure.

Q. (By Mr. Barry:) A couple slides back you mentioned the AIMA with the Illinois Department of Agriculture. Is the decommissioning plan that's Appendix E to the application, was it

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prepared in compliance with and does it comply with the AIMA that was entered into by the project with the Illinois Department of Agriculture?

A. Yes, it was and it does.

MR. BARRY: No further questions at this time.

JUDGE SLAVIN: All right. Back around the horn.

Mr. Boonstra?

STATES ATTORNEY BOONSTRA: No, sir. Thank you.

JUDGE SLAVIN: Ms. Henkel?

MS. HENKEL: None. Thank you.

JUDGE SLAVIN: Ms. Duffy?

MS. DUFFY: No.

JUDGE SLAVIN: Mr. Forster?

MR. FORSTER: No questions.

JUDGE SLAVIN: Mr. Buhrow?

MR. BUHROW: Yes.

EXAMINATION

BY MR. BUHROW:

Q. Ms. Rose, you stated that the current cables are 3 and a half feet deep?

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A. That is my understanding.
Q. And that our Ordinance calls for everything to be removed down to 5 feet deep?
A. That is correct.
Q. Okay. And so I think that's one of the Special Uses that's being addressed, is that -- have you heard that situation? That's been addressed to you?
A. Yes. And as mentioned, that is being addressed under the Amendment 1 to the AIMA.
MR. BARRY: That's also part of Petitioner's request for a Variance from the Ordinance.
Q. (By Mr. Buhrow:) The other thing, currently locally we have -- have you been involved in a decommissioning project yet?
A. I have not been the contractor of decommissioning a wind project, no.
Q. We currently in this area have several companies that grind cement up instead of using a landfill. Have you been familiar with that situation or not yet?
A. I'm not familiar with that particular situation, but it sounds very interesting to me

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personally.

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

JUDGE SLAVIN: Mr. Hughes?

MR. HUGHES: Yes, a few questions.

EXAMINATION

BY MR. HUGHES:

Q. Getting back to the deconstruction of the current site or the decommissioning of it, what -- you have gone through -- you're talking about using a crane and crews to remove the turbines themselves, the turbine towers and the met towers -- first of all, I'm not sure what the met towers are?

A. The met tower is short for meteorological tower.

Q. Oh, okay. Thank you.

A. That's the wind vanes and measurements.

Q. Thank you.

But in the application it talks about two methods: energetic felling and cut-and-fell. Now, where do these fit into this process that you're talking about?

A. Those methods were -- are not part of this particular decommissioning plan. This

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decommissioning plan that I directed the preparation of covers the repowered wind project, not the current decommissioning of the current wind project. So that's why those methods are not addressed in this plan.

Q. Okay. So although you addressed the AIMA for the amended part of decommissioning the existing, you didn't -- you haven't addressed the whole decommissioning of the existing facility in your present -- current presentation?

A. That's correct. The AIMA is -- the AIMA was part of the presentation to cover any facilities that might be reused as part -- from the old project in the repowered project. Those facilities used as part of the repower project would be covered in this particular decommissioning plan.

Q. Okay. Thank you.

Then the next question is, are you prepared to answer any questions on the decommissioning of the existing operation?

A. I am not. That study was prepared by another third party.

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Q. Okay. Are we going to have a witness that can address the decommissioning?

MR. BARRY: We can try to have -- potentially have one of the witnesses, the next witness, address questions about decommissioning and we can -- if that's not sufficient, we have the engineers who prepared the decommissioning study for the existing project. We can make them available, just not tonight.

MR. HUGHES: Okay. Because I think the decommissioning --

JUDGE SLAVIN: Well, let's just --

MR. HUGHES: Okay.

JUDGE SLAVIN: -- stick to questions for her.

MR. HUGHES: Sorry. You're right.

JUDGE SLAVIN: Otherwise it turns into a round table.

MR. HUGHES: Nope, I understand.

Q. (By Mr. Hughes:) Then also in the decommissioning costs, you took estimated scrap value. I assume that is not taking into account the salvageable materials from the equipment itself and you're just talking about other scrap

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because -- I'll stop with that so you can answer that question.

A. The values taken from scrap do include equipment that has scrap value. Although this study wouldn't take into account, but, for example, if cables were going to be removed, because the cost to remove cables is so great, the salvageable value of any materials, i.e., copper or aluminum that might be inside of those cables, the processing of those cables may not be worth it to remove that scrap.

So for the equipment and materials, towers, generators, all the equipment up in the cell, there's a lot of valuable metals in that. So generally speaking, we assume that that scrap has a lot of value. There is a cost to process it, and that's all part of the study.

So, yes, I -- to answer your question, yes, the value of the equipment and materials would be taken into account in that scrap value as part of that cost estimate.

Q. Okay. I might be mistaken, but I was thinking that those scrap values weren't to be included in the offsetting cost of the decommissioning?

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A. I think maybe -- are you referring to the resale of equipment? I mentioned in a slide that all equipment is estimated as a scrap value versus a resale value.

There are aftermarkets for certain components, maybe the substation, possibly medium voltage transformers, those kinds of resales of, you know, potential cost savings are not considered as part of the plan. So that would be a more conservative approach, to just assume everything is scrap versus resold, which might have a higher value.

Q. Okay. I'm not sure I'm comfortable with the technicalities of the Ordinance, so I'll just leave it at that explanation.

A. Okay.

JUDGE SLAVIN: Mr. Pratt?

MR. PRATT: No questions, Your Honor.

JUDGE SLAVIN: All right. And I don't have any.

Interested Parties in the room?

MR. HUGHES: You forgot Mr. Meyer.

JUDGE SLAVIN: Mr. Meyer. Gosh, why do I do that? It's because I went boom, boom, boom

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that time.

EXAMINATION

BY MR. MEYER:

Q. Ms. Rose, how many participating residences have more than 30 hours a year of flicker?

A. I will have to check my study very quickly.

Did you say glare?

Q. No. Flicker.

A. Okay.

Q. You testified there was only one nonparticipating that had more than 30 hours.

A. Correct.

Q. How many participating have more than 30 hours?

A. Let me check my numbers really quick.

Four, per the shadow flicker analysis, which is included in the application.

Q. How much more flicker would there be at a hub height of 105 meters than at 98?

Mr. Wycherly testified last time that the hubs would be as high as 105 meters. Would that change?

A. It would change. What that impact is, I can't tell you today. That would be something that we would have to go back and study that iteration.

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MR. MEYER: Okay. I don't have any other questions.

JUDGE SLAVIN: Okay. Now we're going to Interested Parties in the room. No? No?

How about on Zoom, Interested Parties?

MS. MAUCH: Yeah, please, just a quick question.

JUDGE SLAVIN: Sure.

EXAMINATION

BY MS. MAUCH:

Q. Did I understand correctly that if the value of the buried wires weren't high enough to justify salvaging, does that mean those wires would stay buried? Or is that also going to be decommissioned, no matter the cost?

A. The underground collection cables, as part of the plan, are expected to be retired in place, per the Lee County Zoning Ordinance, where facilities and equipment needs to be removed to anything shallower than 5 feet below grade. With the exception being that the facilities in the existing project that might be reused as part of the repowered wind project would also be retired in place, and that are currently, as the

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information we have, 3.5 feet burial depth for those cables.

So, no, the expectation as part of this plan is that all underground collection cables below 5 feet and those addressed in the Amendment 1 to the AIMA would be retired in place.

Q. Okay. And that is on all participating land, correct? That has nothing to do with nonparticipating properties?

A. The decommissioning plan is for all project facilities. So it is the assumption that if the project facility is located on the land, then that decommissioning plan would apply to that land.

Q. What percentage of the wires are actually buried at the 3.5 feet versus the 5 feet or more?

A. It is my understanding that the existing GSG Wind Project has all of its collection cables buried at 3.5 feet. And any facilities that would be reused as part of the repower project -- I guess if that answers your question, anything that would be used as part of

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the repower project would be at that 3.5 feet.

MS. MAUCH: Thank you.

JUDGE SLAVIN: Is that it then?

All right. You may step down.

MR. BARRY: Could I ask at this time to move into evidence Ms. Rose's presentation? And I know I'm a little tardy on it, but I also ask to move Mr. Brewe's presentation into evidence as well.

JUDGE SLAVIN: You're not tardy because I beat you to the punch on the first one.

On the second one, yes, you ask and you shall receive.

(Petitioner's Exhibit Number 4 marked for identification and admitted into evidence.)

JUDGE SLAVIN: Let's do -- let's take a break. All right. Now is a good time for a break. We'll reconvene at, oh, let's make it 8:15.

(A recess was taken at 8:03 p.m. and proceedings resumed at 8:15 p.m.)

JUDGE SLAVIN: All right. I'll call us

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out of recess.

I have checked tonight's baseball scores, for those of you who care deeply. The White Sox are about ready to win their seventh in a row, and the lowly Cubs are about to lose their second in a row.

All right. Mr. Barry, you may continue.

MR. BARRY: At this time I'd like to call the next witness, Mr. Carter Wells.

CARTER WELLS,

being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BARRY:

Q. Good evening, Mr. Wells.

A. Good evening.

Q. Could you state your name for the record, please, and spell it.

A. Carter Wells. First name is C-A-R-T-E-R, last name, W-E-L-L-S.

Q. Mr. Wells, can you tell us a little bit about your background, please?

A. Yes. So I have a bachelor's degrees in both mechanical engineering and mathematics, and a

Master's Degree in finance, all from Southern Baptist University.

Q. And who is your employer?

A. Leeward Renewable Energy.

Q. What is your position at Leeward Renewable Energy?

A. So I'm a senior development associate and the head developer for the GSG Repower.

Q. And so what is your role in connection with the GSG Wind Project?

A. So I am essentially tasked with, you know, the development of the repower. So that is design, permitting, and then, you know, managing the construction process.

Q. So is it fair to say that you're familiar with the proposed repower of the GSG Wind Project?

A. Yes.

Q. Mr. Wells, can you confirm that the proposed repowered GSG Wind Project will not generate vibration that will adversely affect adjoining properties?

A. I can, yes. Just as the existing project has done, the repower project will not produce vibrations that will adversely affect adjoining

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properties. And this -- you know, the setbacks in the County Ordinance are more than sufficient to ensure that any vibration caused by the turbines will not affect neighboring properties, and this would be confirmed by an engineer, you know, through an engineer's certificate prior to the issuance of the building permits.

Q. As part of the final site plan?

A. That's correct, yes.

Q. Mr. Wells, can you confirm that the operation of the repowered GSG Wind Project will not generate any air pollution?

A. I can, yes. Similar to the existing project, the repowered project will not have any combustion involved with its operation, and therefore will not cause any air pollution from the operation of the turbines.

Q. Mr. Wells, can you confirm that the operation of the proposed repowered GSG Wind Project will not generate any significant odors?

A. Yes. Again, similar to the existing project, there are no -- there's no combustion involved with the operation of the turbines, and therefore it's not expected that any odor will

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be produced by those turbines.
Q. Mr. Wells, can you confirm that the operation of the proposed repowered GSG Wind Project will not generate any electromagnetic radiation that will adversely affect neighboring properties?
A. Yes. Again, similar to the existing project, any electromagnetic radiation or fields that are created from the operation of the turbines will not be -- will not affect neighboring properties to the project.

Again, the setbacks prescribed in the County Ordinance are more than sufficient to ensure that no electromagnetic radiation will affect neighboring properties.
Q. And, Mr. Wells, will the project comply with all applicable State and federal rules relating to electromagnetic radiation, including those of the Federal Communications Commission?
A. It will, yes. And the requirements of the FCC, the Federal Communications Commission, are studied in our communications study, which was submitted as part of the application. And, yes, the project will abide by all State and federal regulations.

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Q. Mr. Wells, will the repowered GSG Wind Project, or the proposed repower, generate any glare or heat that would affect adversely any neighboring properties?
A. It will not, no. Again, similar to the existing project, the turbines will be painted white or another nonobtrusive color to ensure that there's no glare or heat adversely affecting neighboring properties.
Q. Mr. Wells, will the operation of the proposed repowered GSG Wind Project present a significant risk of fire or explosions as it relates to adversely affecting neighboring properties?
A. No, it is not expected that the repower project will be operated with any risk of fire or explosion, and we do not expect there to be any risks involved with that during the operations of the project.
Q. And will the project, if repowered, make sure it will store any flammable or potentially flammable materials more than 400 feet from neighboring properties?
A. That is correct, yes. The project will ensure that all flammable materials are stored greater

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than 400 feet from any neighboring properties.
Q. Mr. Wells, will the repowered GSG Wind Project's operations generate any toxic or noxious material that will be discharged onto adjoining properties?
A. No. The project is not expected to emit any toxic or noxious materials onto neighboring properties. Any toxic materials that are not stored within the turbines themselves for operation -- that being lubricants, grease, oils -- will be stored at the operations and maintenance facility in compliance with State and federal regulations.
Q. And will the repowered project, if it's built, have a spill prevention control and countermeasures plan?
A. It will, yes.
Q. Mr. Wells, will the repowered GSG Wind Project, if built -- how will that project manage waste material -- or will it manage it in a way that it avoids interference with neighboring properties?
A. Yes. So the project will -- has a plan to, you know, manage any waste materials that are

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produced by the project. Any waste materials will be removed from the site and disposed of in accordance to any applicable State or federal regulations.

Q. And incidentally, is the waste handling for the proposed project discussed in the permit application?

A. It is, yes. I believe it's Section 5.2.5.

Q. All right. Mr. Wells, will the repowered -- or excuse me.

Will the proposed repowered GSG Wind Project comply with local State and federal rules regarding the transport, handling, storage and disposal of any hazardous materials connected to the construction, operations or maintenance of the repowered project?

A. It will, yes.

Q. And is that covered in the permit application materials?

A. Yes, I believe also again in Section 5.2.5 of the application.

Q. And will the Applicant provide a written description to Lee County of all materials deemed hazardous materials and their role in the

operations of the repowered GSG project in connection with applications for building permits?

A. Yes, it will.

Q. Mr. Wells, have you had discussions with the Lee County Zoning Officer about whether the Applicant's sound expert is qualified to produce the sound report?

A. I have, yes.

Q. Mr. Wells, Ms. Rose, in her testimony this evening, mentioned a waiver by one of the nonparticipating landowners relating to shadow flicker. Could you please elaborate on that discussion?

A. Yes. So in the shadow flicker report that Ms. Rose spoke about tonight, she identified one residence that exceeded 30 hours of shadow flicker, and I can confirm that we -- the project has executed an impacts agreement with that landowner to waive the limitations to shadow flicker cast onto their property.

Q. Thank you.

Mr. Wells, are you familiar with the decommissioning study that was done for removal

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of the existing project equipment?
A. I am, yes.
Q. Is that study included in the permit application materials?
A. Yes. I believe it is Appendix E.
Q. Thank you, Mr. Wells.

MR. BARRY: Judge, at this time I don't have any additional questions for Mr. Wells.

JUDGE SLAVIN: All right. Around the horn.

Mr. Boonstra?

STATE'S ATTORNEY BOONSTRA: No questions. Thank you.

JUDGE SLAVIN: Ms. Henkel?

EXAMINATION

BY MS. HENKEL:
Q. Just to touch on the Variances that you guys are requesting. For some of these Variances, you have sought landowner waivers to address these Variances; is that correct?
A. Are you referring to the Variances for decommissioning depth of the collection cables?
Q. Well, actually that was going to be my next question. What all areas are landowners

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entering into waivers?
A. So the participating landowners in the project have, you know, signed, as part of their easement, an impact waiver to essentially, you know, waive any requirements for noise or shadow flicker and setbacks, except where otherwise limited by the Ordinance from their residence or property line.
Q. Now, the landowners that will have collection lines left in place on the land, will they be signing waivers as well?
A. So as of now, we haven't had landowners specifically sign a waiver for the retirement-in-place of those collection lines, the existing collection lines. But, you know, in my discussions with landowners -- and this is a discussion that we had with the Department of Agriculture as well -- you know, those original cables that were installed in the project back in 2007, you know, landowners may have installed drain tiles in, on top of, around the existing collection cable. And, you know, I have come to the conclusion, in talking to the landowners in the project that, you know, it is in their best

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interest and their -- they prefer that the cable be retired in place to avoid any unnecessary impacts to the land.

MS. HENKEL: Okay. Thank you.

JUDGE SLAVIN: Ms. Duffy?

MS. DUFFY: No, thank you.

JUDGE SLAVIN: I learned my lesson. I tried to go to the Board in order of seniority, but I am not going to do it anymore because I keep skipping around.

Mr. Forster?

MR. FORSTER: No questions at this time.

JUDGE SLAVIN: Mr. Hughes?

MR. HUGHES: Yes, I have got a variety of them.

EXAMINATION

BY MR. HUGHES:

Q. First one I'll go to is the decommissioning. There is a study in here referencing the existing decommissioning, but I don't see that it draws a specific conclusion. There's two particular methods that it's talking about: the energetic fell and the cut-and-fell.

Has there been any decision as to which

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method is going to be used?
A. So the report outlines, as you said, both the energetic felling and the cut-and-fell method. We are seeking approval to use either one of those options, and we would make a decision as to which method of decommissioning to use prior to application for building permits.
Q. Okay. In the energetic fell method, it talks about the impact from the explosions and the felling and measures it at a thousand feet. Is -- in the -- excuse me.

There's at least one residence then that I saw in your site plan that's only 760 feet from the tower.

JUDGE SLAVIN: Is that a question? Do you agree with that?

MR. HUGHES: Yeah, okay. Thank you.

Q. (By Mr. Hughes:) And do you agree that there's at least one property that's under that 700 -- or that thousand feet?
A. So I haven't looked at the measurement from that residence specifically, but if it is in there, then I recognize that it's in there. In which case, we wouldn't be permitted to use

explosives to decommission that machine.
Q. Okay. So you are looking at using either/or, depending on where a particular tower is and the residences around it?
A. That is correct. We would, you know, seek to use a uniform decommissioning methodology across the entire project for all the turbines, but in specific situations, such as this that you brought up, we would take the necessary adjustments -- make the necessary adjustments to ensure that we're in compliance with the Ordinance.
Q. Okay. Then dealing with setbacks. In your description of the equipment to be used, there is a description of hub height from 107 to 120, correct?
A. I believe that is correct, yes.
Q. And it appears that GE is recommending -- well, it states that the 117 hub height, a tip height of 187 meters. Are you aware of that?
A. I'm not familiar with the machine that you're quoting there, the 117-meter hub height.
Q. It is -- let me see. It is a 3.03-140 wind turbine. And it provides for multiple hub

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heights, but in general it talks about tower -- it will have a hub height of approximately 117 meters, is in development, but the final height will be between 107 to 102. Are you aware of that -- meters?

A. I'm not aware of specifically where that is called out in the Ordinance. I believe the 3.03 machine that you're speaking about there does have a hub height of 105 meters, if I am correct. I believe there was a machine -- one of the machines in there had a rotor radius -- or, sorry, a rotor diameter of 117 meters.

Q. No, it -- it shows a hub height of 117.

A. Hub height of 117?

Q. And maximum tip height of -- or upper tip height of 187.

A. And that's --

JUDGE SLAVIN: Where are we going? Let's just ask a question.

MR. HUGHES: I'm just clarifying the information, because they have talked about multiple pieces of equipment.

Q. (By Mr. Hughes:) So would you agree that at that height, the 1.1 times, which is required,

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for the setbacks in either 1, or 1.1 in many cases, that would be about 677 feet?

A. Yes, so I think the reason I was confused is, what you're referencing is the tip height, not the hub height. So the height being the -- you know, with one of the blades sticking directly up, the measurement from the tip of that blade to the base. And when you refer to hub height, I thought you were referring to the distance from the ground to the nacelle, so the center of the blades.

Q. It has both of those.

A. Okay.

Q. 117 is the hub and 187 is the tip.

So if you're in agreement that the 677 is the 1.1 times, as I was going through the placement, it -- in most cases it shows a -- at a 1.1 radius, it shows at 1.1 times it appears, in most cases, to be about 640 feet in the description of the -- in the project maps.

A. Okay.

Q. If the 1.1 is 677, why in the project maps is it drawn in most cases at 640?

A. So the setbacks that you're seeing in, I

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believe that's Appendix A there, the project maps --

Q. Yup.

A. -- those are the setbacks from the GE 3.6-154 machine. So that is a 154-meter rotor diameter on a 98-meter tower. And I believe -- so the setbacks in Appendix A are consistent with that turbine model, because that is the layout that is displayed there in Appendix A.

Q. But that doesn't appear to be what's put in the application, is it?

A. The turbine used in the Appendix A site layout maps is the 3.6 -- the GE 3.6 machine. So given that this is our preliminary layout, we modeled, you know, the setbacks off of that turbine. There are multiple turbines that are identified as potential candidates to be used in this project.

So if a turbine other than the GE 3.6 machine was selected, we would provide updated setback maps and site layout maps to show compliance with the Ordinance.

Q. And this one may not fall into your -- I'm going to move away from the setbacks. This one

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may not fall into your purview. I missed a chance to talk -- ask Ms. Rose.

But in the modeling for the shadow flicker, they used ten -- ten of the properties were modeled with obstacles, everything else was done in a greenhouse effect. Do you know why those ten were used with obstacles?

A. So I believe the reason obstacles were used in that situation is to create a more accurate representation of the shadow flicker that would occur at that residence. In all other situations, it was modeled as if there were no obstructions and the house was a glass house; meaning, every wall and the roof of the house is all made out of glass.

Q. Greenhouse effect.

A. Yeah.

Q. Do you have any idea what the particular obstacles were that prompted that use on those ten?

A. So I'm not sure what kind of obstacles they were. I know that, you know, satellite imagery was referenced to understand what the obstacles were, whether it was a tree or vegetation, a

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barn. But, you know, the obstacles were modeled based on what is present there.

Q. Okay. One more question, a rather generic one but I think probably important. Is Leeward Renewable Energy, LLC, committed to being bound to all representations made in the application for the GSG Wind Project and statements made under oath during the Zoning Board of Appeals hearing?

A. Yes.

MR. HUGHES: Thank you.

JUDGE SLAVIN: All right. Mr. Buhrow?

MR. BUHROW: Yes.

EXAMINATION

BY MR. BUHROW:

Q. Just a clarification on one of Mr. Hughes' questions. With that situation of being near on the dropping of the towers, you're saying then that you may use both types of felling systems, just depending on the situation that you're involved with?

A. So I believe his original question was directed at the use of explosives in proximity to a residence. But the decommissioning analysis

that was performed for the existing project does outline the direction of felling of the turbines. So the turbines would be knocked over, for lack of a better word, in a controlled way in order to, you know, control the direction in which the turbine falls over.

Q. And the other thing I guess we haven't talked about. When you drop these turbines, are you taking the blades off first or leaving them on?

A. So I'm not, I guess, experienced enough in that operation to understand -- I guess I'm not -- I can't answer that question at this time.

Q. Okay. That's fine.

And you covered some other areas answering Mr. Barry's questions about the certain situations that you probably aren't going to encounter.

What's the type of hazardous materials that you would be using on this project?

A. So the most common hazardous materials that are used for the repower project would be things such as grease, oils, lubricants that are used in the generators of the machines.

MR. BUHROW: All right. That's all.

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Thank you.

JUDGE SLAVIN: It's not going to happen anymore, Mr. Meyer. We're going around the horn in order. So your turn.

MR. MEYER: Thank you.

EXAMINATION

BY MR. MEYER:

Q. How big are the current concrete foundations under the Gamesa generators?

A. So I'm not sure what the exact dimensions of those foundations are, but they are around 50 feet in diameter.

Q. Are you going to reuse any of the existing foundations?

A. No.

MR. MEYER: That's all. Thank you.

JUDGE SLAVIN: Mr. Pratt?

MR. PRATT: No questions.

JUDGE SLAVIN: Interested Parties in the room, raise your hand if you have a question.

Yes, ma'am.

EXAMINATION

BY MS. KITRAL:

Q. If you're going to use --

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JUDGE SLAVIN: We have a record. So you have to --

MS. KITRAL: I'm sorry. Lorraine Kitral.

Q. (By Ms. Kitral:) If you are gong to use explosives, are you going to notify the surrounding landowners when this is going to take place?

A. Yes. There is a requirement in the Ordinance to notify landowners of the use of explosives.

Q. And this is, like, nonparticipating landowners?

A. Correct, yes.

Q. Okay. And then the height of these, is there a -- going to be a better chance of them being hit by lightning?

A. I do not have enough information at this time to answer that question accurately. To my -- I'm not aware of any relationship between tip height of the turbines and likelihood of being struck by lightning, but I'm not an expert in that field.

MS. KITRAL: That's all.

JUDGE SLAVIN: Yes, sir.

MR. KLEIN: Doug Klein.

EXAMINATION

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BY MR. KLEIN:

Q. Does your study have anything to do with, like, electrical interference with television, cell phones, Broadband?

A. Yes. So we did have a communications study performed based on the repower project and, you know, it actually utilized all 24 of the potential turbine sites that we identified that my colleague, John, had up on the screen here on Wednesday night.

And, yes, we did have a communications study performed which addressed things like TV signals, cell phone signals, you know, emergency communication signals. I am not sure which appendix that is in the application, but it was submitted as part of the application package.

Q. Presently I have two 2-megawatt towers behind me and likely there's going to be one 4-megawatt tower to replace them. Is there a proportionate increase in interference with the size of the tower?

A. So to my knowledge, the interference is not based on the generator size, as you're referring to. So an increase from a 2-megawatt machine

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to, say, a 3.6 or a 4.5 to my knowledge does not have any effect on communications interference.

Communications interference is more affected by the physical size of the turbines. So that would be the tip height and the rotor radius -- or the rotor diameter of the turbines.

Q. So the amount of interference would be proportionate to what the present tip height is to what it is going to go to now?

A. So I don't think it would be accurate to say that the level of interference is proportionate to the size of the turbine, because there are a lot of other factors that play into any interference that occurs. You know, for some signals it's a line of sight.

For instance, microwave beam paths need a line of sight from, you know, two of the towers. So that is something that we take into consideration when designing the layout for the project, is we'll look at beam paths between towers so that the signals that are being transmitted between two towers, there's a width and a height to those beam paths, or almost like a circular tube, essentially, invisible running

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through the air. So those are considered when designing the layout to ensure that turbines won't interfere with that line of sight path between towers.

MR. KLEIN: Thank you.

JUDGE SLAVIN: Is that it then? Fair enough.

All right. On Zoom, Interested Party, questions?

MS. MAUCH: Yes, please.

JUDGE SLAVIN: Start with your name, please.

MS. MAUCH: Mary Mauch.

EXAMINATION

BY MS. MAUCH:

Q. Just one quick question. What escrow account or bond is actually in place to guarantee that Leeward, Limited Liability Corporation, will actually execute the decommissioning plan when or if it's discovered that the cost of decommissioning far exceeds the actual salvageable value?

A. So it's my understanding -- well, first, the decommissioning plan that was presented by

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Ms. Rose, you know, takes into account all the factors to determine the net decommissioning costs of the project.

In the County Ordinance, that decommissioning cost is updated periodically throughout the life of the project to make sure that the adequate amount of money is in the escrow account to decommission the project.

Q. That's excellent.

So Lee County holds that escrow account or that's out of the hands of Leeward, LLC?

A. That's correct, yes, to my knowledge.

MS. MAUCH: Thank you.

JUDGE SLAVIN: Meaning, that's it?

MS. MAUCH: Yes. Thank you.

JUDGE SLAVIN: I have one question.

EXAMINATION

BY JUDGE SLAVIN:

Q. Doesn't the existing wind project, not the proposed repower, the existing one, have a decommissioning plan attached to it --

A. So it is my understanding, after --

Q. -- or not?

A. It is my understanding, after speaking with the

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Zoning Administrator, that there is not a decommissioning plan currently in place for the existing project. And that has to do with, you know, the Ordinance that the original project was permitted under.

Q. Okay. So you are then -- am I correct that you are then assuming that you fall under the new Ordinance, which a decommissioning plan for the existing project would then be approved by the Zoning Officer and I think County engineer; is that right?

A. I guess I -- I'm not sure what Ordinance would be governing --

Q. That was kind of an unfair question.

MR. BARRY: Yeah, I don't know, I mean, he --

JUDGE SLAVIN: That's unfair.

MR. BARRY: That question may call for a legal conclusion.

JUDGE SLAVIN: Yeah, you're right.

Q. (By Judge Slavin:) So what protocol do you -- as you sit there now, as the project development manager, do you intend to use to get the existing project decommissioned?

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A. Are you asking what our preferred methodology for decommissioning is?
Q. No. What -- I mean, you can't just go out there and start hacking things down. What approval protocol do you intend to go through, as you sit there now, to get the approval to decommission the present project?
A. So we've submitted a decommissioning analysis as part of the decommissioning plan for the existing project in our permit application which outlines two methodologies for decommissioning, and we would ask approval for -- you know, to use either of those decommissioning methodologies.
Q. Approval from whom?
A. So approval of the application would -- we would ask for that approval as part of approval of our Special Use Permit.

JUDGE SLAVIN: All right. Based on my questions, Mr. Barry?

MR. BARRY: I have no further questions for Mr. Wells.

JUDGE SLAVIN: All right. You may step down. Thank you.

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THE WITNESS: Thank you.

JUDGE SLAVIN: Okay. Further evidence, Mr. Barry?

MR. BARRY: Well, I guess the question I have is less for Your Honor than perhaps for the Board members. As I indicated earlier when Mr. Hughes inquired about the decommissioning plan or a study for the existing project, we have an engineering firm that prepared that plan and we -- the Applicant is certainly willing to make them available, should the Board want to ask further questions.

We just can't -- they're not available tonight.

JUDGE SLAVIN: I'm hoping you'll appreciate this. I don't want to put that burden on the Board. I'm going to put that burden on you to decide whether you want to produce that or not.

If you want to take a few minutes to consult with your client, that's fine. That's fine. I understand. This sort of came out of the blue.

So if -- we'll take five.

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MR. BARRY: Okay. Thanks.

(A recess was taken at 8:52 p.m. and proceedings resumed at 8:56 p.m.)

JUDGE SLAVIN: All right. On the record.

MR. BARRY: We're going to be presenting one more witness.

JUDGE SLAVIN: Okay.

MR. BARRY: And they're not available this evening.

JUDGE SLAVIN: And without being kind of pushy about it, do you know when they're going to be available?

MR. BARRY: Oh. Yeah, I think they're available Wednesday or Thursday, whatever --

MR. WELLS: Wednesday or Thursday.

MR. BARRY: Wednesday or Thursday.

JUDGE SLAVIN: This is going to create some other scheduling problems, but so it goes. I understand. You've got your opportunity.

So I don't want to ask any Interested Parties to present any evidence before you're finished.

So I guess we're for tonight finne,

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continued until, not tomorrow night, but Wednesday night, the 11th, at 7 o'clock. Be here at the old ballpark.

MR. HUGHES: Wednesday, not Thursday?

JUDGE SLAVIN: Wednesday now because now we're still in the midst of presenting evidence. We're going to have to talk about some other dates.

COURT REPORTER: Can you ask who's going to be available? Because there were two that were not available, according to my notes.

JUDGE SLAVIN: Yeah, I'll make sure. So we're talking about Wednesday, the 11th. Two days, 48 hours, from now. I have got the courtroom as being available.

And I have got Mr. Forster is available, right?

MR. FORSTER: Yes.

JUDGE SLAVIN: Mr. Buhrow?

MR. BUHROW: Yes.

JUDGE SLAVIN: Mr. Pratt?

MR. PRATT: I'm available.

JUDGE SLAVIN: Mr. Hughes?

MR. HUGHES: I believe so.

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JUDGE SLAVIN: And, Mr. Meyer?

MR. MEYER: I said no originally.

JUDGE SLAVIN: You did. You did, and I have that "no" circled.

MR. HUGHES: I think I may have been a question mark.

JUDGE SLAVIN: No, I have you as a "Y," but that doesn't mean -- I could be wrong.

Ms. Duffy, Ms. Henkel, you're available? Ms. Henkel is not?

MS. HENKEL: I am not.

JUDGE SLAVIN: How about you, Mr. Boonstra?

STATE'S ATTORNEY BOONSTRA: I can be, yeah.

JUDGE SLAVIN: Okay.

MS. DUFFY: Thursday is better though, right?

STATE'S ATTORNEY BOONSTRA: Yeah, Thursday would be fantastic.

JUDGE SLAVIN: I mean, if you guys want to do Thursday? That's fine with me. I -- we'll just push it back farther, and that's fine.

All right. Let's go to Thursday. The

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courtroom is available.

How about you, Mr. Forster?

MR. FORSTER: Yes.

JUDGE SLAVIN: Mr. Buhrow?

MR. BUHROW: Yes.

JUDGE SLAVIN: Mr. Pratt?

MR. PRATT: Yes.

JUDGE SLAVIN: Mr. Hughes?

MR. HUGHES: Yes.

JUDGE SLAVIN: Mr. Meyer?

MR. MEYER: Yes.

JUDGE SLAVIN: Ms. Duffy?

MS. DUFFY: Yes.

JUDGE SLAVIN: Ms. Henkel?

MS. HENKEL: Yes.

JUDGE SLAVIN: Mr. Boonstra?

STATE'S ATTORNEY BOONSTRA: Yes.

JUDGE SLAVIN: Mr. Barry, you and yours?

MR. BARRY: Yes.

JUDGE SLAVIN: Callie?

COURT REPORTER: Yes.

JUDGE SLAVIN: I'm here.

All right. Thursday it is. Thursday at 7 o'clock. Be here or be square.

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MR. BARRY: Thank you.

JUDGE SLAVIN: No, thank you.

(The hearing was recessed at 9:01 p.m.)

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Now on this 9th day of May, A.D., 2022, I do signify that the foregoing testimony was given before the Lee County Zoning Board of Appeals.

Bruce Forster, Chairman

Dee Duffy,
Zoning Enforcement Officer

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