

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 5th day
of January, A.D., 2021,
before the Lee County
Zoning Board of Appeals

Present:

Mike Pratt (via Zoom)
Craig Buhrow
Gene Bothe
Glen Hughes
Bruce Forster, Chairman

Alice Henkel, Secretary
Dee Duffy, Zoning Enforcement Officer

Honorable Judge Timothy Slavin, Facilitator

1 APPEARANCES:

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5
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EXHIBITS

Exhibit Marked

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End 65

1 JUDGE SLAVIN: All right. I call out of
2 recess Lee County Zoning Board of Appeals
3 hearing on Petition Number 20-P-1557, BSW DevCo,
4 LLC's, petition for a Special Use Permit to
5 construct a wind energy system in portions of
6 May and East Grove Townships here in Lee County.

7 In case you -- Interested Parties, you are
8 not joining us presently on Zoom and are
9 scrambling to find a way or remember a way to
10 get on Zoom, the Zoom meeting ID is
11 915-3923-9154, and the password is 209840.

12 If you want to just watch and listen to us
13 all on YouTube, you can go to your computer or
14 your cell phone, use your browser and go to
15 www.youtube.com, and in the search bar type "Lee
16 County IL," short for Illinois, I-L, "Zoning
17 Board of Appeals," space between each word, no
18 need to be concerned with upper or lower cases,
19 and find the session. The session date should
20 pop up, highlight the one you want, and there we
21 are.

22 If you need technical assistance for any
23 of the above, you can feel free to call
24 815.973.3449.

In Totidem Verbis, LLC (ITV)
815.453.2260

In Totidem Verbis, LLC (ITV)

1 First order of business is always taking
2 stock of who is present. I note the Chair of
3 the Zoning Board of Appeals, Mr. Forster is
4 present, as is the Vice Chair, Mr. Buhrow.
5 Mr. Bothe is present, Mr. Hughes is present in
6 person. I note on the Zoom screen that
7 Mr. Pratt is present, as well.

8 Present on behalf of the Petitioner is its
9 attorney, Mr. Streicker. There are two
10 Petitioner's reps in the Old Lee County
11 Courthouse Third Floor Courtroom.

12 Our IT expert, Alice, is here. So is our
13 court reporter, Callie. I'm here. Three, four,
14 five, six, seven, eight, nine -- that makes,
15 once again, ten in the actual hearing room,
16 which is the max allowed under the governor's
17 mit- -- present mitigation protocols for our
18 Region 1.

19 Present on the edges but outside of the
20 hearing room are the Zoning Officer, Ms. Duffy;
21 State's Attorney, Mr. Boonstra. I saw
22 Mr. McBride, the IT expert. That leaves us with
23 13 people total here in the third -- on the
24 third Floor of the courthouse. I'm told that

1 there are no Interested Parties either in the
2 rear former jury deliberation room or in the
3 first floor lobby.

4 All right. Enough of that. When last we
5 left off, Mr. Streicker, on behalf of the
6 Petitioner, you were presenting evidence, and
7 you may please continue.

8 MR. STREICKER: Thank you, Judge, and
9 thank you to the members of the Zoning Board of
10 Appeals and Lee County staff that are here
11 tonight.

12 We have two witnesses for you this
13 evening.

14 As you know, we've mentioned several times
15 that one of the real benefits that we believe of
16 the repowering is that these newer, more modern
17 turbines will be quieter at lower speeds. So
18 tonight you will get to hear from the expert,
19 Chris Howell, who is to my right, from Burns &
20 McDonnell, and then also, who will be joining us
21 virtually, Aaron Anderson, also from Burns &
22 McDonnell, and Aaron has done the shadow flicker
23 study for the project -- or for the repowering,
24 I should say. Specifically the repowering.

1 So I think that you will find both of
2 their testimony quite interesting.

3 Judge, at this time I would like to call
4 Chris Howell.

5 JUDGE SLAVIN: All right. Mr. Howell, if
6 you would like to step up and raise your -- not
7 step up. Right there is fine. Raise your right
8 hand.

9 (Chris Howell was duly sworn.)

10 JUDGE SLAVIN: We have been having people
11 just sit there, it's just as easy.

12 In this facility, just a word of advice,
13 you almost have to swallow the microphone. And
14 it's important because, obviously, so the ten
15 people in here can hear you, but the Zoom
16 people, the sound system feeds into that.

17 THE WITNESS: I'll do my best.

18 CHRIS HOWELL,
19 having been first duly sworn, was examined and
20 testified as follows:

21 DIRECT EXAMINATION

22 BY MR. STREICKER:

23 Q. Mr. Howell, can you please state your name and
24 spell it for the record.

1 A. Yes. It's Chris Howell, C-H-R-I-S,
2 H-O-W-E-L-L.

3 Q. And can you just state your current business
4 address?

5 A. Yes. My business address is 9400 Ward Parkway,
6 Kansas City, Missouri, 64114.

7 Q. And can you state for the members your relevant
8 educational history?

9 A. Yes. I have a bachelor's degree in mechanical
10 engineering from Kansas State University. I
11 took graduate level courses in acoustics. I am
12 an elected member of the Institute of Noise
13 Control Engineering, where they do a thorough
14 review of your academic and professional
15 background, and you have to have been elected by
16 a current sitting member as well.

17 Q. And how are you currently employed?

18 A. I am a project manager in our environmental
19 services group.

20 Q. And what are your job duties in that position?

21 A. I oversee large permitting efforts. And
22 specifically for this project, I oversaw all of
23 the acoustical studies that were performed.

24 Q. Okay. So you've worked on wind projects in the

1 past?

2 A. Correct. We have done multiple gigawatts of
3 wind farms throughout the United States.

4 Q. And your work on those private projects has all
5 been geared towards sound and noise
6 considerations?

7 A. Correct.

8 Q. How long have you been with Burns & McDonnell?

9 A. I have been with Burns & McDonnell for over 18
10 years at this point, and I have got over 20
11 years of consulting experience.

12 Q. Okay. And, sir, if you could just, just
13 briefly describe for the Board members what the
14 purpose of your testimony is here today.

15 A. Yeah. Real briefly I will go through the
16 process of the noise study, how it was set up,
17 how we performed it, and then the results of
18 that noise study.

19 Q. And then you prepared a presentation to give
20 this evening?

21 A. Yes, I have.

22 (Petitioner's Exhibit Number 10
23 marked for identification.)

24 Q. Mr. Howell, I'm going to present you with

1 what's been -- I'm going to mark as Petitioner's
2 Exhibit 10. If you could take a second to
3 review that, please.

4 JUDGE SLAVIN: I think it's 9.

5 COURT REPORTER: It's 10.

6 MR. STREICKER: Judge, I had Terry
7 VanDeWalle's presentation marked as 9.

8 COURT REPORTER: Correct.

9 JUDGE SLAVIN: Okay.

10 Q. (By Mr. Streicker:) Mr. Howell, is this the
11 presentation you prepared this evening?

12 A. Yes, it appears so.

13 Q. All right. Thank you very much.

14 And am I correct, Burns & McDonnell was
15 the entity that assisted the Applicant in
16 preparing the overall Lee County SUP
17 application; is that correct?

18 A. Correct.

19 Q. And I have in front of you what's been marked
20 as Petitioner's Exhibit 1. Is that the
21 application?

22 A. Yes.

23 Q. And are you familiar with this application?

24 A. I am familiar.

1 Q. Okay. If I'm correct, there's --

2 MR. HUGHES: Speak up. I could barely
3 hear those last two answers.

4 A. Yes, this appears to be the Special Use
5 application.

6 Q. (By Mr. Streicker:) I'm just going to turn
7 quickly to Section 4.3.12, and that's entitled,
8 Noise Levels. Is that the specific section of
9 the application you had input into?

10 A. Yes, it is.

11 Q. And, sir, is your CV included in the
12 application?

13 A. Yes, my CV is included. It's pretty outdated
14 though. I have got more than four years and an
15 additional 20 to 30 projects of wind farms since
16 this.

17 Q. So it's your CV, plus four more years of
18 relevant experience?

19 A. Correct.

20 Q. And then lastly, Mr. Howell, if I could turn
21 your attention to Exhibit J of Petitioner's
22 Exhibit 1. Are you familiar with that, sir?

23 A. Yes, I am.

24 Q. Okay. And what is that exhibit?

1 A. That is the sound study that we prepared.

2 Q. Okay. And that was prepared under your
3 supervision?

4 A. Correct.

5 Q. All right. Thank you, Mr. Howell.

6 At this point, I think it makes sense to
7 turn the presentation over to you and you can
8 testify off your PowerPoint presentation and
9 brief the Board on what you studied and what you
10 determined.

11 A. Great. Thank you.

12 All right. Thank you, everybody.

13 You can go ahead and go skip forward a
14 little bit. You can go ahead and skip to the
15 next slide.

16 JUDGE SLAVIN: You are going to have to
17 keep your voice up.

18 THE WITNESS: Yeah, sorry.

19 A. Real quickly I'll just cover an introduction,
20 acoustics overview, sound level criteria for the
21 project, the ambient measures that were
22 performed, the modeling that was performed, the
23 parameters that were input into the model, and
24 then the results of the modeling.

1 All right. So as mentioned, my name is
2 Chris Howell. You can see the information about
3 me there. I have performed acoustical studies
4 through the world, all 50 states, over
5 6 gigawatts of wind farms, with over 15 in just
6 Illinois.

7 Burns & McDonnell in general is a fully-
8 integrated engineering, construction,
9 environmental consulting firm. We were founded
10 in 1898. We now currently have almost 8,000
11 employees, and we are the top-ranked power
12 transmission distribution firm in the United
13 States.

14 All right. So an acoustics overview
15 generally. Several terms get thrown out. Sound
16 power level and sound pressure level are both
17 used. Sometimes they get used interchangeably,
18 but that's incorrect.

19 Sound power is the physical energy of a
20 source, and the sound pressure is that power at
21 a distance essentially. The power creates the
22 pressure wave.

23 Sound is measured in decibels. It's
24 measured on a logarithmic scale, and most of the

1 time we talk about A-weighted decibels, which is
2 the humans' ears' response to sound.

3 Specifically here in Illinois we talk
4 about unweighted decibels, so that will show up
5 in a little bit here.

6 Frequency is just the wavelength of the
7 sound. Different sounds have different
8 frequency components. Whether it be a
9 transformer hum or bird buzzing or a dog barking
10 or something like that, they all have an
11 individual frequency sound that's identifiable.

12 Most of the time we talk about the
13 equivalent sound level, LEQ, which is the
14 average sound level over a time period. It's
15 typically the easiest to measure and quantify.

16 And then down there at the bottom, 3 dB, 5
17 dB, and 10 dB differences are rules of thumb for
18 -- 3 dB is when you start to hear a change in
19 something, 5 dB is a clearly-noticeable change
20 in something, and 10 dB is considered a
21 doubling -- perceived doubling of the sound
22 levels, and, again, that's because of the
23 logarithmic nature of how the decibels are
24 applied.

1 Next slide.

2 All right. So to perform those studies,
3 the first thing we always do is determine the
4 sound level criteria for the project. We start
5 at the federal level. EPA developed the Noise
6 Control Act in 1972. They then turned and
7 delegated authority to local entities and
8 basically said, Here's some guidelines. You
9 know how best to regulate your own noise. Take
10 care of them.

11 So then the State of Illinois, the
12 Illinois Pollution Control Board, enacted Title
13 35, and specifically Subtitle H, Chapter 1, Part
14 901, for sound, and they have various
15 specialized sound level requirements. They are
16 actually quite difficult to analyze compared to
17 some other states, because they regulate each
18 individual octave band frequency. So they do a
19 pretty good job of making sure you're not going
20 to have particularly annoying noises.

21 So then from the State, we also have to
22 look at local entities, and Lee County has a
23 Code of Ordinances. Chapter 10-15-15 is
24 specific to wind energy systems, and it does

1 call out that you have to meet the IPCB
2 regulations. So the overall, overriding limits
3 for this type of application would be the IPCB
4 noise limits.

5 Next slide, please.

6 All right. So as mentioned, IPCB
7 regulates very specific octave band frequencies.
8 There are different types of land
9 classifications, and the rules apply differently
10 to the different types of land classifications.
11 A residence is considered a Class A, mixed use
12 is a Class B, industrial or agricultural land is
13 either a Class C or --

14 JUDGE SLAVIN: Mr. Howell, excuse me. I
15 just got a text from one of the people sitting
16 on Zoom that says, Judge, he's hard to
17 understand. Not clear.

18 THE WITNESS: Is that better? I hope.

19 JUDGE SLAVIN: The sound system is not the
20 best, we know that. Just try your best.

21 THE WITNESS: Apologies. I'll try and
22 stay right in front of the mic.

23 JUDGE SLAVIN: There you go.

24 A. So the specific land classifications that I was

1 discussing there for this type of application,
2 the area is almost exclusively agricultural
3 land. There are no criteria established by the
4 IPCB for sound emanating or received on
5 agricultural land.

6 So what the IPCB does is, they decide that
7 the residence itself still gets protected as a
8 residence. So the -- you then would apply the
9 Class C, which would be the wind turbines, to
10 the Class A, which would be residences. So you
11 are applying -- they also have daytime and
12 nighttime limits. So applying the nighttime
13 limits, which is lower, is the most restrictive
14 application of the Rule here.

15 So then you can see the specific values
16 there for nighttime limits in the individual
17 octave band frequencies.

18 Of note for wind turbines, typically the
19 1,000 hertz is the one that is hardest to meet
20 in Illinois just because that's a pretty low
21 level, and 1,000 hertz is also the most readily
22 audible frequency for humans. So they put a
23 little extra emphasis there, and that ends up
24 being the overriding limit for the facility.

1 Next slide, please.

2 All right. So the next step after
3 establishing what the sound level criteria was,
4 was we went out and took ambient measurements.
5 Now, we had performed those ambient measurements
6 for the previous application of this facility.
7 So that was done in November of 2018.

8 Four time periods were measured for 13
9 total measurement locations. So each of those
10 13 locations was measured four different
11 times -- morning, noon, evening, and midnight --
12 for 15 minutes each to come up with generally an
13 overall picture of what the sound levels are for
14 those specific locations. Those locations were
15 chosen because they were representative of
16 larger areas, they were mostly unaffected by
17 highway noise, and/or represented specific
18 locations where turbines could potentially
19 impact residences.

20 You can see there what's mentioned is the
21 L90 value. That is an exceedance value. So 90
22 percent of the time the sound level exceeded
23 somewhere between 36 and 49 decibels dBA at
24 those residences -- or at those specific

1 measurement locations. And that's a -- it's a
2 little bit higher than I would typically expect
3 for an agricultural area, but it's pretty common
4 also depending on what's going on.

5 And as you can see at the bottom there,
6 some of the existing wind turbines were off a
7 little at some of the locations. There was
8 traffic, planes, insects, wildlife, and even
9 just the wind itself was making sufficient noise
10 that was noticeable. A full detailing of what
11 was heard while these measurements were taken is
12 in the noise study report, and I believe it's
13 Appendix A.

14 Q. (By Mr. Streicker:) Chris, one question.

15 That's Appendix A to Exhibit J --

16 A. Correct.

17 Q. -- of the application?

18 A. I believe it's Appendix A. Give me a second.

19 Sorry, it's Appendix B.

20 Next slide.

21 This is a little bit difficult to see, but
22 the individual measurement locations that were
23 selected are shown here, as are the wind turbine
24 locations. So you can see captured some

1 operational noise for some of the areas. If the
2 turbines were off, there was no operational
3 noise obviously. Pretty good differential of
4 areas measured there.

5 Next slide, please.

6 So then after we quantify the ambient
7 sound levels in the area, we will do a modeling
8 analysis to determine what the future impacts
9 may be. We use a specific software called
10 CadnaA. It is a noise modeling software that's
11 a scaled three-dimensional program, pretty
12 high-power, to allow us to input a specific
13 amount of data and come up with contours and
14 specific sound level estimates for discreet
15 locations.

16 The model itself is based on ISO 9613,
17 which is the standard method for calculating
18 outside sound propagation. It assesses the
19 sound pressure levels based on the frequencies
20 of the octave band as established by the ANSI,
21 American Standard Noise Institute. And then we
22 look out to 3 kilometers, which is a little
23 further than the model would look, just so we
24 cover our bases here.

1 You can kind of see the results of a
2 generic wind turbine there. If two turbines are
3 near each other, there's an overlapped area.

4 Next slide, please.

5 All right. So then the specific
6 parameters and inputs for the model. The input,
7 97 GE 2.5-116 turbines. There were 273
8 receptors. Those are occupied residences. We
9 put USGS digital elevation into the model to
10 account for terrain. And then also we put in
11 ground attenuation. We assumed it was actually
12 semi-reflective, which is pretty conservative
13 for an area like this that is agricultural,
14 because ground is pretty soft. So assuming that
15 the ground is semi-reflective is a -- will give
16 you higher levels in the model than you would
17 typically expect in real life.

18 Next slide, please.

19 All right. So then as mentioned, the
20 modeling was performed for the GE 2.5-116. A
21 hub height of 80.6 meters was used. An overall
22 sound power level of 108 dB was used. Now,
23 there's -- that's about the max that these kinds
24 of turbines can get to these days. Most

1 turbines are being created such that there --
2 that the max level doesn't change much between
3 different types of turbines -- sorry, I hit the
4 mic there.

5 The existing turbines that are here now,
6 the way the blades were designed are actually
7 slightly louder at lower wind speeds than these
8 turbines would be. So these would typically be
9 quieter at lower wind speeds. The max speeds --
10 or the max sound power levels are about the
11 same.

12 So then that data was provided by the
13 vendor as to a generally guaranteed value. We
14 applied an uncertainty value. That is standard
15 in the data. So applying an extra 0.8 dB on top
16 of the levels that they have already said their
17 turbine wouldn't exceed, so we're going above
18 and beyond that, and we're using the worst-case
19 sound level at each octave band. So even though
20 they give us an overall value, we'll use the
21 maximum at 6 meters per second, the maximum at
22 8 meters per second for the different
23 frequencies just where it happens to fall.

24 And then the model assumes that all

1 turbines are operating simultaneously at their
2 max level, which isn't necessarily always the
3 case.

4 All right. So then some further
5 conservative assumptions were made. The model
6 assumes atmospheric conditions are favorable for
7 sound propagation. So that generally means that
8 the sound will travel farther than it would in
9 real life.

10 All vegetation was excluded. So going
11 above -- even giving the ground semi-reflection,
12 we have excluded all vegetation.

13 Maximum sound propagation. Worst-case
14 directivity factors were considered. So that
15 basically says that the model assumes every
16 single residence is downwind of every single
17 turbine. So if there's a house between two
18 turbines, it's assuming that the wind is blowing
19 at the house from both directions at the same
20 time. It's a physical impossibility, but the
21 model assumes that to stay conservative.

22 As mentioned, worst-case octave band
23 levels were used, the uncertainty value was
24 used, all turbines operating at their max level,

1 and then the semi-reflective ground was used.

2 All right. So from there, we look at the
3 results that come out when first passed to see
4 where we're at and see if we need to discuss
5 anything that we could find. So all of the
6 turbines were modeled at every single receptor,
7 and it's a Q-limited value there. So it's not
8 just the closet turbine is modeled at the
9 nearest residence. That residence will have all
10 97 turbines aggregated for a single value,
11 whether the zero -- the value was zero from 92
12 of them and then 5 decibels, 10 decibels, 20
13 decibels from other turbines.

14 That value is then logarithmically added
15 together to get a single value for each
16 residence that gives us a total impact for the
17 overall facility. As mentioned, the model
18 assumes all directions downwind. So then at --
19 the logarithmic condition of all of those
20 turbines, because it's logarithmic, 35 plus 35
21 does not equal 70; 35 plus 35 would equal 38,
22 because it's based on the power.

23 And then as mentioned earlier, impact of a
24 thousand hertz is generally what is the turbine

1 compliance in Illinois. The modeled value would
2 need to be at or below 41 decibels, or some
3 other noise waiver agreement would need to be in
4 place with residences of those potential
5 exceedances.

6 So then we also create a contour, and I
7 apologize, the yellow doesn't show up very well
8 on the screen in here. Hopefully it shows up
9 better online.

10 The yellow contour is essentially the
11 41-decibel contour from all of the wind turbines
12 aggregated. So you can see residences inside or
13 outside of that contour, and you can tell who
14 exceeds or does not exceed the IPCB standards
15 based on the model.

16 There is a detailed listing in Exhibit A,
17 Appendix C, of the individual values at each
18 frequency and the overall values for every
19 single residence. So then you can quickly go
20 through and see how many there are at -- or
21 close or pass or don't pass.

22 It's also detailed in there whether they
23 are participating or not participating. And as
24 I understand, waivers are being sought from -- I

1 believe there are three that currently exceed
2 that don't have waivers.

3 Q. Chris, if I could ask you a couple questions
4 based on the presentation?

5 A. Sure.

6 Q. If you could, describe for the Board members
7 generally, how does a wind turbine create noise?
8 What type of activity is going on there? What
9 does it sound like?

10 A. Yeah, so there are different ways it can make
11 noise. There's a mechanical noise at the
12 nacelle, the hub of the wind turbine itself,
13 which is generally torqued by the aerodynamic
14 noise that is created by the blades passing
15 through the wind. There is turbulence that
16 comes off the blades as it's passing through the
17 air and then also passing by the tower.

18 You hear what's called, typically referred
19 to as a swoosh or a hum. Individual turbines,
20 as you're close to them, make a swooshing sound
21 every time that blade passes by the tower;
22 however, the further away you get and the more
23 turbines that are operating, it generally blends
24 into the wind or becomes an overall -- the

1 swoosh goes away and you just get a hum,
2 essentially.

3 Q. And we have talked to the Board members about
4 the existing turbines, the Suzlon S-88s, and we
5 have also talked a lot about the turbines that
6 we plan to use, which is this GE 2.7 family.

7 A. Correct.

8 Q. I believe it was GE that sent you all the data
9 to use for your report?

10 A. Correct.

11 Q. And one of the things that we have been telling
12 the members is that we hope and believe that
13 these new GE turbines will be quieter at lower
14 wind speeds. Is that also your belief?

15 A. That is what I understand from the data, yes.

16 Q. Okay. And what does the data tell you? How do
17 you extrapolate that from the data?

18 A. So the vendors provide individual octave band
19 data at 10-meter -- or 10-meter wind speeds. So
20 they'll provide 6 meters per second, 7 meters
21 per second, 8 meters per second, and they'll
22 tell you what the frequency distribution is of
23 that wind turbine. And it changes with the wind
24 speeds.

1 So what we're modeling here is essentially
2 worst-case scenario of all of that. On a
3 day-to-day basis, typically you would operate
4 lower than that. And what we understand, by
5 comparison of Suzlon directly to the GE data, is
6 that at lower wind speeds the GE would be
7 typically quieter.

8 Q. And we have also -- I think Mr. Kutey talked to
9 the Board members about that you're really most
10 concerned about noise at lower wind speeds; is
11 that correct?

12 A. Generally, yes. The -- at lower wind speeds,
13 it's going to be more noticeable because the
14 wind itself is not masking the sound of the wind
15 turbine anymore. There are certain days where
16 the maximum speed can occur.

17 As mentioned in the model, there is
18 moderate ground-based inversion considered,
19 where a day like today, where we have a lot of
20 fog and it can't escape and go anywhere, that's
21 actually considered temperature inversion. So
22 the temperature is warmer above so the
23 atmosphere can't escape. That essentially traps
24 the sound and the sound can't escape.

1 In a scenario like that, it's potential
2 that the sound level wouldn't be masked by the
3 wind. But on a day-to-day basis, the maximum
4 sound levels are going to be masked by the wind
5 speeds themselves with sounds themselves.

6 Q. So in a sense, just to summarize, since the
7 sound levels are masked at a high wind speed,
8 that's why you're more concerned about what the
9 noise level is going to be in the low wind
10 speeds of the turbines?

11 A. For this specific analysis, we're only
12 concerned about the maximum sound levels that
13 the wind turbines can make because that's what
14 you would compare to the IPCB regulations.

15 On a day-to-day basis, you are more
16 concerned with lower wind speeds probably.

17 Q. And your comment was a nice dovetail on one
18 other thing I wanted to ask you, which is, your
19 modeling was looking at the max noise to wonder
20 if we're going to trigger an exceedance,
21 correct?

22 A. Correct.

23 Q. And it appears from the materials in your
24 report that there were three exceedances?

1 A. Correct.

2 Q. And those would all be in Lee County?

3 A. Right.

4 Q. Okay. And the mitigation factors being
5 considered are either, one, a waiver from the
6 landowner; is that correct?

7 A. That is one way, yes.

8 Q. What are some other ways to mitigate sound or
9 noise from the wind turbines?

10 A. So there are a couple ways to do it, depending
11 on where you are in the process. If you're
12 upfront like this, you could potentially specify
13 to the manufacturer that you need low-noise
14 trailing edge blades. It is a fairly expensive
15 option to switch out those blades, but it is an
16 effective option to reduce sound levels
17 somewhat. If we're talking about 1 or 2 dB, it
18 would effectually reduce the sound levels enough
19 to get below that. So that would be one option.

20 Another option would be to de-rate the
21 turbines themselves so that they never hit that
22 peak wind speed so that they never generate peak
23 sound levels.

24 Q. So there are mitigation options outside of

1 waivers --

2 A. Correct.

3 Q. -- for exceedances?

4 Could you -- you talked to the Board
5 members about the Illinois Pollution Control
6 Board regulations. Where is the noise or sound
7 level measured from under those Pollution
8 Control Board regs?

9 A. So it depends on the situation. If you're
10 talking a residence to a residence, it is
11 measured in one location. If you're talking for
12 a situation like this, where it is a wind
13 turbine on agricultural property, the sound
14 level would be measured at the physical
15 residence. So roughly on the exterior of the
16 house far enough away that you're not getting
17 reflections off the house.

18 Q. And that's what you're looking for, correct?

19 A. Correct.

20 Q. All right. So in summary, the three
21 exceedances that were noted, those are
22 worst-case --

23 A. Correct.

24 Q. -- scenarios with the data inputs?

1 A. Correct.

2 Q. And there are either waivers or other
3 mitigation efforts that can be looked at?

4 A. I do believe so, yes.

5 MR. STREICKER: Thank you, Judge. That's
6 all the direct questions we have for Mr. Howell.

7 JUDGE SLAVIN: All right. Questions for
8 this witness, Mr. Boonstra.

9 MR. BOONSTRA: No questions. Thank you,
10 sir.

11 JUDGE SLAVIN: Thank you.

12 Ms. Duffy?

13 MS. DUFFY: No questions.

14 JUDGE SLAVIN: Mr. Forster?

15 MR. FORSTER: No questions.

16 JUDGE SLAVIN: Mr. Buhrow.

17 MR. BUHROW: Yes.

18 EXAMINATION

19 BY MR. BUHROW:

20 Q. Do you have a list of the residences that are
21 above the Illinois Pollution Control Board,
22 according to your model?

23 A. Yes, I do, and I probably talked through it
24 real quick.

1 Appendix C of Exhibit J, there's a
2 detailed listing of every single receptor. I
3 apologize, the print is very small. I can read
4 them off to you, if you would like.

5 Q. How many are there?

6 A. There's three total.

7 Q. Okay.

8 A. For easy reference, the specific three are
9 highlighted red in the document.

10 Q. And do you know if there's anything been done
11 with those residents? Were they previously
12 having problems with the old wind turbines too?

13 A. That I do not know.

14 Q. Okay.

15 A. I'm not privy to the discussions with the
16 neighbors.

17 MR. BUHROW: Okay. Thank you.

18 JUDGE SLAVIN: Mr. Bothe?

19 MR. BOTHE: No questions.

20 JUDGE SLAVIN: Mr. Hughes?

21 MR. HUGHES: No questions.

22 JUDGE SLAVIN: Mr. Pratt?

23 MR. PRATT: No questions.

24 JUDGE SLAVIN: How about Mr. Montavon,

1 questions of Mr. Howell?

2 MR. MONTAVON: No questions.

3 JUDGE SLAVIN: Okay. I think that covers
4 everybody.

5 Thank you. I usually say, Step down, but
6 you can step away.

7 THE WITNESS: Yes. Put my mask back on.

8 MR. STREICKER: Aaron, can you hear us?
9 Is he muted, Alice?

10 MS. HENKEL: He's unmuted now.

11 MR. ANDERSON: I can hear you.

12 MR. STREICKER: Judge, we're ready to call
13 our next witness or follow your lead.

14 JUDGE SLAVIN: Mr. -- just a couple
15 technical things.

16 Mr. Anderson, can you hear me?

17 MR. ANDERSON: Yes, I can.

18 JUDGE SLAVIN: And we can hear you. So if
19 you'll do me the favor, please, of raising your
20 right hand.

21 (Aaron Anderson was duly sworn.)

22 JUDGE SLAVIN: And you may inquire,
23 Counselor.

24 MR. STREICKER: All right. Thank you.

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AARON ANDERSON,

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

DIRECT EXAMINATION

BY MR. STREICKER:

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

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

Q. And what's your current business address?

A. 9400 Ward Parkway, W-A-R-D, Kansas City, Missouri, 64114.

Q. Thank you.

And if you could, briefly tell the Board members what your relevant educational history is.

A. Sure. I have a bachelor's degree in physics, I have a bachelor's degree in mechanical engineering, and I have a master's degree in engineering management.

Q. Okay. And how are you currently employed?

A. I'm a director of renewable energy at Burns & McDonnell.

Q. Okay. And how long have been in that position?

1 A. Almost 14 years.

2 Q. And what are your job duties in that position?

3 A. I perform technical engineering and financial
4 analyses of renewable energy projects.

5 Q. Okay. And, Mr. Anderson, we're here tonight to
6 talk about the repowering of the Big Sky Wind
7 Farm. Have you been involved with that process?

8 A. I have.

9 Q. Okay. Could you tell the Board members what
10 involvement you have had?

11 A. I performed the shadow flicker study for the
12 repower.

13 Q. Okay. And was that shadow flicker study
14 included with the Special Use Permit application
15 that we -- that Burns & Mac put together for Lee
16 County?

17 A. Yes, it was.

18 Q. Okay. And is your curriculum vitae included in
19 that application?

20 A. Yes, it is.

21 Q. Okay. Is that document up to date?

22 A. Yes, it's current.

23 Q. Okay. At this point, Mr. Anderson, let me ask
24 you, have you prepared any presentation to make

1 this evening?

2 A. I have.

3 Q. Okay. And I think we're going to put that up
4 on the web.

5 I'm going to mark a paper copy of your
6 presentation as Petitioner's Exhibit 11.

7 (Petitioner's Exhibit Number 11
8 marked for identification.)

9 Q. As soon as you're ready, I will turn things
10 over to you to talk directly to the Board
11 members.

12 A. If you could go to the next slide, please.

13 So by way of agenda, I'll give you a brief
14 introduction of myself a little bit more --

15 JUDGE SLAVIN: Just a minute,
16 Mr. Anderson. I don't know what happened, but
17 you were coming through loud and clear, and then
18 when you started talking, it faded into the
19 distance.

20 THE WITNESS: Okay. I'll try to talk a
21 little bit louder.

22 JUDGE SLAVIN: Or turn up your mic, if
23 it's got a volume control.

24 MS. HENKEL: Hold on, let me see if it

1 was --

2 JUDGE SLAVIN: Test, test, give us a few
3 test, tests.

4 MS. HENKEL: Can he hear us?

5 JUDGE SLAVIN: Can you hear us?

6 THE WITNESS: Yes, sir. Test, test.

7 JUDGE SLAVIN: It's still pretty low.
8 Does your mic have a volume control on it?

9 THE WITNESS: I beg your pardon?

10 JUDGE SLAVIN: Does your mic have a volume
11 control on it, your laptop or computer mic or if
12 you're using an external one?

13 THE WITNESS: Okay. Any better?

14 JUDGE SLAVIN: No. You're really --
15 you're going to have to really keep your voice
16 up.

17 THE WITNESS: Okay. If it's really bad, I
18 can try to call in. I would be happy to do
19 that. It would only take a moment.

20 JUDGE SLAVIN: Just keep your voice up.
21 Right there was okay, but get real close to the
22 mic and keep your voice up.

23 THE WITNESS: Sure, can do.

24 A. Okay. So by way of agenda, I'm going to give

1 you a quick introduction on me and some of my
2 background a little bit more than we have just
3 discussed. We'll talk about what shadow flicker
4 is and why we discuss it. We'll talk about the
5 modeling that we performed and results of that
6 modeling.

7 Next slide, please.

8 JUDGE SLAVIN: Ms. Duffy is giving me a
9 signal, she can't hear.

10 Let's take a break. You Petitioners work
11 on your technical problem there. I am out of
12 ideas.

13 We'll be in recess.

14 (A recess was taken at 6:39 p.m.
15 and proceedings resumed at
16 6:42 p.m.)

17 A. Okay. By way of introductions, I'm a licensed
18 professional engineer in four states, including
19 the state of Illinois. I have been working on
20 projects like this for about the last 14 years
21 and performed flicker studies across the
22 country, including more than a dozen now in the
23 state of Illinois.

24 Mr. Howell gave an overview of Burns &

1 McDonnell, so I won't belabor the point. But
2 same firm, so everything that he said would
3 still apply organizationally here.

4 Next slide, please.

5 Okay. Let's talk about what shadow
6 flicker is. So shadow flicker is simple.
7 Shadow flicker occurs when wind turbine blades
8 pass in front of the sun, creating a shadow.
9 But there are several important requirements or
10 characteristics for it to constitute shadow
11 flicker and not just a shadow:

12 Number one, it has to be a sunny day,
13 because without the sun you generally cannot
14 have perceptible shadows that occur;

15 The turbine has to be in operation,
16 meaning the blades are rotating, otherwise it is
17 not shadow flicker, it is just a shadow;

18 Third, there cannot be any obstructions in
19 between the wind turbine and the thing receiving
20 the shadow. So in this case, that thing
21 receiving it would be something like a house or
22 a residence. An obstruction would be something
23 like a hedge row, a barn, a silo, or some other
24 obstacle that would prevent the shadow from

1 being cast from the turbine onto that receptor;

2 Then finally, the receptor, in this case
3 the residence or the house, would have to be in
4 the line of sight. So in the photo you can see
5 that the shadow that's being cast is being cast
6 in a very specific direction. If we were facing
7 north here and that residence was to the east,
8 it would not be possible for shadow flicker to
9 occur.

10 So each of those four things has to happen
11 in order for shadow flicker to take place.

12 What you'll see here in a bit is that
13 shadow flicker is most common during very
14 specific seasons and times of the day. You'll
15 see in the calendar that I'll show you in a
16 moment, the seasons are typically spring and
17 fall. The reason is that the sun tends to rise
18 and fall in different parts of the sky
19 geometrically and in different parts of the day.
20 It's typically most prevalent early morning or
21 late afternoon. The reason being that when the
22 sun is first coming up in the morning, it casts
23 much longer shadows than in the middle of the
24 day, when it's directly overhead and the shadow

1 is right below. So you have more opportunity
2 for shadow flicker to occur in this scenario.

3 Next slide, please.

4 Looking at the Ordinance, there are a few
5 important things to note. First, shadow flicker
6 is not regulated at the federal level. The
7 shadow flicker is also not regulated at the
8 State level in the state of Illinois. Within
9 the two counties that this project exists
10 within, Bureau and Lee, of course in this
11 instance, there are no specific regulations in
12 place that govern the amount of shadow flicker
13 that can occur. This is fairly typical for what
14 we see across different Ordinances throughout
15 the country.

16 That being said, what the developer in
17 this case has done is commit to contribute less
18 than 30 hours per year to any specific residence
19 without a landowner waiver, so that landowner
20 providing a waiver participating in the project.

21 30 hours is a very typical industry
22 benchmark that we see throughout the country.
23 So that even though there are no regulations in
24 place within Bureau and Lee County, in this

1 case, when we exceed the regulations, 95 percent
2 of the time those tend to be around 30 hours per
3 year. So it's a very common benchmark that we
4 use. In this case we try to be consistent with
5 other areas that do have a regulation, even
6 though there is nothing here.

7 Next slide, please.

8 Okay. So the next few slides we'll run
9 through the modeling exercise that was
10 performed. So the modeling was done with a
11 software package called windPRO. This is a
12 simple screenshot from windPRO to show some of
13 the inputs and complexity of the model.

14 What it does, at a very simplistic model,
15 is it takes the sun and it models its path over
16 every minute of every year and projects where
17 the sun will shine, where the turbines are at,
18 and where the shadow would be cast during each
19 individual minute. All of those minutes when
20 shadow flicker has occurred are then aggregated
21 by receptor. So in this case, a receptor is a
22 residence or a house. We'll use those
23 interchangeably. We'll add all those up, and
24 that reflects the total amount of flicker that

1 will occur at each individual residence.

2 Next slide, please.

3 Looking through some of the inputs, we
4 tried to -- similar to what Mr. Howell ran
5 through from a noise standpoint, we try to take
6 a very conservative approach to the amount of
7 shadow flicker that would occur. So let me run
8 through some of the individual inputs that went
9 into the model.

10 First and foremost are the turbines. We
11 took 97 different turbine positions. We modeled
12 each one of those turbine positions using the
13 GE 2.7-116 turbine; meaning, it is 2.7 megawatts
14 with 116-meter rotor diameter.

15 Our understanding is that the turbines
16 will actually be operated at a lower level
17 potentially than the 2.7, but just in case,
18 modeling at 2.7 gives a slightly more
19 conservative view than the 2.5 or 2.3 megawatts
20 that they will be modeled at. So if they were
21 to be de-rated to 2.5 or 2.3, results would only
22 improve to that which we're seeing here.

23 We modeled 273 individual receptors or
24 occupied residences throughout the study area,

1 and we modeled each one of those in what is
2 called greenhouse mode within windPRO. What
3 greenhouse mode means is that each individual
4 residence is modeled as a glass house; meaning
5 it's got glass windows on every side of the
6 building, which is important because your house,
7 which is probably much like mine, although there
8 are windows on many sides, it's not completely a
9 glass box.

10 So what that allows the model to do is
11 aggregate a higher level of shadow flicker at
12 each individual home than would actually be seen
13 within the home. So, again, giving it a very
14 conservative view relative to what would be
15 observed in reality.

16 Next slide, please.

17 The next input we took into account, of
18 those 97 turbine positions, we modeled every one
19 of them with a hub height of 80.6 meters. So
20 that's how high the center of the rotor would
21 be. And we modeled the rotor diameter, so from
22 blade tip to blade tip, is 116 meters, which,
23 again, is consistent with what we expect to be
24 installed and consistent with the noise study

1 that Mr. Howell just presented.

2 Next we modeled the operational parameters
3 of those turbines. So you'll remember, from the
4 second or third slide that I went through, that
5 shadow flicker can only occur when the turbine
6 is in operation. So we tried to model how the
7 turbine will actually operate at this site. In
8 order to do that, we took wind data that was
9 measured at the site and then we modeled that
10 for each individual turbine and said, Okay, spin
11 when the wind is blowing, don't spin when the
12 wind is blowing, spin at the actual speed,
13 rotational speed, RPMs, that the turbines will
14 actually operate at to give us a realistic
15 representation of how often this will occur.

16 Next slide, please.

17 The final set of inputs that we looked at
18 were obstacles. So obstacles, as I mentioned,
19 can include things like hedge rows, buildings,
20 silos, barns, anything else that can block the
21 shadow from occurring. What's important here is
22 to note that we disregarded those. We did not
23 consider any obstacles within the model, meaning
24 that any residence, any home that is next to a

1 tree line or is next to a barn or some other
2 obstructions that could block shadows from
3 reaching the home, would only improve the
4 results that we're going to see here today.
5 They cannot possibly -- it's not physically
6 possible for the results to get worse because of
7 obstacles because we didn't consider any.

8 Then finally we looked at terrain. So
9 this is a terrain map of the area and where the
10 turbines are actually located. We took all of
11 those and we modeled the actual height above sea
12 level of every individual turbine and every
13 individual receptor. So that -- as you probably
14 know, most wind turbines are normally placed
15 high so the developer can get the highest wind
16 speed possible and maximum output.

17 What's important about that is, when
18 you're actually higher, it gives the opportunity
19 for the shadow to be cast further. So we want
20 to make sure that we represent that within the
21 model. So we used the terrain data to do that.

22 Next slide, please.

23 I apologize, these are the last inputs.

24 So the last two that we looked at were

1 flicker relevance. So as you can appreciate, a
2 shadow can only be cast so far. There is not an
3 indefinite distance that a shadow can go. At
4 some point it becomes imperceptible,
5 indistinguishable from the environment around
6 it.

7 The input or the assumption we used for
8 that is 10 rotor diameters. So you'll remember,
9 we used a rotor diameter of 116 meters blade tip
10 by blade tip. We multiply that by 10, which is
11 1160 meters, or almost a mile, and we say that
12 that shadow can be cast that far. Anything
13 beyond that, the assumption is that the shadow
14 would become imperceptible, indistinguishable,
15 you wouldn't be able to see it in the
16 environment around it.

17 Then lastly but not least, we looked at
18 the environment. So we assumed that the sun has
19 to be at least a few degrees above the horizon,
20 because otherwise it wouldn't cast enough light
21 for shadow to occur, and that a certain amount
22 of obstruction is occurring on the blades to
23 allow an actual, distinguishable shadow to
24 happen.

1 Next slide, please.

2 Okay. So after all of those results are
3 input and aggregated into the windPRO model, we
4 are able to present the results both visually
5 and numerically. So on the right is an example
6 of the visual output that would occur from the
7 model, and what we see is this butterfly-looking
8 shape.

9 So if you see Turbine 88, for example,
10 there at the right, it creates longer contour
11 lines to the southwest, to the southeast,
12 northeast, and northwest. The reason being that
13 as the sun rises in the east, it's actually a
14 little more to the southeast at certain times of
15 the year, meaning the shadow would be cast to
16 the northwest. The same when it sets in the
17 southwest and so on and so forth.

18 So as we look through the seasons, we see
19 longer shadows in different directions, and that
20 allows higher amounts of shadow flicker to
21 accumulate in each of those directions.
22 Meaning, that a house, for example, directly
23 north of a turbine that's actually a little bit
24 closer may actually experience more shadow

1 flicker than one to, say, the northeast, where
2 those shadow flicker lines start to get a little
3 bit longer.

4 The point is that the flicker impact
5 varies greatly depending on where the turbine is
6 at relative to where the house is at directly.

7 Next slide, please.

8 This is another example of the visual
9 output that we can get. So this is for Receptor
10 4, which you can see within, I believe it's
11 Appendix C of the results. And what this shows
12 us is the amount of shadow flicker that occurs
13 and the times of day and times of year that it
14 occurs at this individual Receptor Number 4.

15 What you can see, and it may not show up
16 very well for you, is a blue blob kind of there
17 at the bottom of the screen. And what it shows
18 is that that blob starts in around mid-May and
19 ends in roughly the end of July, very early
20 August. What that means is, that's the only
21 period of time -- that roughly two-and-a-half-
22 month period, that's the only period of time in
23 the entire year which shadow flicker would occur
24 at that receptor, and, just as importantly, the

1 shadows are only occurring from roughly 6 a.m.
2 to 6:45 a.m. in the morning.

3 So there is no shadow flicker at this
4 house during the afternoon, during the winter.
5 It's simply during the summer months of the year
6 and only in the early morning. So despite what
7 the overall flicker total may be at this
8 receptor, it doesn't happen throughout the
9 course of a year; it only happens during very
10 specific, very predictable periods of time.

11 Next slide.

12 Finally, here's a summary of the overall
13 results. So the top table here shows the full
14 project. This is both Bureau and Lee County.
15 And what you'll see here is that we model 97
16 turbines, 273 receptors. Of those 273
17 receptors, 102 of them, or a little more than a
18 third, had no shadow flicker at all that
19 occurred, so zero hours per year, and only 26 of
20 those 273 had more than 30 hours per year, which
21 was that typical industry benchmark that we
22 mentioned at the beginning.

23 Specifically within Lee County, 51 of the
24 97 turbines are expected to be within Lee

1 County. Only 16 of the 273 total receptors are
2 within Lee County and experience more than 30
3 hours of shadow flicker per year.

4 But, again, the developer has said that
5 any of those that are not participating in the
6 project, they will work with that landowner and
7 seek a waiver for that exceedance.

8 Next slide, please.

9 This shows one more graphical
10 representation of shadow flicker. So this is
11 the entire project. Each of those very small,
12 I'm sure on your screen, yellow dots are a
13 turbine. You can see the red, and then blue,
14 and then lighter shades from there, contour
15 lines that go out from those turbines. Those
16 are the shadow flicker lines. So each one
17 represents a certain number of hours per year,
18 out to zero once it gets to the dark blue line
19 at the outer boundary.

20 And each individual home is represented as
21 a purple dot. It's actually a house on the map,
22 if you look closely. So you can zoom in there
23 and see where the individual receptors are and
24 how the flicker accumulates at each.

1 Next slide.

2 Finally, there are ways that shadow
3 flicker can be mitigated. So because it's --
4 and that's true because it's very predictable
5 and occurs at very known, predictable times of
6 year. So there are a number of ways that
7 mitigation can happen. Some typical ways that
8 we see, and this varies from place to place, are
9 blinds and curtains on homes. That, of course,
10 prevents the flicker from getting into a house.
11 Installing awnings on the outside of a home,
12 accounting for trees and vegetation that already
13 exists, accounting for other obstructions such
14 as barns, hedge rows, silos, and other things
15 that we mentioned that already exist. That will
16 help block shadow flicker from occurring at
17 residences in many cases. And then finally, the
18 operation permit itself can be regulated to
19 control the amount of shadow flicker that
20 happens as well, if required.

21 So that is an overview of the analysis
22 that was performed. I'd be happy to take any
23 questions anyone may have.

24 MR. STREICKER: Yes, Judge, I have a few

1 questions.

2 Q. (By Mr. Streicker:) Mr. Anderson, this is Dave
3 Streicker.

4 Am I correct to say that there is a shadow
5 flicker analysis report that was prepared for
6 the Lee County SUP application for this
7 repowering?

8 A. I beg your pardon, Dave. I'm having a hard
9 time hearing you.

10 Q. Sorry. I said, am I correct to say that there
11 was a shadow flicker analysis prepared by Burns
12 & McDonnell that was included with the Lee
13 County SUP application for this repowering?

14 A. Yes, there was.

15 Q. Okay. Was that prepared under your
16 supervision?

17 A. Say again? I'm sorry.

18 Q. Was that report prepared under your
19 supervision?

20 A. Yes, it was.

21 Q. Okay. And what you have given us tonight is a
22 summary of that report, correct?

23 A. Yes.

24 Q. And all the detailed analysis and backup data

1 can be found in the report that was submitted
2 with the application?

3 A. Correct.

4 Q. Okay. And just so I'm clear in my mind, the 30
5 hours per year -- or not to exceed 30 hours per
6 year shadow flicker criteria that you
7 referenced, that's a voluntary level; is that
8 correct?

9 A. Yes.

10 Q. Okay. It's also a level that many wind farms,
11 at least across Illinois, voluntarily hold
12 themselves to; is that correct?

13 A. Correct.

14 Q. Okay. And that's where you arrived at that
15 demarcation point?

16 A. Can you repeat that one? I'm sorry.

17 Q. Oh, the no more than 30 hours per year for any
18 one receptor shadow flicker, that's basically
19 become an industry standard in Illinois for
20 projects to voluntarily hold themselves to,
21 correct?

22 A. Correct.

23 MR. STREICKER: Okay. Judge, I have no
24 more questions for Mr. Anderson.

1 JUDGE SLAVIN: All right. Questions of
2 Mr. Anderson. Mr. Boonstra?

3 MR. BOONSTRA: No questions, Judge.

4 JUDGE SLAVIN: Thank you.

5 Ms. Duffy?

6 MS. DUFFY: No questions, Judge.

7 JUDGE SLAVIN: Members of the Board.

8 Mr. Forster?

9 MR. FORSTER: No questions.

10 JUDGE SLAVIN: Mr. Buhrow?

11 MR. BUHROW: Yes.

12 EXAMINATION

13 BY MR. BUHROW:

14 Q. Mr. Anderson, in your report you have the
15 number of receptors in Lee County greater than
16 30 hours per year at 16. Do you have the number
17 that are participating and nonparticipating
18 houses, residences, in that 16 number?

19 A. Yes. Ten of the 16 were current -- were listed
20 as nonparticipating in the data that the project
21 would be seeking waivers from.

22 Q. Okay. And are you familiar --

23 JUDGE SLAVIN: Would you say that again?

24 It didn't come across very clear. Apparently

1 Mr. Buhrow heard you, but I didn't quite get it.

2 Would you answer the question again,
3 Mr. Anderson, please?

4 THE WITNESS: Yes. Ten of the 16
5 receptors in Lee County that were above 30 hours
6 per year were nonparticipating in the project
7 and would require a waiver under the
8 commitment --

9 JUDGE SLAVIN: Just answer the question.
10 How many? Ten?

11 THE WITNESS: Ten, 1-0.

12 JUDGE SLAVIN: Okay. Thank you.

13 THE WITNESS: (Indicating.)

14 MR. HUGHES: He did this (indicating).

15 Q. (By Mr. Buhrow:) Another question: are you
16 familiar, Mr. Anderson, with what changes this
17 might have been from the previous wind turbine
18 situation before? Have we got more receptors
19 with shadow flicker or less this time?

20 A. It's roughly the same, slightly less. The
21 modeling approach that we would have presented
22 before was identical. No change at all to
23 inputs, assumptions, methodology, et cetera.
24 Other than, the turbine layout was adjusted from

1 what we presented in, I believe it was 2018,
2 that would have changed slightly for the number
3 of turbines that were included.

4 MR. BUHROW: Okay. Thank you.

5 THE WITNESS: If -- yeah.

6 MR. BUHROW: That's all.

7 JUDGE SLAVIN: Thank you.

8 Let's see. Mr. Bothe?

9 MR. BOTHE: No questions.

10 JUDGE SLAVIN: Mr. Hughes?

11 MR. HUGHES: No questions.

12 JUDGE SLAVIN: Mr. Pratt? Mike Pratt, can
13 you hear me?

14 MR. PRATT: Just one quick question.

15 EXAMINATION

16 BY MR. PRATT:

17 Q. If a nonparticipating landowner had a 20-hour
18 shadow flicker, he has no recourse?

19 JUDGE SLAVIN: Is that correct?

20 Q. (By Mr. Pratt:) Is that correct?

21 A. There's currently no plans in place to mitigate
22 below 30, correct.

23 MR. PRATT: No further questions.

24 JUDGE SLAVIN: Thank you.

1 How about you, Mr. Montavon?

2 MR. MONTAVON: No questions.

3 JUDGE SLAVIN: Am I missing anybody?

4 Okay. Very good. Usually I say you can
5 step down, Mr. Anderson, but you can sign off.

6 THE WITNESS: Thank you.

7 JUDGE SLAVIN: Thank you.

8 We're going to take a break right now, and
9 then --

10 Mr. Montavon, can you still hear me?

11 MR. MONTAVON: Yes, I can still hear you.

12 JUDGE SLAVIN: Thank you. You're the, for
13 good or -- for better or worse, depending on
14 your viewpoint, the only Interested Party
15 appearing tonight. We'll reach the stage where
16 it's your opportunity to present evidence. Do
17 you want to testify or do you have any
18 witnesses?

19 MR. MONTAVON: Could you say that again,
20 please?

21 JUDGE SLAVIN: Sure.

22 I believe, unless he interrupts me
23 otherwise, that that completes Mr. Streicker's
24 evidence.

1 MR. STREICKER: Judge, we have the signal
2 interference.

3 JUDGE SLAVIN: Oh. Never mind.

4 Mr. Montavon, please disregard.

5 MR. MONTAVON: Okay.

6 MR. STREICKER: I'm happy if you want to
7 explore that, but ---

8 JUDGE SLAVIN: Ding, ding, ding.

9 But that's not tonight?

10 MR. STREICKER: That's correct, Judge. We
11 have completed our presentation this evening.

12 JUDGE SLAVIN: Okay. Well, I can't do
13 anything about it. So it is. So it goes.

14 All right. Instead of a break --

15 MR. BUHROW: Recess.

16 JUDGE SLAVIN: I've got to find my dates
17 now.

18 MR. BOTHE: Yeah, when do we come back?

19 JUDGE SLAVIN: Reading down the column,
20 Bureau County, Big Sky --

21 MR. HUGHES: Is it the 27th or the 2nd?

22 COURT REPORTER: I believe it's the 27th.

23 JUDGE SLAVIN: 27th.

24 MR. BOTHE: Yeah, 1st and 2nd.

1 JUDGE SLAVIN: 27th, everybody is a yes?
2 27th, reading across here, is a yes.

3 So 6 o'clock, January 27th.

4 Anticipating, without promising, the
5 progress of events is that Mr. Streicker is
6 telling me that, at least at this time, he
7 intends to have only one more interest. That
8 would open up the floor for Interested Parties'
9 witnesses or their own testimony; not their
10 public comment or closing arguments, but
11 testimony under oath subject to
12 cross-examination. That would be also on that
13 night, the 27th. And then I guess we would move
14 to February -- oh, boy, February 1st.

15 MR. HUGHES: I thought February 2nd was --
16 yeah, February 1st.

17 JUDGE SLAVIN: We'll take it a step at a
18 time.

19 All right. I'll recess then until, I
20 guess it's January 27th at 6 o'clock, here in
21 the Old Lee County Courthouse.

22 MR. BUHROW: Judge, do you want to tell
23 Marty -- is he familiar with -- if he wants to
24 testify or anything, has he talked about this;

1 Marty Montavon?

2 JUDGE SLAVIN: Well, we don't even know if
3 he's going to be here on the 27th.

4 But, Mr. Montavon, I think I'm being asked
5 to explain, once again, if you -- Mr. Montavon,
6 did you hear my opening comments maybe a month
7 ago?

8 MR. MONTAVON: I did not.

9 JUDGE SLAVIN: Okay. The hearing is in
10 stages. We're right now in the evidence
11 production stage. Once the Petitioner finishes
12 their evidence, then Ms. Duffy has an
13 opportunity to present any evidence she has. I
14 suspect, without speaking for her, she may not
15 in this particular case.

16 And then Interested Parties, which you fit
17 that category, have their chance to present any
18 evidence they have. That's evidence. That
19 means if you want to call a witness, have that
20 witness put under oath and ask questions and
21 have that witness cross-examined by others,
22 that's your opportunity. If you, that includes
23 you as a witness, if you want to testify, you're
24 put under oath, you're cross-examined.

1 But that's just the time to testify about
2 facts. Facts are things like the light was
3 green, the light was red, the sun shines in Lee
4 County 365 days a year, I can hear sounds that a
5 mouse makes from a hundred yards away. Those
6 are facts.

7 You save how you feel or what you think or
8 your opinion for public comment, closing
9 arguments. That's the time to tell the Board, I
10 think you ought to do this because the evidence
11 showed this and this. Or, If I was on the
12 board, it's my opinion that you should do this
13 because of the evidence of this in itself.

14 So the next stage I'm talking about is the
15 evidence production. And then following that,
16 we'll have closing arguments, closing comments.
17 Mr. Streicker will go first and then any
18 Interested Parties, such as yourself.

19 You think you generally get what I'm
20 explaining?

21 MR. MONTAVON: I understand, yes.

22 JUDGE SLAVIN: Okay. And we'll recess
23 until the 27th at 6 o'clock.

24 Mr. Bothe, 6 o'clock.

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MR. BOTHE: Okay.

(The hearing was recessed at
7:09 p.m.)

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On this 5th day of January, A.D., 2021, 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

Callie S. Bodmer

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