1 BEFORE THE OHIO POWER SITING BOARD

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3 In the Matter of the :
Application of Champaign :
4 Wind LLC for a :
Certificate to Construct : Case No. 12-0160-EL-BGN
5 a Wind-Powered Electric :
Generating Facility in :
6 Champaign County, Ohio. :

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8 PROCEEDINGS

9 before Ms. Mandy Willey Chiles and Mr. Jonathan

10 Tauber, Administrative Law Judges, at the Public

11 Utilities Commission of Ohio, 180 East Broad Street,

12 Room 11-A, Columbus, Ohio, called at 9:00 a.m. on

13 Wednesday, November 14, 2012.

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15 VOLUME IV

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On behalf of the Staff of the
Ohio Power Siting Board.

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Wednesday Morning Session,
November 14, 2012.

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ALJ CHILES: Let's go ahead and go on the record. The Ohio Power Siting Board has set for hearing at this time and place case No. 12-160-EL-BGN being In the Matter of the Application of Champaign Wind LLC for a Certificate to Construct a Wind-Powered Electric Generating Facility in Champaign County, Ohio. I would note for the record that this is our fourth day of hearing.

At this time we will take appearances beginning with the company.

MR. PETRICOFF: Thank you, your Honor. On behalf of Champaign Wind, Howard Petricoff, Michael Settineri, Stephen Howard, and Miranda Leppla from the law firm of Vorys Sater.

ALJ CHILES: Thank you.

MR. VAN KLEY: Thank you, your Honor. Jack Van Kley on behalf of Union Neighbors United, Bob and Diane McConnell, and Julia Johnson. And I am Jack Van Kley and Chris Walker of Van Kley & Walker.

ALJ CHILES: Thank you.

MS. NAPIER: Good morning. My name is Jane Napier, I represent Champaign County and the

townships of Goshen, Union, and Urbana. I am assistant prosecutor and I'm here representing those entities along with the Champaign County Prosecuting Attorney Nick Selvaggio. Thank you.

ALJ CHILES: Thank you.

MS. PARCELS: Attorney Breanne Parcels for the City of Urbana under the direction of Urbana Law Director Gil S. Weithman.

ALJ CHILES: Thank you.

MR. REILLY: Thank you, your Honor. On behalf of the Ohio Power Siting Board staff, Mike DeWine, Ohio Attorney General, Bill Wright, Section Chief, Public Utilities Section, Steve Reilly, Vern Margard, and Devin Parram, Assistant Attorneys General in the Public Utilities Section. Also Sarah Anderson and Summer Plantz, Assistant Attorneys General in the Environmental Enforcement Section of the Ohio Attorney General's office.

The Public Utilities Section is located here at 180 East Broad Street, Columbus, Ohio 43215. The Environmental Enforcement Section is located at 30 East Broad Street, Columbus, Ohio, 43215.

ALJ CHILES: Thank you, Mr. Reilly.

Is the company ready to proceed?

MR. PETRICOFF: Yes, your Honor. At this

time our next witness up will be Frank Marcotte, and Mr. Howard will present him.

MR. HOWARD: Your Honor, we would call Francis T. Marcotte, M-a-r-c-o-t-t-e, to the witness stand.

ALJ CHILES: Please raise your right hand.

(Witness sworn.)

ALJ CHILES: Thank you. You may be seated.

MR. HOWARD: Your Honors --

ALJ CHILES: And please turn on your microphone for us if you wouldn't mind. Thank you.

MR. HOWARD: Your Honors, at this time I would ask that a multipage document entitled "Direct Testimony of Francis T. Marcotte" be marked as Company Exhibit 10 for identification purposes, please.

ALJ CHILES: It is so marked.

(EXHIBIT MARKED FOR IDENTIFICATION.)

MR. HOWARD: Thank you.

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FRANK T. MARCOTTE

being first duly sworn, as prescribed by law, was examined and testified as follows.

DIRECT EXAMINATION

By Mr. Howard:

Q. Would you please state your name and address.

A. Francis Marcotte, 1033 Tallokas Road, Crestview, Florida, 32536.

Q. Mr. Marcotte, I'm going to hand to you, or you should have before you a multipage document marked as Company Exhibit No. 10. Do you recognize that?

A. Yes, I do.

Q. Is that a copy of your direct testimony that was caused to be prepared and filed in this case?

A. Yes, it is.

Q. Mr. Marcotte, do you have any additions or corrections to make to Company Exhibit 10?

A. No, sir.

Q. Mr. Marcotte, if I were to ask you the same questions today while you're under oath, would your answers be the same as therein set forth in Company Exhibit 10?

A. Yes, sir.

MR. HOWARD: Thank you.

Your Honor, we would move the admission

of Company Exhibit 10 and make the witness available for cross-examination.

ALJ CHILES: We'll reserve ruling on your motion until after we're finished with examination of this witness. We'll begin with Ms. Parcels.

MS. PARCELS: Thank you, your Honors. I'm going to pass out what have been labeled as City Exhibits 2 through 6.

(EXHIBITS MARKED FOR IDENTIFICATION.)

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CROSS-EXAMINATION

By Ms. Parcels:

Q. Mr. Marcotte, you're a resident of Florida, correct?

A. Yes, ma'am.

Q. Okay. And I read your CV and direct testimony, and you're an independent aviation investigator specializing in helicopter accident reconstruction?

A. Yes, ma'am.

Q. Okay. Are you familiar with the National Transportation Safety Board?

A. Yes, ma'am.

Q. Can you tell me your understanding of what that board is responsible for as it relates to

1 roles like yours in aviation safety accident
2 reconstruction?
3 MR. HOWARD: Object.
4 ALJ CHILES: Basis?
5 MR. HOWARD: Relevance.
6 ALJ CHILES: Could you read back the
7 question for me, please.
8 (Record read.)
9 ALJ CHILES: Do you have a response to
10 the objection?
11 MS. PARCELS: Your Honor, I guess the
12 point of my question is more why are independent --
13 if he would establish that the National
14 Transportation Safety Board also investigates
15 crashes, why are independent investigators needed.
16 ALJ CHILES: I'll allow the question.
17 A. As I understand it, the purpose of the
18 NTSB is to investigate fatal accidents for accident
19 prevention purposes, and it's a federal government
20 entity. Independents fill the purpose of the civil
21 side of that. I provide expert testimony on the how
22 and the why in civil suits that federal officials are
23 unable to provide.
24 Q. And how do you go about doing that sort
25 of I guess additional analysis?

1 A. Review of -- in general, you start with
2 the NTSB reports, review the evidence and the
3 testimony of the folks that have been deposed, review
4 the evidence, visit the sites, and also involving
5 sending evidence that has not been previously tested
6 off to labs and drawing conclusions, expert opinions,
7 and providing them to, you know, to the court.
8 Q. In your many years of independent crash
9 investigation have you ever reached conclusions that
10 were contrary, as you noted you start with the NTSB
11 reports, have you ever reached conclusions that were
12 contrary to the NTSB reports of crash investigations?
13 A. Yes.
14 Q. Moving on in your direct testimony, your
15 answer to question 4, you said you were a rescue
16 helicopter pilot and you flew all weather, no radio,
17 no autopilot, no GPS. How would you characterize
18 that, as IFR or VFR? Instrument flight rules or
19 visual flight rules.
20 A. Under both.
21 Q. So you --
22 A. Day and night.
23 Q. So you have flown VFR and IFR?
24 A. Yes, ma'am.
25 Q. Okay. And I want to clarify, you said

1 you flew Bell 206 helicopters with FAA approved
2 minimums of 300/2. Could you elaborate what 300/2
3 means for the Board?
4 A. I was attempting to explain the weather
5 minimums that I have operated under carrying
6 passengers for hire.
7 Q. Okay.
8 A. Because -- that's under carrying
9 passengers for hire, 300/2 is a very low ceiling, and
10 2 miles' visibility over the water at night is very
11 low visibility.
12 Q. What's the 300 in reference to?
13 A. The 300-foot ceilings.
14 Q. And is that 300 feet above ground level
15 or above sea level?
16 A. Yes, ma'am.
17 Q. I just wanted to clarify that.
18 And then further on in that same question
19 you flew as a single pilot IFR in the California
20 coastal mountains. IFR is instrument flight rules?
21 A. Yes, ma'am.
22 Q. Can you explain to me briefly the
23 difference between instrument flight rules and visual
24 flight rules as you understand it.
25 A. Visual flight rules are what most of the

1 general flying public operate under, which is clear
2 of clouds, a see-and-be-seen environment. Instrument
3 flight rules are visibility ceilings well below a
4 thousand feet, visibility below 3 miles and/or, well,
5 when you want to fly on the airways in the commercial
6 air system.
7 Q. I'll just ask you, if you're going to use
8 a acronym like "CNBC" or "IFR" or --
9 A. See and be -- I'm sorry, I didn't
10 enunciate that. See and be seen.
11 Q. What does "see and be seen" mean?
12 A. It means you're not relying on a radar
13 controller to give you Simon-says directions on how
14 to fly. I can just get in the helicopter and if I
15 can see it, I can go there.
16 Q. That's what I needed to hear.
17 A. There you go.
18 Q. Like I said, if you're going to use
19 acronyms or anything like that, please explain them
20 because we need a layman's definition of that sort of
21 technical jargon.
22 A. I understand, and I'll try my best.
23 Q. Thank you very much.
24 In your answer to question 5 you said
25 you've reviewed the recommended staff condition 70

1 and Google Earth depictions of the area between
2 Dayton and Columbus, Ohio. Have you ever flown,
3 yourself, in the area there between Dayton and
4 Columbus, Ohio?
5 A. Not to my recollection, although I have
6 ferried through the area low and slow, but I'm not
7 sure if the track took us right through there. But I
8 did drive through it yesterday.
9 Q. So you drove through it and got a basic
10 familiarity as you were driving through it, but not
11 flying through that area --
12 A. Exactly.
13 Q. -- that was reviewed --
14 A. Yes, ma'am.
15 Q. -- previously by your Google maps --
16 A. Yes, ma'am.
17 Q. -- perusal? And from your previous
18 driving through and reviewing of the Google maps, how
19 would you characterize the terrain of that area in
20 pilot, not in pilot-speak, but maybe, you know, what
21 a pilot would see or look out for.
22 A. I was impressed by the fact that there
23 aren't any mountains to deal with, there aren't any
24 significantly high ridges or trees, the vast open
25 spaces, and significantly more low-level wires than I

1 would have otherwise thought in open country like
2 this. Rolling terrain, not necessarily flat. Does
3 that give you a sense for what I felt?
4 Q. Yes.
5 A. Okay.
6 Q. Now, you mentioned wires. For helicopter
7 pilots are wires of particular concern when it comes
8 to causes of crashes?
9 A. I have investigated several wire strikes.
10 Q. You have investigated several wire
11 strikes. Why, in the basis of those crashes that you
12 personally have investigated, why are wires posing
13 such a threat to pilots of helicopters?
14 A. I would say primarily because of their
15 visibility and, secondarily, because of their
16 proximity to the best landing sites and takeoffs,
17 departures.
18 Q. So when you reference "visibility," are
19 they difficult to see, then, because they're blending
20 in with the background of the sky? What's the
21 problem with visibility?
22 A. I feel like I'm educating as much as
23 testifying here, and if I -- I don't want to waste
24 your time on the one hand, and I don't want to speak
25 to you as if you're not knowledgeable, but if I can,

when I -- driving down that road I can see the power lines because they are silhouetted against the blue sky, or at least they were yesterday.

Q. Okay.

A. When I'm in the cockpit and I'm looking down at the surface of the earth, those wires are invisible because they blend with the earth tones behind them or the roadways behind them, until you get to a level where they are silhouetted against something, a background that is different, and the -- with the exception of rows of towers, but even those can be misleading at times for high-tension wires and such. You don't see the wires, you see the towers or the power poles.

Q. And in your experience, you indicated that you have flown near wind turbines, correct?

A. I have flown in the areas of them. I've never actually landed at one or had the need to.

Q. Okay. And can you tell me whereabouts those turbines were located that you have flown around?

A. Both in the Napa Valley, up there they're used to move air over the vines but they're very small ones, and in the area of -- I've done a lot of flying in San Francisco Bay so in the area east of

1 Hayward out in the Danville area there was, back in
2 that period, there were huge acreages of the turbine
3 fields.
4 Q. Okay. How long ago would you estimate
5 that was?
6 A. In the '80s and the '90s.
7 Q. So have you flown in or around modern
8 industrial-scale turbines since the 1980s?
9 A. No, but the flying I've done since then
10 may be more intense than what you're describing.
11 Q. Okay. Let's go to your direct testimony
12 and question 13. You indicate helicopter operators
13 are prohibited from their operation specifications
14 from flying at all when ceilings are below a thousand
15 feet. Is that a federal aviation guideline or is
16 that, as you indicate, operation specifications from
17 the manufacturer or from an employer? I'm not real
18 clear on, you know, the basis for that statement, so
19 could you elaborate, please?
20 A. All helicopters don't operate under the
21 same guidelines. As with fixed-wing, there are
22 noncommercial operations which I would describe as
23 Part 91 amongst aviators, that is not for hire
24 generally. You can do an awful lot under those rules
25 and you have a maximum amount of freedom such as your

1 sport pilots enjoy here.
2 As you go up in responsibility the FAA
3 requires you to adhere to more regulations so then
4 there's Part 135 operators, which is what I just
5 gave, for the oilpatch, I'm carrying passengers for
6 hire over the water so I have to have more required
7 equipment, procedures, and training. And then
8 there's Part 121 operators which I would say
9 commercial carriers that you've all flown with.
10 So you can anticipate that as the level
11 of the numbers of people you're carrying, the expense
12 of the equipment, more and more regulation is
13 required so that the people who are going to be
14 flying -- is it Life Flight? Are going to be
15 commercial operators with a significant degree of
16 control, but the FAA looks at each operator who is
17 proposing to do business and gives them operating
18 specs. to deal with.
19 And in my business, in the offshore oil
20 business, single-engine helicopters, for instance,
21 weren't even allowed to fly at night over the water
22 under that.
23 Q. Okay.
24 A. But a private helicopter pilot could go
25 out there all night if he wanted. So there are

1 differences in the requirements, and to the point
2 where -- and you want it that way because you don't
3 want to be required to deal in Ohio the same way
4 somebody in New Orleans or San Francisco would
5 because of regulation.
6 Q. So you think, from what you're telling
7 me, there is still a nationwide sort of standard
8 because you don't want it to vary from state to
9 state, but that there are different industries that
10 have different specifications such as the offshore
11 oil industry versus the medical helicopter industry.
12 A. I'm not sure I understand what you just
13 asked me.
14 Q. I'm just trying to make sure that I
15 understand what you testified to, that it might be a
16 different specification for operators in the offshore
17 oil industry versus common carriers that are land
18 based for hire for things such as medical helicopters
19 or sight-seeing.
20 A. But I would -- I would be more specific
21 in that I would say each operator has to propose and
22 be granted a set of specifications that they are
23 allowed to operate under and can't necessarily vary
24 from them, and they will be different operator to
25 operator.

1 Like in my -- in the offshore oil
2 industry there's any number of Part 135 operators
3 that have the same basic requirements in the FAA,
4 each one of which will have individual operating
5 specifications imposed on them by their local FAA
6 principal operating inspector, principal maintenance
7 inspector to require them to do things differently.
8 And that goes as far as, even though
9 we're doing the same thing with the same equipment in
10 the same place, we may have different limitations
11 because of the history of the country -- the company
12 or -- if you understand what I mean.
13 Q. I think I do.
14 A. So the final document for a commercial
15 operator such as Life Flight is going to be their
16 operations manual that has been approved on the FAA
17 side, their operations manual that has been approved
18 for their operation. Then there's the flight manual
19 which is the FAA approved portions of that and that's
20 how they operate the specific piece of equipment.
21 Q. Okay. You referenced Life Flight several
22 times and I want to direct you to City Exhibit 2.
23 A. This is the first time I've seen this
24 document.
25 Q. Okay. Just take a minute to familiarize

1 yourself with it. I only need to direct you to two
2 parts of that document, one is that the operator of
3 that service is titled CareFlight. Do you see where
4 that is there?
5 A. Yes, ma'am.
6 Q. In the About Us section?
7 A. Yes.
8 Q. Okay. And can you tell me what hospital
9 operates CareFlight from looking at that document?
10 A. I'd have to read the whole thing.
11 Q. It's at the top.
12 A. Oh. Miami Valley.
13 Q. So Miami Valley Hospital operates
14 CareFlight. And you understand CareFlight is a local
15 air ambulance service?
16 A. Yes, ma'am.
17 Q. Okay. I think it's the second paragraph
18 from the bottom, do you see a reference there to
19 CareFlight's aircraft being maintained and operated
20 by Air Methods?
21 A. I don't see it yet. Under Rapid
22 Response?
23 Q. No, it's above the Rapid Response
24 section.
25 A. I see that.

1 Q. Can you read for me that sentence?
2 A. "CareFlight helicopters are maintained
3 and operated by Air Methods Corp., and the program is
4 accredited by the Commission on Accreditation of
5 Medical Transport Systems."
6 Q. Okay. Are you familiar with that
7 Commission on Accreditation for Medical Transport
8 Systems?
9 A. No, ma'am.
10 Q. Are you familiar with Air Methods? I
11 mean just in general as a part of the industry.
12 A. Tangentially I would yes.
13 Q. Tangentially.
14 A. I'm familiar with the nature.
15 Q. Are you familiar with the providers for
16 air ambulance service; is that your tangential
17 understanding?
18 A. Yes.
19 Q. I want to direct you to, I believe it's
20 City Exhibit, it might be 3 or it might be 4 but it's
21 got an Air Methods logo at the top. Can you tell me
22 which exhibit that is?
23 A. I've got Exhibit 3 has "Air Methods" on
24 it.
25 Q. Okay. Can you read for me what that, the

very top of the page, what it appears to be?

A. The general operations manual.

Q. Okay. So that's a page from their general operations manual for Air Methods, correct?

MR. REILLY: Objection.

MS. PARCELS: It appears to be a page --

MR. REILLY: Lack of foundation. I don't think the witness knows.

ALJ CHILES: I'm sorry, Mr. Reilly, can you turn your microphone on. I can't hear what you're saying. I got "Objection."

MR. REILLY: It's my understanding of the witness's testimony that he doesn't know if that's a page from the manual or not.

ALJ CHILES: Do you have a response to the objection?

MS. PARCELS: Again, just that it appears to be a page from that general operations manual.

ALJ CHILES: Well, the objection's overruled. I'll allow you to ask the question and then the witness can answer whether he knows what this is or not.

Q. (By Ms. Parcels) Mr. Marcotte, does that appear to be a page from a general operations manual for Air Methods?

1 A. It appears to be Revision 7 from this
2 year.
3 Q. Okay. And there is a paragraph in there,
4 I think it's two or three paragraphs down, it talks
5 about obstruction clearance. Can you find that?
6 A. Yes.
7 Q. Okay. What is the minimum distance
8 recommended in that operations manual for obstruction
9 clearance?
10 A. Just a minute. I thought you were
11 referring to paragraph 3.13. I'll have to find
12 obstruction clearance.
13 I see it. Do you want me to read that,
14 ma'am?
15 Q. No, I just was going --
16 A. It says obstacles are cleared by a
17 minimum of 30 feet.
18 Q. Okay. In your experience is that a
19 sufficient distance for most helicopter pilots to
20 operate or would they use much larger clearance
21 distances when takeoff and landing for stationary
22 obstructions, that 30-feet distance?
23 A. I have operated with significantly less
24 clearance than that. And it would not surprise me
25 that operators may independently require more

1 clearance than that given the nature of their
2 environment, the training of their pilots, and the
3 experience of those pilots. Does that make any
4 sense?
5 Q. Yes.
6 A. Okay.
7 Q. Yes. Thank you. But I guess I'll
8 reiterate my question another way. You yourself have
9 taken off with less clearance but you believe that
10 other companies could mandate more clearance than 30
11 feet, but from the appearance of this document it
12 appears that Air Methods' minimum distance is 30 feet
13 and you believe that's safe?
14 A. That's correct.
15 MR. HOWARD: Objection.
16 THE WITNESS: I'm sorry.
17 ALJ CHILES: Basis?
18 MR. HOWARD: No foundation's been laid.
19 ALJ CHILES: Ms. Parcels.
20 MS. PARCELS: With Mr. Marcotte's
21 experience as a crash investigator I believe he's
22 qualified to testify as what his opinion is of
23 "safe."
24 ALJ CHILES: The objection is sustained.
25 I'd like the witness -- he hadn't seen this document

1 before.
2 MS. PARCELS: Okay, but I was asking him
3 to opine on a distance of 30 feet, not on the
4 document itself.
5 ALJ CHILES: I think you need to rephrase
6 your question if that is your question.
7 MS. PARCELS: All right.
8 Q. (By Ms. Parcels) In your opinion,
9 Mr. Marcotte, as a safety investigator and as a
10 helicopter pilot, is a distance of 30 feet from
11 stationary obstructions a safe distance to operate
12 for takeoff and landing?
13 A. That can be done with comfort by an
14 experienced pilot, yes, ma'am.
15 Q. Thank you.
16 And later in your testimony, going back
17 to your direct testimony, in your answer to question
18 8 you indicate "While speed is important, it is not
19 necessarily a priority once the rescue portion of an
20 event has been completed by the first responders."
21 Can you tell me why you believe that speed is not
22 necessarily a priority once an event has been
23 responded to?
24 A. I don't believe I said it was not a
25 priority. I said it was not my top priority.

1 Q. What is the top priority, then?
2 A. Safety. When you're in the business of
3 rescue or emergency medical transports, you've got to
4 be able to do it reliably and consistently and you
5 don't do that by being the fastest all the time,
6 having a good, quick, helicopter. And these
7 helicopters operate at speeds of 130 to 200 miles an
8 hour crossing the ground, so that in short distances
9 a little bit of speed is not as critical to getting
10 the job done and saving the individual as getting
11 there every time.
12 Q. Okay. That leads into my next question.
13 If you'll refer to the, well, I should ask first are
14 you familiar with the National Transportation Safety
15 Board's 2006 report, special investigation into
16 emergency medical pilots' safety?
17 A. 2006?
18 Q. 2006.
19 A. No, ma'am, I'm not.
20 Q. Okay. I'll direct your attention, I
21 believe it's City Exhibit 5 [verbatim] as a cover
22 page and excerpt from that 84-page report.
23 A. I see. I have something marked Exhibit 5
24 in front of me.
25 Q. Okay. You testified that you're not

1 familiar with that, but are you familiar with the
2 general trend in the industry between -- the medical
3 helicopter industry between 2002 and 2005 of a high
4 rate of fatal crashes in the EMS helicopter pilot
5 industry?
6 A. No, I am not. And particularly the word
7 "increase."
8 Q. Okay. Are you familiar with a National
9 Transportation Safety Board report as far back as
10 1988 regarding problems that contributed to crashes
11 in the industry that flagged things such as poor
12 communications and competitive pressure and risky
13 missions? Are you familiar with that report from
14 1988?
15 A. No, ma'am.
16 Q. Okay. In your opinion, what can be done
17 to improve medical helicopter safety? You indicated
18 that safety is your priority. What can be done to
19 improve medical helicopter safety in the industry as
20 it stands currently?
21 A. My God, that expands what I'm testifying
22 on to unlimited proportion compared to paragraph 7.
23 Q. Let me narrow it down.
24 A. Okay.
25 Q. You mentioned that you drove through

1 Champaign County and the area between Columbus and
2 Dayton and you observed the terrain, and you said it
3 was great because it wasn't the mountains of
4 California, you didn't have mountains that you had to
5 worry about flying into.
6 Even with the gently rolling terrain of
7 Champaign County do you believe a terrain avoidance
8 warning system as standard equipment on medical
9 helicopters would be beneficial and would it, do you
10 know if that's standard practice in the industry as
11 it stands today?
12 MR. HOWARD: I'm going to object to
13 several questions, at least two questions that I
14 could count in there. Could we break it down,
15 please?
16 MS. PARCELS: Sure.
17 ALJ CHILES: Can you rephrase? Thank
18 you.
19 Q. In your opinion, given the terrain of
20 Champaign County, would a terrain avoidance warning
21 system help helicopter pilots operating in that area?
22 A. It may --
23 Q. Okay.
24 A. -- in that this is relatively newer
25 technology, it's not state of the art, but it

notifies you of obstacles that are on the sectional charts, are on the aviation charts and the autobin so that you don't have to be -- you can be looking out the windshield looking for these things as they're telling you where they are and how high they are on the one hand, but on the other hand if you -- there are some -- I would say that in general those things are the future. I don't know as they're required by anyone at this point.

Q. Okay.

A. And they may be at the option of the operator and their FAA-required equipment.

Q. Okay. What about in night flying conditions, what about equipment such as night vision goggles, would that help pilots operating, again, from your observation of the terrain and the geographic characteristics of Champaign County, would night vision goggles as standard equipment on medical helicopters help those pilots operating in that area to avoid obstructions?

A. I would qualify the fact that I have never worn night vision goggles. My night flying period was done before they became operationally convenient. However, they do provide -- they're costly, they narrow a pilot's field of vision, but

1 particularly at night they allow the conditions
2 necessary to land the helicopter in confined areas
3 much better than we ever had in the past, so I would
4 think that they could be beneficial.
5 Q. Okay. I'll direct your attention to I
6 think it's, is it City Exhibit 3? It's a big blue
7 page.
8 A. (Indicating.)
9 Q. That's it. Can you tell me, what's the
10 title on the --
11 ALJ CHILES: I'm sorry I have to
12 interrupt you, just for clarity purposes this appears
13 to be City Exhibit 5.
14 MS. PARCELS: City Exhibit 5. My
15 mistake, excuse me.
16 Q. Can you tell me what the headline of that
17 is?
18 A. "Night Vision Technology Assists
19 CareFlight with Night-time Missions."
20 Q. And what's the date on that? It's under
21 the blue bar.
22 A. 2011.
23 Q. Okay. So just perusing that article it
24 appears to be from -- can you tell me who wrote the
25 article?

1 A. Marcia Roemer.
2 Q. And does she have --
3 A. An EMT.
4 Q. Okay. So can you tell me, from that
5 article it appears that CareFlight is equipped with
6 night vision.
7 MR. HOWARD: Objection. No foundation
8 laid as to the truth of this document, who actually
9 wrote it.
10 ALJ CHILES: The objection is sustained.
11 The witness hasn't testified whether he's familiar
12 with this.
13 MS. PARCELS: Okay. I'll just strike
14 that, then.
15 Q. Take a moment to familiarize yourself
16 with that article, Mr. Marcotte.
17 A. Okay.
18 I've read this article.
19 Q. Okay. You testified that you believe
20 night vision goggles do improve safety even though
21 they do limit a pilot's field of vision because they
22 allow a pilot to detect obstacles that they would
23 otherwise not be able to see in dark conditions; is
24 that correct?
25 A. I said that they can.

Q. They can, okay.

A. I'm not sure that I would say that they would under all conditions.

Q. Okay. Is it your opinion that terrain avoidance warning systems, or TAWS, which you testified about just a minute ago, and night vision goggles, and we'll abbreviate those as "NVG," can detect obstacles but not necessarily other flight risks?

A. Yes.

Q. Okay. What sorts of flight risks would those technology systems, the TAWS and the NVG, not detect?

A. Anything airborne: Birds, other aircraft.

Q. Okay. Are you aware of a condition as a pilot that creates dangerous flying conditions known as wake turbulence?

A. I'm familiar with wake turbulence, yes.

Q. Okay. You actually reference wake turbulence a little bit in your testimony in your answer to, I believe it's question 10, and you note that there is going to be a large clear zone free of wind turbines above the length of U.S. Route 36.

A. Yes.

Q. Do you know if U.S. Route 36 is a two-lane or four-lane road?

A. It's two-lane.

Q. Okay.

A. The part I drove yesterday is.

Q. Do you know if there are any four-lane roads in the project area?

A. I do not know that.

Q. Okay. Do you know how far away the setbacks for these proposed turbines are from U.S. Route 36?

A. I was provided both the -- just a moment.

I was provided an electronic depiction of the area of the proposed Phase II and indicating the positions of each of the proposed turbine sites and other obstructions in the area, as well as I was -- in some of the documents that I reviewed, and I can't remember specifically which one, a verbal depiction of setbacks, and it appears to me that they vary between, as I recall, they vary between I think the nearest was a thousand feet from Route 36 to 1500 feet on either side.

Q. Okay.

A. So leaving a relatively wide swath, yes.

Q. So you indicate that the helicopter

pilots could fly along U.S. Route 36 when flying into the project area, what's the basis for your opinion that that would be some sort of clear zone? Is that -- I should back up.

Can you clarify for me, when you say that's a clear zone, whether that's free of turbine obstruction or wake turbulence -- or wake turbulence?

A. I'm not sure I understand the specific nature of your question. Is the wake turbulence you're describing that you're concerned with turbulence from the turbines themselves?

Q. Yes.

A. Could you repeat the question to me?

Q. Yes. When you're describing U.S. Route 36 as a large clear zone, is that free of the wind turbines, the stationary physical obstructions, or the wake turbulence from those -- from the operation of those turbines?

A. Both. As I recall it, there's only one existing 300-foot tower along the road as it is, and the pilots are familiar with that. So with the exception of that one tower, it's relatively clear, and it's particularly clear of both the maximum height and the turbulence associated with wind turbines.

1 Q. Okay. Your answer to question 16 in your
2 direct testimony, about midway down you indicate any
3 wind turbulence involved descends and dissipates
4 quickly. Did you mean wind turbulence or wake
5 turbulence?
6 A. Wake.
7 Q. Wake turbulence. And what's the basis
8 for your statement? I mean, have you conducted -- as
9 an aircraft crash investigator have you conducted
10 crash investigations where wake turbulence was a
11 factor in the crash?
12 A. Possibly, but there are many kinds of
13 wake turbulence, and if you -- well, there are many
14 types of wake turbulence.
15 Q. Well, again, I'm a layperson so could you
16 describe to me what wake turbulence is and why there
17 are several kinds of wake turbulence?
18 A. All right. When I was flying in the
19 Helicopter Airline, in my vitae, we had to cross the
20 international airports of Oakland, California, and
21 San Francisco International. SFO has four major
22 runways crisscrossed with major jets taking off on
23 each one less than every -- less than a minute
24 separation sometimes. The wake turbulence of an
25 inbound or outbound jet descends at the rate of 300

1 feet a minute and dissipates after three minutes.
2 Now, that's a very heavy jet that dissipates an awful
3 lot of weight turbulence, all right, supporting the
4 weight of that aircraft.
5 Now, we operated helicopter flights
6 across -- through that wake turbulence all day every
7 day, 365 days a year, without incident from wake
8 turbulence, so I know that that can be done. That's
9 one form of wake turbulence.
10 There is -- if you just consider -- now,
11 that's the classic form of wake turbulence that we
12 see on the TV.
13 Q. Just to interrupt just so I understand,
14 wake turbulence is generated by aircraft in that
15 scenario.
16 A. In that scenario.
17 Q. Okay.
18 A. It's the movement of the aircraft and the
19 engines that generates the wake and the effect of the
20 lift over the wings actually creates it.
21 There is a disturbance in airflow, which
22 is what we're looking at more here than that. One,
23 because the turbines don't generate a wake, they
24 don't add power to the existing airflow system, they
25 detract, they absorb power from it so that it's not

like you're going to walk behind an exhaust of an engine that's producing power.

The airflow in front of a turbine is going to be whatever the ambient airflow is. For example, if we have 20 knots of air flowing into a wind turbine, that turbine is going to generate electricity, as I understand it, by absorbing that energy, it actually results in a reduction in air velocity, right, that changes the velocity by reducing it, and I understand it's by about a third but I am not an expert in that area, okay? And it dissipates quickly. And I'm told, my research shows that it's about three rotors of the size of the rotor of the windmill, of the wind turbine, and descends --

Q. Okay.

A. -- so that there will be no wake above the turbine or on either side of it or in front of it for anyone to be concerned about. And, in fact, they could put the next row of turbines quite close and it's normally I think six to eight rotors because then the second row of turbines are in clean air and you --

Q. Okay. You indicate that's your research. Did you do a study or are you talking about research that you've read?

A. I came up with a photograph that I think -- that describes it to me as I look through of a wind farm in the North Sea, that the photograph was taken at the formation of fog and it shows quite graphically the pattern that the air takes as it goes through which gave me an idea of what was going on with that air.

Q. So I just want to make clear that the wake turbulence from wind turbines is different from that generated by aircraft, but if I'm to understand your testimony, the decrease in velocity still creates some disturbance in the air?

A. Yes. Now, that -- since I've never landed behind a wind turbine, I don't know, but I've landed behind other things that disturb air.

Q. Such as?

A. Any offshore oil rig, I've landed on vessels that disturb air significantly, and in the offshore oil market almost -- you could count on every landing being behind a superstructure or a drilling apparatus or exhaust fans from massive turbine pumps and with experience you -- and training you learn how to adapt and overcome those problems.

Q. Okay. Also in your answer to question 16 in your direct testimony you indicate it is neither

1 practical nor desirable to require immediate
2 shutdowns of turbines for emergency Life Flight
3 services.
4 A. Yes.
5 Q. Why?
6 A. It's not going to affect the landing of
7 the aircraft whether they're turning or not. I have
8 to avoid them anyway.
9 Q. But you testified that you have not
10 personally tried to land an aircraft near an
11 industrial turbine.
12 A. That's correct, but I've landed next to
13 things that were moving.
14 Q. Okay. Is it easier to land next to
15 stationary objects versus things that are moving when
16 you're talking about the absence of wake turbulence
17 from that moving object?
18 A. I'm certain I don't understand what you
19 just said.
20 Q. Is it safer to land near a stationary
21 object when you don't have any wake turbulence
22 involved?
23 A. The only time that you will land next to
24 a stationary object and wake turbulence is not
25 involved is when there's no wind.

1 Q. Okay.
2 A. And I don't think that it makes a
3 difference. It's not you're safer or more unsafe. I
4 have to have whatever I'm landing next to in my field
5 of vision whether it's moving or not.
6 Q. But you indicate it's not practical or
7 desirable to require immediate turbine shutdown if
8 CareFlight or Life Flight or any EMS helicopter has
9 to fly in a project area. What's the basis for your
10 opinion that it's not practical?
11 A. Going back to --
12 Q. I guess I should clarify. Do you know
13 personally how fast a turbine can be shut down
14 remotely?
15 A. No.
16 Q. Then what's the basis for your opinion
17 that it's not practical?
18 A. Going back to being dispatched, on-scene
19 calls both in a rescue mode and in an emergency
20 medical services mode, I have never asked anyone to
21 change what exists inbound simply because things
22 change so rapidly. You would be shutting down things
23 unnecessarily much of the time. And, if it doesn't
24 matter whether they're turning or not, there's no
25 need to.

1 And, secondly, the response time for --
2 of a very quick aircraft may be in excess of the
3 shutdown period and you would actually be delaying
4 responses by doing so.
5 And, if you've got limited resources,
6 communications becomes the critical line of progress
7 and I don't see that it's practical, to the vast
8 distances involved here, to be shutting these things
9 down as much as it's not necessary, in my mind.
10 Q. Now, you spoke just about vast distances
11 involved, and you're aware of the size of this
12 project area?
13 A. In general terms.
14 Q. Okay. Is it your opinion that a
15 helicopter responding in the area might be benefitted
16 by a designated landing zone, that the ground crew
17 EMS responders wouldn't have to set up a landing
18 zone, that there would be like some sort of
19 stationary place in the project area that helicopters
20 could respond to in and out of in case there is some
21 sort of issue with landing too close to a turbine?
22 A. Yes.
23 Q. Okay. I want to go back to your
24 testimony about working for the offshore oil rig
25 industry. Have you flown internationally, then, with

1 the offshore oil rig industry?
2 A. In the oilpatch my experience is in the
3 Gulf of Mexico.
4 Q. Okay. So have you --
5 A. But, I've landed on foreign vessels which
6 makes it an international proposal. In some
7 occasions you're actually landing in a foreign
8 country in the Gulf of Mexico.
9 Q. You mentioned that you saw a photograph
10 from the North Sea, but you haven't been to,
11 yourself, to northern Europe and flown --
12 A. No.
13 Q. -- to oil rigs there. Are there wind
14 turbines operational in the Gulf of Mexico outside
15 U.S. waters that you know of?
16 A. I haven't operated near them offshore
17 although some of the rigs actually generate some of
18 their power, or not rigs, the production platforms.
19 The unmanned production platforms routinely have
20 small generators on them and it's just a matter of
21 avoiding them with your wake.
22 Q. Is there any sort of clearance corridor
23 when you have to fly those offshore operations like
24 as far as the distance between oil rigs or anything
25 like that in terms of, you know, for helicopter

safety?

A. No.

MS. PARCELS: Okay. I have nothing further for this witness. Thank you.

ALJ CHILES: Thank you.

County?

MS. NAPIER: Thank you. Just a few questions.

- - -

CROSS-EXAMINATION

By Ms. Napier:

Q. Mr. Marcotte, do you know what CareFlight's opinion as to the necessity of condition 70 of the Staff Report?

A. No.

Q. Are you speaking today for CareFlight?

A. No, ma'am.

Q. Are you affiliated with CareFlight in any way, shape, or form?

A. I have no dog in this fight.

Q. And just to clarify what you had responded to Attorney Parcels' questioning, you're stating to the Board that you haven't flew through a wind farm or landed in a wind farm?

A. Not that I recall. There was one

aircraft crash that was adjacent to one and I've been close to them, but I haven't actually landed, to my memory, in a wind farm. But it wouldn't bother me if I did.

Q. So your opinions are based on your experience in other areas other than flying through a wind farm or landing in a wind farm; would that be a fair statement?

A. You'd have -- my experiences in what?

Q. Well, I'm sorry.

A. I'm sorry.

Q. Let me repeat that.

A. My opinions on what, because my opinions are varied because of my background and experience.

Q. Your opinion as to what you have testified in your direct testimony. The opinion as to the necessity of condition 70 is based on your experience outside of any experience that you would have in flying into a wind farm or landing in a wind farm; is that correct?

A. With the exception of landing behind a wind turbine specifically for some reason, I've been operating helicopters since 1969 in all circumstances, some of which are more aggressive than that. Does that answer your question, ma'am?

Q. Sure.

A. Okay.

Q. And you had testified that -- about the air in front of or beside a wind turbine as usable; is that correct?

A. Yes.

Q. Does that mean that the area behind the wind turbine is not usable?

A. What that means is that I haven't tested the area behind the wind farm nor have I read anybody that has, that would tell me that, my suspicion if you want is you just get a thump like an air disturbance because the velocity is reduced and the direction is changed somewhat.

Q. Isn't it true, you can tell me if you know this, isn't it true that a wind turbine, the area in front of it and the area beside it are always changing because the wind turbine changes according to wind direction?

A. I understand --

Q. Is that your understanding?

A. -- that some of them can change direction and these may be that mode.

Q. Okay. And is your testimony reflecting the fact that they can move directionwise

1 or is it based on them kind of being stationary but
2 the blades moving?
3 A. My testimony accommodates both --
4 Q. Okay.
5 A. -- in that, and the primary reason for
6 that is if the blades can weather vane, so to say,
7 then the area in front of them is still landable,
8 it's just changing. And the ground crews are going
9 to go to that area and bring the helicopter in. Does
10 that make sense?
11 You're going to have -- the helicopters,
12 each time the helicopter lands, like when you fly
13 commercial, the airplanes take off and land into the
14 wind at the runways, the runways are aligned with the
15 prevailing winds, right? I would imagine that much
16 of the time the winds will be similar around here but
17 if they're not, the helicopter -- we're not
18 controlled by large amounts of concrete and FAA
19 aligning us with that concrete into the wind.
20 I have to evaluate each landing every
21 time and I'm the only one responsible for getting my
22 ship into the wind prior to touchdown. Now, that can
23 be on a long straight in or that could be at an angle
24 with a turn to final as long as I keep the
25 obstruction in my peripheral view at all times.

1 Q. You had just said something in response,
2 I think, right --
3 A. I'm sorry if I meandered.
4 Q. -- at the beginning about ground crews
5 bringing the helicopter in.
6 A. Yes.
7 Q. Can you explain your opinion as to a
8 ground crew meeting a helicopter in a field in
9 response to an emergency.
10 A. What aspect of that are you interested
11 in.
12 Q. Well do you believe that there will be a
13 ground crew there to bring in the helicopter; is that
14 your assumption?
15 A. No. I've done it both ways.
16 Q. Well, I just was wondering why you had
17 said that.
18 A. The reason I said it was because in some
19 of the photographs that I've seen I've seen, I
20 believe it was this air ambulance company landing on
21 roadways blocked off by ambulances and police
22 vehicles amidst power lines, and when I drove Route
23 36 and 29 yesterday, I was -- I noticed the fact that
24 the power company seemed to run power lines down both
25 sides of the roads as opposed to just one, and they

set up it seemed like every pole or every other pole smaller wires that ran back and forth between them at 90 degrees and there were crossing high power lines.

So that I would think many of the night landings or foul weather landings, the ground crews, I assumed that the ground ruse crews would be assisting in that or else we would have seen more wire strikes in this area.

Q. So I believe you testified you have seen the footprint of this wind project, correct? You've seen where the towers are going to be located?

A. Yes, ma'am.

Q. Okay. And --

A. On a very tiny graph.

Q. I know you had indicated that they could land or fly along Route 36, correct?

A. Without concern for the height of the towers. You can fly right over the wind farm anytime during the day or you have good visibility and high ceilings, they're just going to overfly it, period. The only time you're talking about is when you have a life-threatening rescue or response that has to be done at night under low visibility conditions is the only time that the wind farm is even going to be noticed.

Q. And so, since you had indicated you were out there, you drove the roads and you've seen the footprint, you've seen that the turbines and the homes are not only along the highway, they're going to perhaps be on much smaller county roads or on township roads or maybe their own access drive; would that be a fair statement in your observation?

A. I didn't leave 36, but I saw that most of the homes were along 36 and 29. I didn't wander off in the backwoods.

Q. Well, would that be surprising to you that people would live off of 36?

A. No, ma'am.

Q. And so there would have to be some way for a helicopter to get to either land on 36 or fly along 36 in a clear zone from an accident site or to an accident site, correct?

A. You'd have to repeat that question.

Q. So there may be instances where the helicopter has to come from someplace else to get to 36 to fly over this turbine project, correct?

A. Yes.

Q. And so I know that you had answered in response to Attorney Parcels a question about it not being practical to shut down the turbines, but I'm

not sure for who you are stating in here it is not desirable to shut down the turbine; who would that be?

A. It's not desirable in the small area, in the small aspect that there's no need to disrupt power generation.

Q. So it isn't desirable for the developer to shut that down? Is that what you're saying?

A. It wouldn't be, I wouldn't think. Nor is it desirable from the pilot's standpoint because I don't know what the blades do -- of the turbines, what they do when they're shut down. I simply don't know. Do they stop windmilling? Do they stop rotating? And that would go to the design and I'm not familiar with that.

But if I operate around equipment of known condition, the fact that they're turning all the time, one of them that's not turning isn't going to sneak up on me. Does that make sense? It's not going to surprise me in any way so that if you're disturbing one or two of them and then we change the location, now I've got to worry about what that means to me as I fly by them, so it's just not desirable.

If I've got them all turning in the same direction, I know where the wind line is, I know

where the wake, whatever that is, is, and I don't have the distraction of something different for me as a pilot.

Q. Okay. So do you believe that, then, CareFlight pilots need to be trained and tested on this -- on the operations of this project?

A. I think that will be inevitable.

Q. You mean experiencewise or educationwise?

A. I would -- and we have to realize -- well, say that again.

Q. Well, I mean, are you saying that that's inevitable because they'll just fly into it trial by fire, so to speak, or are you saying that it's inevitable that they will get the education?

A. It's necessary and inevitable because, primarily because as pilots, or just people in general, we tend to oppose change so that if you know you can operate without windmills, then something's going to change.

As change occurs you will adapt to it. The ground crews are going to be requested the first time one of these is built, the first time that the first one goes up and you have to operate next to it, they're going to find the most workable area for the helicopter to land in just like they're doing now,

1 right? They're going to go out -- so they are going
2 to learn from experience.
3 They're going to transfer that to -- the
4 pilots will see it, they'll say yeah, last time I
5 went out and did it, it worked fine this way, then
6 that's going to be part of the -- that will become
7 part of the initial pilot area familiarization
8 flights and on and on until eventually when -- if
9 these areas and these responses get so prevalent,
10 that the FAA makes them incorporate it in their
11 manuals and everything, and their training programs.
12 But, basically, the pilots and the ground
13 crews are going to get familiarized and have their
14 anxieties reduced, I believe, with more knowledge.
15 Q. So I know you had stated that safety was
16 your number one priority, and I'm going to
17 characterize this in your statement that, in essence,
18 there was some trial by fire, that they're going to
19 have to experience it in order to learn how the wind
20 project works. Do you believe that there is, in
21 essence, an unsafe component there to the wind
22 project as opposed to there not being a wind project
23 at all there?
24 A. I think "trial by fire" was your words,
25 first off. And I would anticipate that as the

1 windmills are built, both the operator and -- of the
2 helicopters and of the wind farm is going to have the
3 opportunity to test and evaluate these things. When
4 the first windmill is built, the operator could be
5 invited to test his equipment in or around the
6 windmills or circle them in any way they want. So it
7 doesn't have to be a trial by fire, it can be an
8 observe-and-learn situation.
9 Q. So you're assuming there will be some
10 coordination between the operator and the emergency
11 flight service.
12 A. I don't assume that, but I expect it
13 would be beneficial.
14 Q. Are you recommending that type of --
15 A. I would.
16 Q. -- type of coordination?
17 A. Familiarity is the best, and it is --
18 familiarity and training, operational hands-on
19 training is the best preventative measure to avoid
20 mishaps in the future.
21 Q. And do you believe that between the
22 CareFlight organization and the developer that they
23 should develop some type of plan in coordination,
24 things like that?
25 A. We're not reinventing the wheel here.

1 When I got to the Gulf of Mexico, I had never landed
2 on a rig, they didn't let me land on a rig until some
3 fat old guy took me out and showed me how to do it.
4 I would imagine the same thing could happen here if
5 it was done with forethought and planning.
6 MS. NAPIER: Thank you. I appreciate it.
7 THE WITNESS: Can I get a glass of water?
8 ALJ CHILES: Sure. Why don't we take a
9 brief, ten-minute recess.
10 (Recess taken.)
11 ALJ CHILES: All right. Let's go back on
12 the record. Mr. Van Kley.
13 MR. VAN KLEY: Thank you, your Honor.
14 - - -
15 CROSS-EXAMINATION
16 By Mr. Van Kley:
17 Q. Good morning, Mr. Marcotte.
18 A. Good morning, sir.
19 Q. Are you aware of an instance in Wisconsin
20 in which an airplane flew into a turbine in the
21 fog killing four people?
22 A. No, sir.
23 Q. Did you do any research for purposes of
24 your preparing for your testimony to determine
25 whether there had been accidents involving aircraft

and wind turbines?

A. No, sir.

Q. I believe you said that on one instance you landed near a wind farm; do I recollect that correctly?

A. Yes.

Q. Okay. How close to a turbine did you land?

A. Less than a half mile I would think.

Q. Approximately --

A. Which is in the vicinity of it.

Q. In the vicinity of a half mile away?

A. Yes, sir.

Q. Okay. Do you recall how many turbines were in the area? Is it just one, or more?

A. It was at the edge of a wind farm -- wind generating area --

(Interruption.)

THE WITNESS: It would be at the edge of such an area. And it -- go ahead.

Q. Do you recall the weather that day?

A. Clear.

Q. Clear?

A. Yes.

Q. All right. And do you recall how fast

the turbine rotors were rotating that day?

A. No, sir.

Q. Do you recall whether they were even on?

A. No, sir.

Q. I think I heard you say that low visibility conditions don't exist all the time and, therefore, if they don't exist, you can fly over the wind farm; am I recollecting that correctly?

A. Yes, sir.

Q. Okay. Now, what do you mean by -- what's a low visibility situation? How would you define that?

A. For visibility that restricts -- forward visibility -- let's see. You'll have to restate the question because I'm not sure -- you'll just have to simply restate the question.

Q. Well, for example, is there low visibility when there's fog?

A. Yes.

Q. Okay. Is there low visibility when it's raining?

A. Yes.

Q. Okay. Is there low visibility when it's snowing?

A. Can be, yes.

1 Q. Now, isn't it true that during the low
2 visibility situations we've just named that accidents
3 on the highways may increase?
4 A. That's possible.
5 Q. So there may be more instances in which a
6 CareFlight helicopter may need to come out for an
7 accident under those conditions than under clear
8 conditions.
9 A. That's possible.
10 Q. Are you aware that the Illinois
11 Agricultural Aviation Association has passed a
12 resolution informing the public that its pilots will
13 not fly through or near wind turbines?
14 A. No, sir.
15 Q. Are you aware that the crop dusters, that
16 the pilots of the crop dusters in Illinois refuse to
17 fly near turbines because of the wakes from the
18 turbines?
19 A. I am not aware of that, however, it
20 wouldn't surprise me because it would affect the
21 pattern of their spray which is very expensive and
22 their primary consideration.
23 Q. Well, are you aware that they have
24 declared in the resolution that I mentioned that they
25 would not fly near or among turbines because of the

safety hazard?

A. I'm not aware of that, sir.

Q. Do you know that the wake from a turbine will extend to seven to ten rotor diameters from that turbine?

A. As I understand it, that's true.

Q. And do you understand that a typical rotor diameter for a wind turbine is about 700 meters or about one-half -- I'm sorry. Do you understand that the typical rotor diameter is about a hundred meters?

A. I'm not familiar with rotor -- the specifics of wind turbines.

Q. Okay. Would you look at a binder that's in front of you, binder No. 1 which is an application.

A. I have never seen this document before.

Q. That's okay, I'm just going to show you some information from the application which has been admitted into evidence.

A. I have I think Exhibit 1.

Q. I'd like to refer you to page 11 of Volume I of the application. Would you let me know when you've reached that page.

A. I'm not sure I understand the layout of

this document. Is this Exhibit L?

Q. No. No. You're in the wrong volume. Try Volume I.

A. I'm sorry. I moved them so I could see. I have page 11, Volume I, it has Table 03-1 at the top.

Q. Exactly. All right. Do you see the rotor diameters set forth in that table for seven wind turbine models?

A. I see the diagram.

Q. All right. And you'll see that the rotor diameter for those turbines ranges between 300 feet, 303 feet, which is 92.5 meters, and 338 feet which is 103 meters.

A. Yes, I do.

Q. Okay. Now, going back to your previous answer where you stated that you believed it was true that the wake will extend to seven to ten rotor diameters, if you do the math, that would mean that a wake will extend to about a half mile from the turbine; is that correct?

A. I haven't computed it. And the fact that the wake extends ten diameters --

Q. Okay, answer the question first, please.

MR. HOWARD: Could he be permitted to

finish?

MR. VAN KLEY: Well, he wasn't answering the question. He was going out on a tangent on some other topic. I asked him whether the wake extended a half mile, that's the question he needs to answer.

A. I'm not certain what the diameter of the rotors we're speaking of is, sir.

Q. Okay, look at Table 3.1 -- or, 3-1.

A. I'm looking at it.

Q. If that table is accurately setting forth the rotor diameters for the turbines that will be put into this wind farm, isn't it true that the wake from those turbines will extend about a half mile?

A. I have no way of knowing whether the rotors we're speaking of are in this chart.

Q. Well, I'm asking you to assume that they are because prior testimony in this case has established that. So would you please answer the question.

A. Yes.

Q. Okay. Thank you.

MR. VAN KLEY: No further questions.

ALJ CHILES: Mr. Reilly.

MR. REILLY: Thank you, your Honor.

- - -

CROSS-EXAMINATION

By Mr. Reilly:

Q. Good morning. My name is Steve Reilly. I'm here on behalf of the staff of the Ohio Power Siting Board.

I would like to talk to you for a second about your preparations for your testimony. First of all, did you draft your testimony?

A. Yes.

Q. Okay. In preparing that testimony what did you do? In preparing the draft what did you do?

A. I was provided the basic information on what was happening and some of the testimony -- prior testimony and reviewed it, evaluated it against my personal experiences, and I did some personal review in the extent of night vision goggles and just a cursory wind turbine wake turbulence review on a computer.

Q. Now, have you heard of the CareFlight service? I mean, I think it's been mentioned in here. Does that name have meaning for you?

A. I am in no way associated with CareFlight, sir.

Q. But does the name CareFlight have meaning for you?

1 A. I recognize it as an established air
2 ambulance provider.
3 Q. Okay. And that's the established air
4 ambulance provider in the area of this site, the site
5 covered in the application, is it not?
6 A. To my knowledge, it is the primary if not
7 the only one in this area.
8 Q. Okay. Did you interview anybody from
9 CareFlight in preparation for your testimony?
10 A. No, sir.
11 Q. Okay. So you didn't interview any of
12 their pilots.
13 A. No, sir.
14 Q. Did you inspect any of the machinery at
15 CareFlight in the preparation for your testimony?
16 A. I looked at their Dauphin yesterday.
17 Q. And your testimony was filed -- strike
18 that.
19 Yesterday would have been November
20 14th? Thirteenth. November -- yesterday would
21 have been November 13th, correct? When did you
22 prepare your testimony?
23 A. Last month.
24 Q. So in preparation for your testimony you
25 had not inspected any of their machinery, correct?

A. That's correct.

Q. Okay. Now, as I understand your testimony, you object to condition 70 of the Staff Report; is that correct?

A. I disagree with the necessity.

Q. You disagree with the necessity for condition 70 of the Staff Report. Correct?

A. Yes.

Q. Okay. I would like you to take a look at your testimony on page 5, question 15. Would you take a look at that, please.

A. I have it.

Q. Okay. And in question 15 -- and you wrote question 15, correct?

A. No, sir.

Q. You did not write question 15 of your testimony?

A. I answered it.

Q. Who wrote question 15 of your testimony?

A. The legal staff that I'm . . .

Q. I just want to clarify an earlier answer. Previously you testified that you drafted your testimony and by that you mean -- what did you mean by that? What parts of your testimony did you draft?

A. My answers.

Q. Okay. And where did you get the questions to answer?

A. They were provided for me by legal staff.

Q. And by "legal staff" do you mean the legal staff of Champaign Wind?

A. Yes.

Q. Now, if you know -- could you take a look at question 15. Do you quote condition 70 in question 15?

A. I don't understand the question.

Q. Okay. Question 15 contains a quote; do you see that?

A. Yes.

Q. It runs about five or six lines.

A. Yes.

Q. Do you accept that as a quote of condition 70?

Let me back up for a second. I'm going to talk to you about the quote and I would like us to agree that that's condition 70.

A. I believe it is, and I have seen condition 70 and I didn't -- I didn't notice any differences.

Q. Okay. Now, taking a look at condition 70 I'd like you to take a look at the first sentence.

1 Would you read that to yourself for me, please, as
2 it's presented in question 15. Let me know when
3 you've finished.
4 A. I've finished.
5 Q. Okay. Do you see the phrase "medical
6 needs service plan"?
7 A. Yes.
8 Q. You don't object to a requirement that
9 the Applicant and CareFlight -- that the Applicant
10 prepare a medical needs service plan in conjunction
11 with CareFlight, do you?
12 A. I'm not familiar with what a medical
13 needs service plan involves, but it sounds like it
14 would be beneficial.
15 Q. Okay. So when you said that you do not
16 recommend condition 70, what you were referring to
17 were the requirements in the second sentence,
18 correct?
19 A. That's correct.
20 Q. So what you objected to about condition
21 70 was that the plan shall incorporate -- I'm reading
22 from question 15, the quote of the second sentence of
23 condition 70. You objected to that "This plan shall
24 incorporate measures that assure immediate shutdowns
25 of any portion of the facility necessary to allow

1 direct routes for emergency life flight services
2 within the vicinity of the facility"; is that
3 correct?
4 A. That's correct.
5 Q. Okay. And that's the only part of
6 condition 70 you object to.
7 A. Yes.
8 Q. Now, just so I understand your previous
9 testimony, you mentioned before the coordination
10 between the groups where a helicopter is landing, and
11 you mentioned specifically oil rigs, and the
12 helicopter landing, the coordination and agreement on
13 how these things were going to take place was a
14 benefit; did you not?
15 A. I don't believe I phrased it that way.
16 Q. I think you phrased it something along
17 the lines that I wouldn't be allowed to land the
18 helicopter until the fat guy in the T-shirt -- until
19 I agreed to land the helicopter the way the fat guy
20 in the T-shirt told me to do it. I think you said
21 something along those lines. Does that sound
22 familiar?
23 A. That sounds familiar, but the -- okay.
24 I'd ask you to read back the question as it was
25 originally stated for me.

1 Q. Let me restate it. I think it was
2 confusing.
3 A. Okay.
4 Q. I'm going to restate it.
5 Do you think coordination between land
6 and -- as a general rule do you think coordination
7 between land and air services is helpful to the
8 landing of any airplane, helicopter or airplane?
9 A. Yes.
10 Q. Okay. And in your experience if you have
11 repeatedly operated for a land-based operation of
12 some kind whether it be -- there have been some sort
13 of protocols, have there not, or understandings as to
14 how you were going to conduct your landing
15 operations? Correct?
16 A. No, sir.
17 Q. Okay. In your operations with oil rigs
18 were there understandings as to how you were going to
19 conduct your landing operations?
20 A. Company-imposed standards of operations.
21 Q. Right.
22 A. And it would vary company to company.
23 Q. Company-imposed. You mean the oil rigs
24 just let you land however you wanted.
25 A. No. The company that I was flying for

1 under the operations manual, their operations manual
2 which happened to be ERA, E-R-A, has requirements and
3 approaches in the way they want us to conduct
4 ourselves around rigs.
5 The specific rigs, Chevron, BP and all
6 the rest, have their own regulations or requirements
7 and each one of them has to be accommodated.
8 Q. Right. So the company you were flying
9 for, "you" including yourself, was meeting the
10 requirements of Chevron, BP, whoever might own the
11 oil rig, in landing the helicopter.
12 A. Yes, sir.
13 Q. Okay. So it is certainly not unusual in
14 the helicopter operation, it's certainly not --
15 strike that.
16 It's not unusual in helicopter operations
17 that there are understandings between the facility
18 where the helicopter is landing and the helicopter
19 company as to how it's going to be done, correct?
20 A. It is not unusual and, by the same token,
21 we land in remote areas on an infrequent basis as
22 well without those controls.
23 Q. You are not a windmill operator, correct?
24 A. Correct.
25 Q. Okay. Have you ever worked for a

windmill operator as an -- in the operations side of things?

A. No, sir.

Q. You've never shut down a windmill?

A. Not intentionally.

Q. All right. You've shut down one -- have you ever shut down one unintentionally?

A. Not to my knowledge.

Q. Okay. So you don't really know if it's practical to immediately shut down wind turbines.

A. I'm not certain that it's im- -- it's practical.

Q. You're not certain that it's practical.

A. Impractical.

Q. You're not certain, okay.

And you're not certain that it's desirable, are you, to shut down wind turbines?

A. I'm searching for the difference between "desirable" and "necessary." I don't believe it is necessary to shut them down.

Q. In any situation.

A. I didn't say that.

Q. Okay. So it might be necessary in some situations to shut down wind turbines in order to safely land an emergency services helicopter,

1 correct?
2 A. I didn't say that either, sir. What my
3 thing was, that as a rescue pilot if I had to pull
4 someone off of the tower, I would need the blades to
5 stop turning if I was operating with external cables
6 and hoists and such. You couldn't tolerate the
7 motion in that instance.
8 Q. But if you were landing on the ground, it
9 would not be necessary to shut down a wind turbine,
10 is that -- in order to allow for the landing, is that
11 what you're saying?
12 A. Yes.
13 Q. Okay. But, as I understand it, you are
14 making some distinction between necessary and
15 desirable?
16 A. It's desirable in the interest of
17 consistency to not have random differences when
18 approaching a landing area. If something,
19 particularly with on-site communications that I have
20 experienced in the past, if somebody doesn't get the
21 word and either de-energizes or energizes a piece of
22 equipment that I have made a decision on during the
23 landing or approach process or even with departures
24 in mind, I don't want them messing with it. I need
25 it to be consistent. As long as I have prevailing

1 consistent conditions I can operate the helicopter in
2 close proximity to any obstruction.
3 Q. Okay. So if the protocol was to shut
4 down the entire field if there was an EMS, and by
5 "EMS" I mean emergency services or CareFlight
6 landing, then that would be a desirable event?
7 A. I don't see how, sir.
8 Q. Okay. Consistency is what I was getting
9 to.
10 A. There's no reason to disturb anything
11 that's not affecting the landing of the helicopter
12 directly, and by that, something acres or miles away
13 would be unbeneficial, unhelpful.
14 Q. Okay. You indicated that there was a
15 difference between something that was necessary and
16 should be done and whether it was desirable,
17 something desirable to be done, you indicated a
18 difference between those two terms and I'm trying to
19 understand what that difference is. When is it
20 desirable, in your opinion, to shut down -- to
21 immediately shut down wind turbines for An emergency
22 Life Flight services?
23 A. I don't think it would be desirable to
24 shut down the turbines. That's all.
25 Q. Is it easier to land next to something

1 that is stationary or something that is moving?
2 A. Stationary.
3 Q. Okay. Is it safer to land next to
4 something that is stationary than something that is
5 moving?
6 A. Say that again, please, I missed it.
7 Q. Is it safer to land next to something
8 that is stationary rather than something that is
9 moving?
10 A. I don't see the difference.
11 Q. Okay.
12 A. Before what you just -- the question you
13 just asked. It is -- it's not necessarily safer.
14 Q. But in some instances it might be safer.
15 A. Depends on what kind of motion we're
16 talking about.
17 Q. Are there any situations in which it
18 would be safer to land next to something that is
19 stationary versus something that is moving?
20 A. Any circumstance --
21 Q. I'm sorry, you'll have to speak up for
22 the court reporter.
23 A. You'll have to repeat that for me.
24 MR. REILLY: Could you repeat the
25 question?

ALJ CHILES: Please.

(Record read.)

A. A moving ship.

Q. All right. A moving ship is what?

A. A moving ship, a stationary ship is safer to land on than a moving ship that's underway with pitch, roll, yaw, and heave.

Q. Is that the only situation that would be -- where it would be safer to land on something that is stationary versus something that is moving?

A. It's the first one that comes to mind. I've never been posed the question before and I haven't prepared for it.

Q. So you don't have an opinion on really -- let me back up.

You don't have an opinion on whether it is safer to land on something that is stationary versus something that is moving; is that correct?

A. No, sir. I think I just expressed that.

Q. Other than a moving ship you don't have an opinion on whether it is safer to land on something stationary rather than something that is moving; is that correct?

A. No. Safety -- and that's because "safety" is a relative term. I can drive on freeways

1 with a level of safety, NASCAR drivers can go at
2 three times the speed and still have a relative
3 safety. So safety is not a specific term that I can
4 say that I have no opinion on.
5 Q. Okay. So when you say "Safety is my top
6 priority" in answer 8 to your testimony, you don't
7 have any specific idea of what "safety" is; is that
8 correct?
9 A. Safety is an atmosphere.
10 Q. Could you -- I don't understand the term
11 "atmosphere." Can you tell me what "atmosphere"
12 means in that statement?
13 A. It is an encouraged environment, in my
14 mind.
15 Q. If I could direct your attention to the
16 fourth sentence from the bottom of answer 16 that
17 begins "Given the high-speed capabilities." Could
18 you take a look at that for me, please.
19 A. I have it.
20 Q. Would you take a look at that sentence,
21 "Given the high-speed capabilities," that begins
22 ". . . the high-speed capabilities"?
23 A. Yes.
24 Q. When you say the word "desirable" there,
25 what you're saying is that it's not desirable -- that

1 the immediate shutdown of turbines is not desirable
2 for creating this atmosphere of safety? Is that what
3 you're saying?
4 A. Yes. And, I'm a simple individual and I
5 understand that I can overwhelm the response time of
6 the people I'm speaking to over the radios with the
7 capabilities of my aircraft.
8 In addition, if you take the words that
9 I'm saying to you about response time and
10 desirability and turn them into regulation such that
11 some individual has to go to some corner of a wind
12 farm and shut it down before I'm allowed to land,
13 you're going to incur delays, particularly if the
14 ambulance crew moves the individual or changes the
15 position or I've been given a wrong position over the
16 radios to respond to. If anything changes and I'm
17 still -- and we delay the landing, it's not
18 desirable.
19 In addition, some of these turbines are
20 going to be moments away from the departure of an
21 aircraft. I can get a helicopter airborne in a very
22 short period of time and proceed at 3 miles a minute
23 to something that's only 4 miles away, I can get
24 there before you can and I'll be orbiting and
25 waiting, possibly. I don't know about the -- and

1 that is based on, somewhat, on my ignorance of your
2 means and abilities to shut down these devices
3 remotely.
4 But I am familiar with communications in
5 the cockpit at night on bad weather, they get
6 confused, and you don't want anything to delay the
7 response time unnecessarily. It's not desirable.
8 Q. In your opinion, would prior protocols
9 and agreements and understandings through an
10 agreed-upon plan relieve some of those difficulties
11 that you just described?
12 A. Yes.
13 Q. Okay.
14 A. As would training.
15 Q. Is the competence of the pilots an
16 important part of safety?
17 A. Yes.
18 Q. Okay. And you don't know the confidence,
19 as I understand your prior answers, you don't know
20 the confidence level of the pilots associated with
21 CareFlight in landing around moving wind turbines,
22 correct?
23 A. I am neither promoting nor criticizing
24 CareFlight pilots.
25 Q. Right.

1 A. I'm basing my conditions on my
2 capabilities.
3 Q. And you didn't interview any of the
4 CareFlight pilots.
5 A. That's correct.
6 Q. Okay. So you don't know what their view
7 of -- what their view of landing a helicopter around
8 moving windmills is; is that right?
9 MR. HOWARD: Object. He indicated he has
10 not interviewed so I don't know what relevance this
11 question has.
12 ALJ CHILES: Mr. Reilly.
13 MR. REILLY: It has every relevance, your
14 Honor. He's saying that -- he's been a little vague
15 about the meaning of the word "desirable." He has
16 said --
17 MR. HOWARD: I'll --
18 MR. REILLY: Do I get to respond?
19 MR. HOWARD: I'll withdraw the objection.
20 ALJ CHILES: You may proceed. Do you
21 need the question read back?
22 MR. REILLY: Yes, if you would.
23 ALJ CHILES: Would you read it back,
24 please.
25 (Record read.)

1 A. That's right.
2 MR. REILLY: Could I have just a moment,
3 your Honor?
4 ALJ CHILES: Sure.
5 MR. REILLY: Thank you, your Honor.
6 Thank you, sir.
7 ALJ CHILES: Thank you.
8 Mr. Marcotte, I do have a question for
9 you just to follow up on some things that Mr. Reilly
10 spoke about. Going back to your answer 16 on page 6
11 where you talk about the term "desirable," it's that
12 sentence. ". . . it is neither practical nor
13 desirable to require immediate shutdown of these
14 turbines for emergency LifeFlight services." I just
15 wanted to clarify something. Your answer to that
16 question using the term "desirable," you're speaking
17 from a helicopter pilot standpoint that it's
18 desirable to have consistency when approaching an
19 object such as a turbine as to whether it's moving or
20 not.
21 THE WITNESS: That's correct, your Honor.
22 ALJ CHILES: Is that correct?
23 THE WITNESS: Yes, your Honor.
24 ALJ CHILES: Okay.
25 THE WITNESS: And from the standpoint of

1 predictability and not precluding a rescue before it
2 happens or, not a rescue, but a response before it
3 happens. The more that you can -- the more
4 deviations you can take out of the equation, the more
5 predictable the outcome becomes.
6 ALJ CHILES: Okay. That clears that up.
7 THE WITNESS: It would, in my mind,
8 inflict a level of randomness to an otherwise intense
9 situation anyway and you don't need that, it's not
10 desirable.
11 ALJ CHILES: Thank you.
12 THE WITNESS: You bet.
13 ALJ CHILES: Mr. Howard?
14 MR. HOWARD: If I can just have a moment,
15 please.
16 ALJ CHILES: Sure.
17 MR. HOWARD: Thank you, your Honor, I
18 have no redirect.
19 Thank you.
20 ALJ CHILES: Thank you.
21 Thank you, Mr. Marcotte, you are excused.
22 THE WITNESS: I thank you.
23 (Witness excused.)
24 MR. HOWARD: Your Honor, I would renew
25 our motion for the admission into evidence of Company

1 Exhibit 10.
2 ALJ CHILES: Are there any objections to
3 the admission of Company Exhibit 10?
4 (No response.)
5 ALJ CHILES: Hearing none, Company
6 Exhibit 10 will be admitted.
7 (EXHIBIT ADMITTED INTO EVIDENCE.)
8 ALJ CHILES: Ms. Parcels, you did mark
9 several exhibits, did you intend to move for
10 admission of any of those?
11 MS. PARCELS: Yes, the City would move
12 for admission of I believe it's Exhibits 1, the --
13 no, excuse me, Exhibit 2 which is the CareFlight
14 About page, Exhibit 3 which is the Air Methods flight
15 operations page, and Exhibit 5 from the CareFlight
16 magazine.
17 ALJ CHILES: You're not moving for
18 admission of Exhibits 4 or 6?
19 MS. PARCELS: Is 4 the NTSB report?
20 ALJ CHILES: Four is entitled "Aviation
21 Special Investigation Report."
22 MS. PARCELS: Yes. No, Mr. Marcotte did
23 not testify as to his familiarity with that report so
24 I would not move for admission of that or for the CAA
25 standard at this time.

1 ALJ CHILES: Are there any objections to
2 the admission of City Exhibits 2, 3, or 5?
3 MR. HOWARD: Yes, your Honor. The
4 Applicant would object on the basis Mr. Marcotte did
5 not authenticate these and there's been no foundation
6 laid for these exhibits.
7 ALJ CHILES: Are there any other
8 objections to the admission of City Exhibits 2, 3, or
9 5?
10 (No response.)
11 ALJ CHILES: Ms. Parcels, do you have a
12 response?
13 MS. PARCELS: Yes. The exhibits are
14 merely limited in scope to familiarize Mr. Marcotte
15 with CareFlight operations as he testified he had no
16 familiarity with CareFlight and did not interview
17 CareFlight.
18 ALJ CHILES: City Exhibits 2, 3, and 5
19 will not be admitted on the basis that an appropriate
20 foundation was not laid.
21 ALJ TAUBER: Mr. Howard, your next
22 witness.
23 MR. HOWARD: I think Mr. Settineri.
24 ALJ TAUBER: Mr. Settineri.
25 MR. SETTINERI: Thank you, your Honors.

At this time we would like to call Mr. David Hessler to the stand.

MR. REILLY: Your Honor, if I could ask for maybe a two-minute break before while we bring up our attorney.

ALJ TAUBER: Sure. We'll take a five-minute recess and then we'll reconvene. Let's go off the record.

(Recess taken.)

ALJ TAUBER: Let's go back on the record. Mr. Hessler, please raise your right hand.

(Witness sworn.)

ALJ TAUBER: Thank you.

Mr. Settineri.

MR. SETTINERI: Thank you, your Honor. At this time we'd like to mark Company Exhibit 11 entitled the Amended Direct Testimony of David M. Hessler.

ALJ TAUBER: The exhibit is so marked.

(EXHIBIT MARKED FOR IDENTIFICATION.)

- - -

DAVID M. HESSLER

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

DIRECT EXAMINATION

By Mr. Settineri:

Q. Good morning, Mr. Hessler. Will you please state your name and business address for the record, please.

A. Yes. My name is David Hessler, and I work for Hessler Associates which is at 3862 Clifton Manor Place in Haymarket, Virginia.

Q. And do you have in front of you what's been marked as Company Exhibit 11?

A. Yes, I do.

Q. Can you please identify that document for me, please.

A. It's my amended direct testimony in this proceeding.

Q. And do you have any changes or revisions to your testimony at this time?

A. No, I don't.

Q. If I were to ask you the questions in that testimony, would your answers be the same today?

A. Yes, they would.

MR. SETTINERI: Thank you.

Your Honors, at this time the witness is available for cross-examination.

ALJ TAUBER: Thank you.

Ms. Parcels.

MS. PARCELS: No questions.

ALJ TAUBER: Ms. Napier?

MS. NAPIER: Thank you.

- - -

CROSS-EXAMINATION

By Ms. Napier:

Q. Mr. Hessler, my name is Jane Napier. I represent the county and townships within the project area. I was looking at your direct testimony last night and I just had a couple of questions regarding your answer regarding your background. I thought there might be some error.

You've been employed with Hessler Associates for 21 years, correct?

A. That's right.

Q. That would be starting about 1991?

A. That's right.

Q. And you've been employed as an acoustical engineer, correct?

A. Yes.

Q. Were you an acoustical engineer all the time since 1991?

A. Yeah, that's the way I would describe it. Part of that in the early years I was going to school and working at the same time.

Q. Okay. So I see that you received your bachelor's of science in mechanical engineering in 1997, correct?

A. That's right.

Q. And so I guess my thought that there might be an error, that you did not need to be an engineer, have a degree in engineering, to be an acoustical engineer with that firm, correct?

A. Yeah, I would say that's correct. It's a family business and I was essentially in an apprenticeship, well, ever since I was a little kid I've been hearing about decibels and things, but no, there's no hard-and-fast definition for that term. That's what I call myself today, but I was doing the same things back in '90-'91.

Q. So at least for you, being an acoustical engineer, when you started in '90-'91, you didn't believe you needed to have a degree in engineering to do that job, correct?

A. Yeah, that's right, because most of the work I did in school wasn't really all that relevant to what we're doing here.

Q. Okay. And you said that it was founded in 1996 or, sorry, 1976, and that's a family firm?

A. Yes.

Q. How many employees does it have?

A. Three at the moment.

Q. And are they all related to you?

A. Yes.

Q. Okay. And I see, I won't get into some of the specifics, requirements and measurements that you've done, but I do have a couple of more general questions. Are you advocating for a sound level measured at occupied structures in your testimony?

A. Yeah. I believe that's the best point of application of any regulatory limit or noise goal.

Q. And why do you not -- why are you not advocating for a noise level, I believe you said 45 dBA, at the property line?

A. Because the point of a noise regulation is to control noise where people actually are most of the time, and particularly at night, so my feeling is that people aren't normally out at the perimeter of their property, especially at night, so I don't think that that limit of 45 should apply at some remote land parcel.

Q. Don't you feel as though people should have full use of their property?

A. I think it's immediately around the house that's the, you know, and sleeping, those sorts of

activities that's the real concern.

Q. Okay. And so you're not also aware of any future development, future homes being built, noise to them, having to -- that maybe have larger than 45 dBA sound levels.

A. Yeah, there's always the possibility that houses would be built in the future on currently vacant land, but those houses would be built with the awareness that the project was there.

Q. Okay. So you do believe that that might limit the use of vacant ground, that may not be able to build --

A. I don't think it would place a direct limit on anyone's ability to build.

Q. Okay. Can you tell me why you make that, you know, assertion?

A. Because a level is, let's say, 47 at a land parcel closer to turbines doesn't mean that it's that much louder or would preclude anyone living there.

Q. So then why not make the 45 from a property line?

A. Well, if you did that, you're allowing for just the potential for future construction which may never occur and it would significantly impact the

1 ability of the project to site turbines because
2 project -- or, property parcels at this project and
3 many others are, the pattern of them is kind of a
4 hodgepodge of parcels. So some of them come close to
5 turbine locations, others aren't. It would be very,
6 very restrictive to the project.
7 Q. So your reasoning for that is that it
8 would be -- may have a negative effect on a developer
9 of a wind project, correct?
10 A. It would probably -- well, it would be
11 much, much more difficult and I don't think for any
12 justifiable reason.
13 Q. So in looking at a level to an occupied
14 structure you don't believe that activities of
15 somebody in that occupied structure outside of their
16 home would be affected; is that what you're saying?
17 A. I am saying if the project level is 45 dB
18 or less, what we found is that the overwhelming
19 majority of people appear to have no issue with it
20 whatsoever.
21 Q. So if it's larger than that, there is an
22 effect from that?
23 A. Yeah. There are projects where levels as
24 high as 50 or more than 50 have occurred and there
25 are issues and complaints that I'm familiar with,

1 but, still, it's low percentagewise to the total
2 population.
3 Q. So if, for instance, somebody at home
4 would like to camp out with their children outside
5 and sleep outside in their backyard, they might have
6 an issue with noise because they're not right outside
7 their occupied structure; is that a fair statement?
8 A. That's conceivable, sure.
9 Q. Okay. So that may be a limitation on
10 their use of their property.
11 A. There you go.
12 Q. And so you had said something about that
13 having the level of noise from the property line
14 might restrict this project or other projects; was
15 that a fair statement? I don't want to put words in
16 your mouth.
17 A. Yeah, what I was saying is that that
18 would make it extremely difficult to site any units.
19 Q. Is that because then they would need to
20 set them back a little further from a property line?
21 A. Yeah. Yeah.
22 Q. So in laymen's terms, then, is it a
23 pretty general rule that the larger the distance from
24 an occupied structure, the less noise that would be
25 heard at that structure?

A. That's true.

Q. So that if there is an issue with noise, that setbacks would rectify that issue.

A. Yes, that's correct.

MS. NAPIER: Thank you. I have no further questions.

ALJ TAUBER: Thank you.

Mr. Van Kley.

MR. VAN KLEY: Yes, your Honor, thank you.

- - -

CROSS-EXAMINATION

By Mr. Van Kley:

Q. Good morning, Mr. Hessler.

A. Good morning.

Q. We've met before, haven't we? A couple times.

A. It's great to be back.

Q. My feelings exactly.

Let's just continue our discussion about the limit at the property line which I understand from the application is supposed to be 50 dBA; is that your understanding?

A. Right.

Q. Now, 50 dBA is too high of a noise level

to apply that to a person's home, right?

A. Yeah. Yeah, I would agree with that.

Q. Okay. Now, if the noise level outside of a person's home were 50 dBA, there would be some problems with annoyance and sleep disturbance of the occupants of that home?

A. There would be in a certain probably small percentage of cases. I'm well aware of many people that live at houses that are close enough that we have actually measured levels of 50 and more and they have absolutely no problem with it.

Q. And you've also -- you're also aware of other instances in which people have been exposed to that level of noise and they have had a problem, haven't they?

A. Oh, yeah. Yeah.

Q. And, in fact, you're familiar with the Shirley Wind project in -- the wind farm, Shirley Wind wind farm in Wisconsin?

A. Yes, I certainly am.

Q. Yeah. And, in fact, the limit that has been set by the government there is for 50 dBA at the property line, right?

A. I'm not sure what the regulatory limits were at that project.

Q. Well, do you know that the levels at the property lines for some of the residents do reach 50 dBA at that project?

A. No. No, I don't know what the levels are at the houses or property lines at that project.

Q. Okay. Now, if a person who was not participating in the Buckeye Wind II wind project wanted to build another home, perhaps for their children, maybe their children may want to build a home near the property line, if the level of noise coming into that property at that point is 50 dBA, then those people are going to be exposed to potentially 50 dBA of noise from the wind turbines; isn't that right?

A. That's a possibility.

Q. Okay. And if the landowner knows that there's that amount of noise present near the boundary of their property, that's going to discourage them from developing the property for such a purpose; isn't that right?

A. Potentially.

Q. Okay.

A. I'm aware of one case that comes to mind where somebody did build a new house after a project had gone in at a remarkably close distance to

turbines and we questioned them repeatedly on whether that was a problem, and no, no, it wasn't a problem at all.

Q. But that's not -- those noise levels are not tolerated by everybody, are they?

A. No. No, you wouldn't want, as a general rule, the level to be significantly above 45.

Q. And, in fact, isn't it true that different persons have varying tolerance to noise?

A. Oh, absolutely. Yeah.

Q. Some people are going to be bothered by lower volumes of noise than other people.

A. True.

Q. Okay. So the fact that one person can tolerate the noise doesn't mean that everybody can.

A. Right.

Q. So if there is a noise level, a noise standard of 50 dBA set at the property value [verbatim], in essence, that provides the wind company with an easement over the adjoining landowner, doesn't it?

MR. SETTINERI: Object. Calls for a legal conclusion.

ALJ TAUBER: I'll allow the witness to answer the question and we'll note for the record

1 that he's not an attorney.
2 MR. SETTINERI: Thank you.
3 A. Well, I would answer that by saying that
4 in years past, say five, six years ago, 50 dBA was a
5 very common regulatory limit for new projects and
6 many were built to that standard and, from what I've
7 observed, even those projects do not have a very high
8 rate of complaints. In fact, of all the projects
9 that I've been to to measure the actual sound, I've
10 always been surprised in every instance how few
11 people are actually -- actually end up being upset
12 about the project once it's there.
13 Q. Well, going back to my question which was
14 concerning whether or not a 50 dBA limit at the
15 property line is essentially an easement over the
16 property of the adjoining landowner, isn't that the
17 case? I mean, isn't it the case that the adjoining
18 landowner may no longer be able to put his property
19 to uses that he otherwise would have wanted to had
20 those wind turbines not been there?
21 A. I wouldn't characterize it as an
22 easement, and as we said, I'm not an attorney, but
23 no, I think that's just a reasonable limit to put on
24 what is currently vacant land and, you know, the
25 possibility exists that a house may go in in the

1 future, that is the decision of that person.
2 Q. Going back to my question again, isn't it
3 true that by placing such a limit at the boundary you
4 will discourage the adjoining landowner from
5 developing that property in a manner that he
6 otherwise may have wanted to develop it?
7 A. It could possibly be a discouragement to
8 certain people.
9 Q. Okay. And if you're not finding
10 significant noise problems at boundaries of adjoining
11 landowners which have a 50 dBA limit on them, isn't
12 it conceivable that the reason you're not getting any
13 noise complaints is because those people do not
14 develop those areas due to the noise limit of 50 dBA?
15 A. Well, the 50 dBA limit that I referred to
16 earlier was applicable at houses and in those
17 instances we found that the adverse reaction was
18 still small.
19 Q. Okay. Going back to my question, with
20 regard to the 50 dBA limit at the boundary, isn't it
21 true that somebody -- that you may not be seeing any
22 significant complaints about the noise levels at the
23 boundary because they're not developing those areas
24 due to the fact that there is a 50 dBA limit at the
25 boundary?

A. Well, I think that's a stretch. It's possible, but I think that's a remote possibility.

Q. Well, if there's no new development near the boundary because of the 50 dBA limit, then there's not going to be anybody living in that location to complain, is there?

A. True.

Q. Okay. Would you turn to answer 6 of your testimony, please. Tell me when you find it.

A. I'm there.

Q. Okay. Now, answer 6 of your testimony deals with your measurements of background sound for the Buckeye II project area, correct?

A. Correct.

Q. All right. And I'm interested in a sentence that you included in your answer that references ANSI S12.9. Can you find that sentence for me, please?

A. Yes.

Q. Okay. And the sentence reads "Therefore, standards, such as ANSI S12.9-1992/Part 2, were followed to the extent that they were relevant in the field survey but additional techniques and analyses, such as a correlation between the measured sound levels and the concurrent high elevation wind speed,

1 were required to obtain a sensible and meaningful
2 result." Did I read that correctly?
3 A. Yes, you did.
4 Q. Okay. Let me ask a few questions about
5 what you said in that sentence. First of all, what
6 is an ANSI standard?
7 A. It is a, in general, it's a recommended
8 procedure for doing certain kinds of tests. This
9 particular standard talks about measuring long-term
10 background sound levels.
11 Q. "ANSI" stands for the American National
12 Standards Institute?
13 A. Yeah.
14 Q. And ANSI prepares standards to be
15 followed by people in the fields that are addressed
16 by the standard, correct?
17 A. That's correct.
18 Q. Okay. And these standards are the
19 product of working groups of respected acoustic
20 engineers with respect to the acoustics standards?
21 A. That's correct. I'm currently on a
22 committee on the standard right now.
23 Q. Okay. So given your familiarity with
24 their standards, you believe those standards are
25 respected by the acoustic community?

A. Yes, they certainly are. And I'm not disrespecting this standard, I'm just saying that it wasn't written with the specific case of wind turbines in mind and certain additional techniques and analyses, as I say, are required.

Q. But you also said that you attempted to follow it to some extent, right?

A. Yes. Yes, we did. Whenever it was relevant to this we did.

Q. And you made an offer to follow the procedures in this standard when you conducted the field survey for the background sound?

A. Yes, uh-huh.

Q. Tell me how you selected the locations for the measurements of the background sound.

A. I wanted positions that were distributed throughout the project area in a somewhat even manner to represent all parts of the project. We also wanted to measure at or near the residences with the maximum proximity to Buckeye II turbine locations. And as a general rule we also like to monitor in different what I call "settings" sometimes -- settings that represent the houses and farms in the area.

Sometimes houses are out in the open and

we'll choose monitoring locations that are out in open fields, other times houses are surrounded by trees and whatnot so we'll want to capture sound levels in that setting, so we typically look for a diversity of places to put the monitors.

Q. What kind of research did you do to evaluate the potential locations for your background sound measurements?

A. They were generally selected from a map of the project area and then field inspected to see whether they made sense once we got there.

Q. Did you do that field inspection yourself?

A. Yeah, it was part of the survey setup.

Q. So did you use a map of the area to help you determine where the measurements should be located?

A. Yes.

Q. And how did you decide which areas on those maps to select for further analysis?

A. Well, as I say, I indicated general areas on a map that had the distribution throughout the project area that I was looking for and then I asked the project people to contact someone in or near those areas to obtain permission ahead of time that

we could come on the property and set up equipment.

Q. So you did not choose the locations at random.

A. I think I would characterize it that way. Yeah, I just circled different areas on the map that were more or less randomly distributed throughout the project area.

Q. What you did was you just circled an area within a certain region of the facility and then circled another area; is that what you're saying?

A. Yeah, areas where there were houses that were fairly close to planned turbine locations.

Q. So that's not exactly random, is it? I mean, you're choosing the location that is close to a turbine location.

A. Yeah, because we're interested in the sound level at those locations. Those are the critical design points.

Q. Okay. And then all ten of your locations are located fairly close to roads, aren't they?

A. Well, there's roads all through the area there.

Q. Okay. Well, are any of the locations for the background sound measurements located midway between roads as opposed to being along the road?

A. Yes. There was one farm that was set back a considerable distance from any road and, you know, there was no influence from any kind of traffic at that point.

Q. Okay. Let me --

A. I don't recall the position number right offhand.

Q. All right. Well, let me direct you to Graphic A in Exhibit O of the application and maybe that will help you.

MR. SETTINERI: Counsel, what was that reference again, please?

MR. VAN KLEY: It's Graphic A. You'll find it right after the text of the report that is right after page 47 of Exhibit O.

MR. SETTINERI: Thank you.

A. Yeah, the position I was thinking of was position 3 up at the top. You can see there's a long access road to the farmhouse which is down at the end of that road. It's hard to tell the scale from this but it's quite a distance from that road. But in general what we were after is what is the level at typical farms and houses in the area, and most of the houses and farms are right off of roads.

Q. So that, again, is another factor that

you use to determine locations of the background measurements, right?

A. Yeah. Yeah, we want to monitor at actual houses rather than in the middle of fields where nobody is.

Q. So that's another aspect in which your selection of monitor sites was not random, correct?

A. Well, I think in the ANSI standard there's two aspects to selecting locations, one of them has to do with being random, the other one has to do with I think they call it deterministic where you're putting them in a place for a particular reason because you're after, in this case, what is the sound level at houses.

Q. Well, the ANSI standard that you reference requires the monitoring locations to be chosen randomly, doesn't it?

A. No. No, not necessarily.

Q. With respect to position 3, isn't it true that that position is only 1200 feet away from the main road?

A. That sounds about right.

Q. Okay. Well, you can look for sure on page 8 of your report, can't you?

A. Yeah, that sounds familiar. I probably

1 did put it in the report.
2 Yes, that's correct.
3 Q. Okay. Isn't it true that the ANSI
4 standard provides that the locations of the
5 monitoring stations should not be coincident with any
6 dominant street pattern?
7 A. Well, evidently it says that, but I would
8 think that would be one of the instances where we had
9 to depart from the standard to get after something,
10 get after what we were looking for here in this
11 survey.
12 Q. Are you familiar with the three classes
13 of study that are covered by the survey, Class A,
14 Class B, and Class C?
15 A. Yes.
16 Q. Okay. And can you tell me which of those
17 classes you followed, if any?
18 A. Yeah, I don't recall the specific
19 definitions, but I think for the, I think for one
20 category you need, I think it says a minimum of 8
21 positions, and then I think the next category is like
22 50 or a hundred positions or something that's totally
23 impractical.
24 Q. All right. Well, since you're expressing
25 some uncertainty about what the standard says, I'm

1 going to show you a copy of the standard which we'll
2 mark for identification as the next UNU exhibit, and
3 I think we're up to 13. No, that's -- yeah, 13, I
4 believe.
5 ALJ TAUBER: The exhibit is so marked.
6 (EXHIBIT MARKED FOR IDENTIFICATION.)
7 Q. Do you recognize that as a copy of the
8 standard we've been discussing?
9 A. Yes, it is.
10 Q. Would you find the provisions that apply
11 to Class C assessments, tell us where that is.
12 A. It looks like Section 9.7 on page 12.
13 Q. All right. Have you reviewed the
14 requirements for Class C measurements?
15 A. Yeah, I see what it says there. I don't
16 know how that's relevant to what we're talking about,
17 though.
18 Q. Well, the question that was on the table
19 before we marked the exhibit was whether or not you
20 followed the Class C procedures for doing your sound
21 assessment.
22 A. No, I wouldn't have wanted to follow that
23 procedure. It says measurements are made for one
24 day; that's insufficient for this.
25 Q. Okay. Well, did you follow any of the

procedures in this standard to do your background study?

A. Well, it generally went by I guess you could say Class B which requires the minimum of eight positions, so we went with ten distributed over the project area.

Q. When you say you generally went by that procedure, I assume you did not follow parts of that procedure?

A. Yeah. Principally the part about the procedure in general limits measurements to fairly low wind speeds and that's perfectly fine in just about every other case besides wind turbines that I can think of; that's exactly what you'd want to do. But the principal departure from this is that we're specifically interested in the background level during windy or moderately windy conditions so we are looking for the sound levels when it's windy; that's what's relevant here.

Q. Well, isn't it true that at the higher wind speeds there is more potential for distortion of the microphone due to the noise, or due to the wind shear?

A. Yes, that's correct. So we use oversized kind of high-density windscreens to filter some of

that out and then, in addition, this has always been an issue with wind turbine surveys, in addition it's necessary to know how much distortion there is in the measurements so some years ago we commissioned a wind tunnel study at a wind tunnel in Germany of various windscreens and subjected them to known velocities and were able to quantify the self-noise that occurs when a microphone is sitting out in windy conditions.

Now, that correction which we're able to apply is part of the story, and then there's also additional distortion from large scale turbulence that makes up another component of that.

Q. What's the self-noise of your windscreen at a wind speed of 5 meters per second?

A. I don't know the exact number, but I believe it's somewhere in the vicinity of 25 dBA I would guess.

Q. What's the self-noise at 10 meters per second?

A. Well, there's a formula for calculating that, I don't have it in front of me here.

Q. It's about 40 dBA, isn't it?

A. No. That sounds too high.

Q. Isn't it true that at a wind speed of 5 meters per second the measurements that you get

from your microphone are going to show at least the 25 to 28 dBA regardless of how much else -- how much background noise there is in the area?

A. Yes, that's right. So what we look at is we look at the total measured level and then we calculate the self-noise level and then subtract the distortion from it to correct that level.

Now, we've done that in many, many such surveys and for the wind speeds we're talking about the correction is so insignificant that -- I usually have a section in the report discussing it but it's become so irrelevant that I didn't include it in this report.

Q. What's the confidence level for the background measurements that you took?

A. That's a good question. I can't put a number on it.

Q. Would you expect that the procedures that you used for your background sound measurements would produce a confidence level that's about the same as the confidence level provided for Class B techniques in the ANSI standard?

A. Yeah, generally.

Q. Okay. Would you take a look at the ANSI standard at page 8, please. Does the table in

Section 9.3 on that page of the ANSI standard provide you with the confidence level for a Class B procedure?

A. Well, there's a table in there that gives plus and minus values for the DNL, or the day-night sound level. That's a weighted 24-hour average measurement that is not relevant to this type of study.

Q. Well, the day-night sound level, the day-night average sound level has the same margin of error or the same confidence level as longer intervals of measurement; isn't that true?

A. I'm not even sure I understand that question; what was it again?

Q. Well, let me back up with another question first. With regard to the table that's in paragraph 9.3 on page 8 of the ANSI standard, isn't it true that the margin of error shown there for a Class B sound assessment is plus 3 decibels to a minus 10 decibels? Is that what's shown there?

A. Yeah. Yes, suggesting that our results could be up to 3 dB higher or the sound level could be 10 dB lower.

Q. Okay. So if this procedure were followed, the actual background sound could be as

much as 10 decibels lower than the measurements that were actually taken.

MR. SETTINERI: I'll object to the form of the question. Clarification as to the use of the word "procedure." Are we referring to the procedure Mr. Hessler used or the ANSI standard? Two different procedures.

MR. VAN KLEY: Well, we'll address both, then.

Q. Putting aside what you did in your procedure, if a person were to do a Class B procedure under the ANSI standard and follow those procedures, isn't it true that, according to this chart, their results could be 10 decibels higher than the actual background sound level that's being measured?

A. Yeah, but these figures are related to the DNL which is, as I mentioned, it's a single number that represents an entire 24-hour period. Such a value wouldn't have any use or meaning in this type of survey. If we came up with an answer of 42 dB for a whole day, that would tell us nothing.

Q. Okay. Well, the DNL procedure entails taking multiple measurements over a period of days -- or, the period of a day, correct?

A. Entails taking 24 hourly samples and then

1 plugging them into a formula to come up with an
2 answer. We measured a much higher time resolution of
3 ten minutes and for the reason that we were
4 interested in correlating that to the met tower wind
5 speed data which is measured in ten-minute
6 increments.
7 Q. Well, under the procedure that is
8 provided in the standard isn't it true that the
9 measurements taken in this DNL procedure for daytime
10 are averaged together as one number?
11 A. Yes. And the nighttime is averaged
12 together plus a 10 dB weighting factor.
13 Q. Okay. And isn't it true that when you
14 did your background study, you also calculated a mean
15 daytime and nighttime number?
16 A. Yes, we did a correlation of the results
17 to wind speed and got an average sound level as a
18 function of wind speed for day and night.
19 Q. Where do you get your position that the
20 Class B procedure in this ANSI standard requires the
21 collection of data only for one day?
22 A. That's the Class C that you mentioned
23 earlier.
24 Q. Okay. Well, we're talking about Class B,
25 aren't we?

A. Only in the sense that it suggests a minimum of eight measurement positions and we measured at ten positions. That's the bulk of what we do.

Q. Well, under the Class B procedure over what period of time are the measurements supposed to be taken? It's not just one day, is it?

A. I don't know that they even give a time for Class B or A. In fact, I don't think they do. It just says shall be long enough to achieve the desired accuracy and confidence. So what we did was measure for I think it was 18 days continuously and the logic there was we wanted to observe a wide variety of wind and weather conditions, and storm fronts and weather patterns normally take three, four days to pass through so we wanted the survey period to be long relative to these changes in conditions.

Q. So there's nothing in this standard that supports your statement that the DNL procedure in section 9.3 pertains only to one day of measurements, is there?

A. No. Nor did I say it did.

Q. Okay. So then you would agree that the Class B procedure set forth in the ANSI standard could also be referring to measurements taken over a

1 period of multiple days.
2 A. Yes.
3 Q. Okay. Now, with respect to your study,
4 did you determine the confidence level for the
5 results?
6 A. No.
7 Q. Would you agree that your results do have
8 a margin of error?
9 A. The objective in this survey is to
10 estimate what the background conditions are on a
11 long-term basis and it's, obviously, impractical to
12 measure for a year, for instance. So I think what
13 our survey shows is what the actual levels were
14 during the survey period.
15 Now, whether that can be extrapolated to
16 the remainder of the year, I think there would be
17 some sort of plus or minus factor that would play in
18 there.
19 Q. So the answer to my question is yes,
20 there is a margin of error to your results.
21 A. Yeah, with respect to defining the kind
22 of permanent sound level.
23 Q. Okay.
24 MR. VAN KLEY: Your Honor, this would be
25 a good breaking point if you want to take lunch.

ALJ TAUBER: Sure. Let's do that. We'll reconvene at 1:20. Let's go off the record.

(At 12:19 p.m. a lunch recess was taken until 1:20 p.m.)

- - -

1 Wednesday Afternoon Session,
2 November 14, 2012.
3 - - -
4 ALJ TAUBER: Let's go back on the record.
5 Mr. Van Kley.
6 MR. VAN KLEY: Thank you, your Honor.
7 - - -
8 CROSS-EXAMINATION (Continued)
9 By Mr. Van Kley:
10 Q. When we broke for lunch, we were talking
11 about your background noise study and we were talking
12 about your use of an ANSI standard to provide the
13 basis for some of your procedures. Is it reasonable
14 to say that you used your own procedure to measure
15 the background level in the project area?
16 A. Yeah. As we talked about earlier, we
17 used the procedures in ANSI to the extent that they
18 were relevant, which was rather limited, and then
19 went beyond that to specifically try to correlate the
20 background sound levels to the concurrent wind
21 speeds, that's what we were really after.
22 Q. And because you used your own procedure
23 you're unable to tell the Board what the confidence
24 level for that procedure produces, correct?
25 A. Yeah, that's all right. There is no

1 standard that you can just pick up and use that would
2 be completely relevant to this.
3 Q. Now, the purpose of the background sound
4 study is to find out how much noise is already in the
5 project area prior to construction of the wind
6 turbines, correct?
7 A. Correct.
8 Q. And that's referred to as the background
9 sound?
10 A. Yes.
11 Q. And the reason you want to find out what
12 the existing noise level in the community is before
13 you install the turbines is so that you can determine
14 how much existing noise is available to mask the
15 noise of the turbines once they're constructed.
16 A. Generally so, but another reason for
17 doing this survey was that the, it's been brought to
18 my attention that the state has a sort of a de facto
19 standard which is based on the nighttime Leq plus 5.
20 So that implies that you need to measure the
21 background nighttime Leq so you know what that plus 5
22 is added to. So that's another reason for doing the
23 survey.
24 Q. Well, we'll get into your Leq plus 5
25 level later in this testimony. Let's talk a little

1 bit more about the background study before we get to
2 that point.
3 Now, when you do the background noise
4 study, isn't it important to locate the microphones
5 away from significant sources of contaminating noise
6 generated by human activity or machinery?
7 A. Yes.
8 Q. And that includes cars, right?
9 A. Not necessarily. What we're looking at
10 or looking for is what is the typical background
11 level at typical farms and houses in the project area
12 from wherever that sound may come from.
13 Q. Look at page 5 of Exhibit O, please,
14 which is your study.
15 A. Okay.
16 MR. SETTINERI: Counsel, what was that
17 reference again? I'm sorry.
18 MR. VAN KLEY: Page 5 of Exhibit O.
19 MR. SETTINERI: Thank you.
20 Q. I'd like to refer you to the
21 second-to-the-last sentence on that page, and that
22 sentence reads as follows: "The monitors were also
23 placed away from any significant source of local
24 contaminating noise that might be generated by human
25 activity or machinery." Did I read that correctly?

A. Yes, that's correct.

Q. And are you telling us that you do not believe that the noise from cars is generated by human activity?

A. Well, of course it is, but what I meant by that statement was that when we got to a particular farm, we tried to take care to put the monitor away from farm activities and obvious things that were going to be going on. What we were after was the natural background noise primarily.

Q. What do you mean by "the natural background noise"?

A. The noise exclusive of these human contaminating noise events. What we're looking for is the long-term level that can be relied on to be there to potentially mask the project.

Q. And, in your opinion, does noise from cars constitute part of the natural sound?

A. Well, it's part of the total environmental sound level there.

Q. You're aware that farms harvest their crops in the fall?

A. Sure.

Q. When did you do your background noise study, your background noise measurements?

A. It was November 3rd through the 21st.

Q. It's right in the middle of harvest season, isn't it?

A. I think it's a bit toward the end of it, perhaps.

Q. Well, you certainly are aware that there is substantial harvesting going on during that period, correct?

A. Yes, that's possible.

Q. Okay. And are you generally aware of the farm machinery that is used to harvest crops?

A. Yes, I'm familiar with farm equipment.

Q. They're big machines, aren't they?

A. Yes.

Q. And they're noisy machines, aren't they?

A. Yes.

Q. Are you aware that during and after the harvest season grain is commonly dried in grain dryers on farms?

A. Yes.

Q. So is it reasonable to believe that grain dryers were operating during the time you did your background measurements?

A. That's possible in certain places.

Q. In fact, grain dryers are pretty common

in the countryside in farm communities, aren't they?

A. That's my understanding.

Q. Okay. And grain dryers produce noise, don't they?

A. Yes, they do.

Q. Did you make an effort to choose locations that avoided farms that were doing their harvesting during the time you took your background measurements?

A. Yes, we did. And I think we talked to most of the owners and kind of interviewed them as to what their expected activities were, and I don't believe there was any harvesting or grain drying planned for the specific locations that were used.

Q. When you took your photographs of the locations at which the background sound was measured, did you include in those pictures any grain fields that were surrounding or nearby those locations or did you avoid including that in your photographs?

A. No, we tried to include the pictures in the report that give a sense for what that location looked like.

Q. You were not present when the measurements were being recorded at your background sound locations, were you?

A. No.

Q. So you have no firsthand knowledge that the owners of properties nearby these sound measuring locations actually refrained from harvesting their crops during that time, do you?

A. No. It's certainly possible that certain farming activities happened near some of the locations some of the time.

Q. Okay. And because you weren't there during the time the measurements were being taken, you also don't know whether any grain dryers were being operated in the area around your sound measurement devices.

A. No, we don't specifically know that, but we do, of course, have the data from the survey and what that shows is that the sound levels at all of the ten positions were very consistent with one another, meaning that if a grain dryer were active by one of the positions, there would have to be another grain dryer near all the other nine to keep the levels the same.

We didn't find that any one or two particular locations were higher, appreciably higher or lower than the rest of them.

Q. How many of the ten locations had fields

1 nearby them?
2 A. I think they were all in fields; that's
3 what's out there.
4 Q. Okay. When you talked to the owners of
5 the properties on which you wanted to put your
6 sound-measuring devices about whether they planned to
7 harvest their grain or use their grain dryers during
8 the time you took the measurements, did you also talk
9 to their neighbors to determine whether their
10 neighbors also would refrain from harvesting or grain
11 drying during that period of time?
12 MR. SETTINERI: Object. Lack of
13 foundation. It's not established that all of these
14 neighbors -- that all of these owners have grain
15 dryers, the witness did not testify to that
16 previously, so object to the lack of foundation that
17 all of the parcels where he put sound monitors have
18 grain dryers.
19 Q. Well, at the risk of asking an obvious
20 question, are the owners of the properties on which
21 you placed the sound measuring devices the only
22 people in the neighborhood that had grain fields?
23 A. There were adjacent fields at some of the
24 locations, yes.
25 Q. Okay. Did you talk to the owners of

1 those fields to determine whether they would be
2 harvesting their crops during the time you took your
3 background measurements?
4 A. No. We only spoke to the people whose
5 property we were on.
6 Q. Now, you know that it's common for
7 farmers who are harvesting their crops to drive their
8 machinery up and down the roads to get access to
9 their fields during harvest season, right?
10 A. Yes.
11 Q. And if such a machine were driven past
12 your monitoring devices, your monitoring devices
13 would pick up that noise, wouldn't it?
14 A. For that ten-minute interval, yes.
15 Q. Okay. Did you also determine whether the
16 landowners on whose property you placed the measuring
17 devices had dogs?
18 A. Some of them did, yes.
19 Q. Okay. Are you aware of any effort made
20 to remove those dogs from the property during the
21 time you took your measurements?
22 A. Yeah, I think it was only one location
23 that was actually at a house where there may have
24 been a dog around. The rest of them are fields that
25 are across the street or not where any dog would run

1 around.
2 Q. Which location do you think may have had
3 a dog?
4 A. I think I recall at position 3 that we
5 talked about that was set back from the highway.
6 Q. Were all of your test locations on farms?
7 A. No. No. Some were on land parcels that
8 were adjacent to residences and some were actually at
9 residences that weren't actually farms.
10 Q. Were all of the locations either on farms
11 or nearby farm fields?
12 A. That's pretty unavoidable out there.
13 Q. So the answer is yes?
14 A. Yeah.
15 Q. All right. And if that is the case, then
16 there's no way to determine whether farm machinery at
17 just one location might have been present if there's
18 a potential for having farm machinery nearby all the
19 locations.
20 A. Well, you would have to have farm
21 activity near all ten of the locations at the same
22 time over a period of 18 days to draw that conclusion
23 that there was local noise at all of the locations.
24 My strong belief is that there isn't any significant
25 contamination in this data.

1 Q. Well, the background levels that you
2 obtained for each of your monitoring locations were
3 pretty consistent with each other, weren't they?
4 A. Yeah, and that's typical for this kind of
5 an environment.
6 Q. So are you saying, then, that none of
7 these farming activities were occurring in any of the
8 ten locations that you surveyed during your survey
9 period?
10 A. We saw no evidence of it in the data. If
11 it did occur, it was probably for some short period
12 at one of the locations, but there was no sustained
13 noise from anything evident in any of the data.
14 Q. So do you actually believe that at all of
15 these locations there was no significant harvesting
16 activity during approximately 18 to 20 days of the
17 harvest season?
18 A. No, I just said that there may have been
19 activity at some of the locations some of the time,
20 but what we ended up drawing from the survey is I
21 think best illustrated on page 26 of the report, if
22 you can look at that for a moment.
23 The point I want to make is that that,
24 the green line there is the sound level, the average
25 sound level of all ten positions over the survey

period compared to the wind speed, and the point is that the sound level is seen to parallel and follow the wind, that tells us that the sound levels were due to natural causes rather than tractors and grain dryers and things of that sort.

Q. What produces the noise that you've described with regard to the wind?

A. It's the sound of the wind blowing through trees and grass and that sort of thing.

Q. And that includes the noise that the wind made through the leaves?

A. Yes.

Q. I mean, there were still leaves on some of the trees at the time you did your survey, right?

A. Yeah. However, we took some effort to put the monitors in open areas remote from woods and trees.

Q. Yeah, but that would not avoid all of the noise from the rustle of leaves, would it?

A. No. I think you'd have to say that there was some influence from it.

Q. Okay. Looking at page 26 of your report, which is in Exhibit O to which you've just referred us, would you look at the green line and the blue line at approximately, it looks like November, is

that November 5 at between zero hours and 12 hours?

A. Yes.

Q. Okay. Now, what does the blue line represent?

A. That's the wind speed as determined by the masked-top anemometers on the met towers.

Q. And the green line is the sound that's recorded in your measurements, right?

A. Right.

Q. And looking at the data that you have in this graph for November 5, I guess it is, do you see where the blue line dips down?

A. Right.

Q. Okay. Is that on November 5?

A. Yeah, it's about midday on the 5th.

Q. Okay. So you see that at that time the wind level was down, but the noise level was up, right?

A. Yeah. Well, the sound level was about 35 which is very, very quiet. Those dips in the green lines are the day-night variation that's natural and often seen. The dips in the green line are the middle of the night and then it gets a little bit louder during the day due to daytime sounds.

Q. But in that instance your theory that the

wind is creating the noise is not valid, is it?

A. That's because the wind is light then so you're just measuring other -- whatever other sounds are there. It's when the wind is strong that you can see the correlation.

Q. So you want to amend your position, then, that it's not always -- that the measurements you got were not always related to the amount of wind, but sometimes are related to the amount of wind?

A. They're much more closely related when the wind speed is significant, yes.

Q. What do you consider to be a significant level of wind?

A. Oh, about anything above the 6 meter per second line in that chart.

Q. Okay. And you're looking at the right side of the chart for the wind speeds; is that right?

A. Right.

Q. Okay. So referring you, then, to November 8 at about zero hours, you'll see that the wind speed there reaches the significant level of 6 meters per second, right?

A. Okay, so we're talking about November 8th at midnight? Is that right?

Q. It kind of looks like, I can't tell

whether it's November 7 or November 8. It looks like November 8 to me.

A. Okay.

Q. What do you think? I'm looking at that peak there around that time period.

MR. SETTINERI: Counsel, can you identify, there is a time stamp on this graph, it would help the witness if you identify the time stamp you're looking at for the dates.

MR. VAN KLEY: The time stamp?

MR. SETTINERI: Above the date November, it looks like November 8th there is either 000 hours or 1200 hours, so if you could designate which one you're looking at, that might be very helpful.

MR. VAN KLEY: I believe we're looking at midnight to noon. That is midnight, yeah, midnight to noon on November 8.

A. Okay. All right. I've got November 8th at midnight. Yes?

Q. Do you see a peak in wind speed that goes up to 6 meters per second?

A. It just goes up to 6 meters and then down again after, right.

Q. Okay. And do you see the valley in the green mark at that same time that goes down below 30

dBA?

A. No. The valley occurs later. Where that wind peak at 6 meters per second happens the sound level's up at about 35 again I would estimate.

Q. The wind speed is still fairly close to 6 at that point, isn't it?

A. Is that a question?

Q. Yes.

A. Well, I think what you're saying -- okay, the sound level, when the sound level drops to 28, the wind speed is also fairly low at that point, it's down in the, I'd say 5 meter per second range.

Q. And you consider that to be a slow wind speed?

A. Yeah, that's reasonably light.

Q. During the time -- based on this figure what are the approximate ranges of noise in the community when the wind is not blowing?

A. Well, it can't be seen easily from this graph that we're belaboring here, but on the next page there are -- the same data is replotted as a function of wind speed and then on this plot you can tell what the mean sound level was at any given wind speed.

Q. So what's the answer to my question,

then, as to what the sound level in the community is when the winds are not blowing?

A. During light wind conditions what this data shows is that the sound level was in the vicinity of, let's see, about 32 dBA, this is the L90 background.

Q. What was the level of sound in the community on November 5 at the lowest point?

A. Well, that's a bit hard to read off of this chart that shows the whole survey. I have to go into the spreadsheet to figure that out. Okay. So we're talking about, again, November 5 did you say?

Q. Yeah.

A. On the 5th in the evening it looks like the level got as low as 28 dBA. Again, this is the L90.

Q. How about on November 6th, what was the lowest sound level?

A. Yeah, roughly 30 dBA at night.

Q. Well, doesn't that -- you're looking at the green line, aren't you?

A. Sure.

Q. Okay. And that green line goes below 30, doesn't it?

A. It generally goes below 30 during the

1 nighttime period, yeah, most nights.
2 Q. Well, on that night what was the lowest,
3 the lowest sound level that night?
4 MR. SETTINERI: I'll object at this time.
5 The witness has stated previously -- we're trying to
6 read a graph here that consists of multiple data
7 points, so he's asking specific questions and so it's
8 very difficult for the witness to give precise
9 answers on this, so I'll object to the extent the
10 witness has already said he would, you know, need to
11 refer to his spreadsheet in order to give specific
12 answers and these are specific questions.
13 MR. VAN KLEY: That's not true at all.
14 This graph shows what the L90 levels were during the
15 relevant time periods, whereas the witness is saying
16 that if we were going to look at each individual data
17 point, the numbers might be somewhat different
18 because the numbers are added and averaged together
19 to get the L90 that's reflected in the graph.
20 So I'm asking him about the sound levels
21 that are actually recorded in the graph as the L90
22 levels.
23 ALJ TAUBER: To the extent the witness
24 can answer the question, I'll allow him to answer it.
25 A. Okay. Which time again are we talking

about?

Q. All right. Give me the lowest sound level for November 5. I think you said it was around 28, but isn't it true that the valley in the green line goes halfway between 30 and 20 dBA? So it's more like 25, isn't it?

A. Yeah, it looks like, I would call it 26 on, I would say 1 o'clock in the morning on the 5th.

Q. What's the lowest L90 for November 5 -- or, November 6?

MR. SETTINERI: And I'm going to object again to be clear in the form of the question. Are we asking for the lowest L90 of all the sites that were averaged, or are we asking to interpret -- read the graph and say what that point is on the graph?

ALJ TAUBER: Please clarify your question, Mr. Van Kley.

Q. With regard to November 5, give me the lowest L90 average that you obtained for the ten sites.

A. Twenty-six.

Q. Same question for November 6th.

A. I would call it 28.

Q. Okay. Same question for November 7.

A. Thirty.

Q. Same question for November 8.

A. Twenty-eight.

Q. Okay. November 9.

A. Twenty-six.

Q. Okay. November 10.

A. Twenty-six.

Q. November 11th.

A. Thirty.

Q. November 12th.

A. Thirty-five.

Q. November 13.

A. Thirty-seven. It's windy then.

Q. Okay. November 14.

MR. SETTINERI: Again, I'd like to request specific times. This graph is set up differently. And, your Honors, I'm going to object to the whole line of questioning. The graph speaks for itself. If you look at the graph, the witness is being asked to interpret where these points are.

As to the last question, we're asking November 14th, but the graph, if you look at the X axis, you will see that there are two different points available for each time, midnight November 9th, noon November 9th through, I should say,

yeah, noon through November -- or midnight November 10th. So we're covering a 24-hour period with three points.

Counsel's questions are general saying for this day tell me the lowest point. If we're reading the graph, you look at the X axis, you look at the Y axis, and you find the point and see what it is. I think it's very clear because, obviously, these questions are geared to creating a record, so we want the record to be clear and accurate.

ALJ TAUBER: Mr. Van Kley.

MR. VAN KLEY: I very clearly asked the witness to tell me what the lowest sound level is during the day and, well, for the entire 24-hour day, and if there are three data points for that day, he picks the lowest one and he tells me what it is. Very simple exercise.

MR. SETTINERI: That's not the answer to the question. He's asking the witness to take points that are taken over the course of ten-minute samples and come up with an average for three data points. He's asking the witness to do that by looking at this graph without the benefit of a spreadsheet. I don't think anyone in this room can do that.

MR. VAN KLEY: We've already established

that we're asking for the lowest sound levels as measured by the L90 average level shown in this graph. The question's extremely clear.

ALJ TAUBER: The witness has already answered this line of questions so I'll allow him to continue to do so to the extent he can answer them. If he needs to clarify, if he can't answer the question, then the witness can explain so.

MR. SETTINERI: Your Honors, with that last clarification that we're looking for the lowest point within the 24-hour period, with that clarification I would withdraw the objection regardless.

ALJ TAUBER: Thank you.

Q. (By Mr. Van Kley) Same question with regard to November 14th.

A. Okay. Let's call it 29.

Q. Now, the reason that you measured the sound measurements for an extended period of time instead of just taking one point in time measurement to evaluate the background sound is because you want to find out what sound is there all the time, right? Not just one point in time.

A. Right. What sound is there for differing wind conditions.

Q. Okay. And going back to the purpose for doing the background sound study to begin with, you want to find out what sound is normally available in that environment to mask the sound of the turbines, right?

A. That's correct.

Q. Okay. And if in the normal environment there is a sound that occurs only briefly, such as a car passing by for one minute in time, and there is no car passing for another nine minutes during that ten-minute period of time, then the noise level from the car is available to mask turbine noise only during that one minute, correct?

A. That's right. Now, this graph that we're looking at is the L90 statistical, and what that does is filter out the sporadic noise from short duration noise events like cars going by. This is the sound level that happens in the momentary lulls between anything happening at all, the very quietest cumulative one minute of each ten-minute sample. It's the true, literally the background.

Q. The L90 is meant to determine the amount of noise that is available during those intervals of higher noise to mask the new noise during those intervals, right? I better rephrase the question

1 because I think I might have misstated it.
2 As you stated, the L90 is designed to
3 filter out the brief peaks of noise, right?
4 A. Correct.
5 Q. And the reason that this L90 is used is
6 to determine how much noise is available for the rest
7 of the time to mask the new noise that's coming into
8 the community.
9 A. I'm not sure I understand the question,
10 but the L90 captures the very quietest, as I say, one
11 minute of every ten-minute sample. It's the lulls
12 between any kind of significant noise event
13 happening.
14 Q. In your common experience as a person can
15 a human be awakened by a brief noise that might occur
16 less than 10 percent of the time?
17 A. Certainly. A gunshot or something, sure.
18 Q. Okay. So unless you are measuring the
19 noise level during those times, during those quiet
20 times, you're not going to know how much noise is
21 available during those quiet times to mask the sound
22 of turbines during those quiet times, correct?
23 A. No. That's what the L90 does capture is
24 what is the very quietest sound level in between
25 anything happening.

Q. Right. And the reason you do that with the L90 is to determine how much noise is available during those quiet periods of time to mask turbine noise that otherwise might wake you up.

A. That's correct, yeah.

Q. Okay. How many of your ten locations for background measurements were located adjacent to state highways?

A. I would say three and they were done deliberately to see what the sound level was at the houses along those highways.

Q. You would expect state highways to have more vehicle traffic than other roads, wouldn't you?

A. Sure.

Q. So you expected the noise levels along those highways to be higher than in other areas of the community?

A. Yeah, that's what you would intuitively expect. This is one of the settings, the different settings that I referred to earlier.

Q. Why did you do this background sound measurements -- why did you do the background sound measurements in November instead of during the winter?

A. Well, we seek to do these surveys during

1 the cold weather season in general, it doesn't
2 specifically have to be the winter, because --
3 primarily because we don't want there to be any
4 nighttime insect noise contaminating the
5 measurements.
6 Q. Well, isn't it true that ordinarily you
7 don't want to have leaf rustle either?
8 A. Yeah, but that's a very, very secondary
9 effect.
10 Q. If you had done it during the winter, you
11 would have a lot less leaf rustle, wouldn't you?
12 A. I don't think it's going to be a lot
13 less. I think it might make a almost imperceptible
14 difference because we put the equipment some distance
15 from any trees.
16 Q. And if you had done the background sound
17 measurements during the winter, you would not have
18 expected to pick up noise from farm machinery doing
19 the harvesting?
20 A. Well, we didn't put it out in November to
21 capture farming noise, if that's what you're
22 implying. And also, this is essentially the second
23 time we've done this survey. We did a very similar
24 survey for Buckeye I in the same area and that was
25 done definitely in the wintertime when there was no

farming activity whatsoever and the levels are very similar. Very similar.

Q. What was the L90 for your first survey? It was 29 dBA, wasn't it?

A. Well, it's not one number. We're looking for the level at a particular wind speed. I don't recall exactly what the design level was.

Q. What was the relevant L90 level in this -- that you used for this project?

A. Well, in this project we simply reported the L90, but the Leq was used as a design basis in keeping with the state precedent.

Q. Okay. You reported an L90 background level 30 dBA for nighttime in this project, correct?

A. Yeah. That would be the number I would use. That's the nighttime L90 at 6 meters per second which is typically the critical wind speed.

Q. Going back to my question before we got off on the L90 levels for your prior background study, it is true, isn't it, that if you had done this background study during the winter, you could have avoided the noise from the harvesting of the crops in the fields?

A. Well, that would have precluded any potential contribution from harvesting, but I don't

1 believe there's significant harvesting noise in this
2 data.
3 Q. Do you recall writing a paper for the
4 Minnesota Public Utilities Commission entitled
5 "Assessing Sound Emissions From Proposed Wind Farms &
6 Measuring the Performance of Completed Projects"?
7 A. Yes, I do.
8 Q. You prepared that paper, right?
9 A. Correct.
10 Q. I'm going to hand you a copy of this
11 which I will mark as UNU Exhibit 14.
12 ALJ TAUBER: The exhibit is so marked.
13 (EXHIBIT MARKED FOR IDENTIFICATION.)
14 Q. Take a look at page 25 of Exhibit 14,
15 please. Specifically I would like you to look at the
16 third paragraph on that page. Look at the second
17 sentence which I'll read to you and which reads as
18 follows: "In addition, it is best for deciduous
19 trees to be leafless at sites where they are present
20 in quantity to avoid elevated sound levels that might
21 not be representative of the minimum annual level."
22 Do you see that?
23 A. Yes, I do.
24 Q. Okay. And this sentence is talking about
25 the performance of noise surveys, correct?

A. Yeah. Yeah. Obviously, you don't want leaf rustle noise -- as I mentioned, it's a very secondary concern. The principal thing is the insects and frogs and birds that I mentioned up above there, that's really what you want to avoid by measure during the cold season.

Q. But you thought that the noise from leaves was significant enough to cause you to write this sentence, right?

A. Yeah. But that's why we selected our measurement positions away from any trees.

Q. Now, the next sentence of your paper states "Human activity, such as from a farm machinery or lawn care, is also normally lower during the winter."

A. Right.

Q. And as you sit here today you agree with that sentence, right?

A. Yes.

Q. Okay. Now, you mentioned that instead of using the L90 for use in your recommendations for a limit or a standard for this project you used Leq, right?

A. That's right.

Q. Okay. And the Leq is an exercise that

1 averages the sounds that you find during a specific
2 time period.
3 A. Right. It's the average level that was
4 measured over each ten-minute increment as opposed to
5 the quietest one minute that the L90 represents.
6 Q. So the Leq does not filter out the
7 short-term events such as passing cars or barking
8 dogs or mooing cows, right?
9 A. That's right, it has no real filtering
10 quality other than very short duration, very high
11 magnitude sounds don't show up, but other things do.
12 Q. So instead of filtering out those
13 short-term noises, you averaged them with all of the
14 other sound levels for the relevant time period.
15 A. Yeah. Yeah, the Leq is the average
16 level.
17 Q. And the Leq that you used as the most
18 important Leq for this project was 38 dBA or, I'm
19 sorry, 33 dBA. No? I'm reading my notes wrong.
20 A. Thirty-nine.
21 Q. Thirty-nine dBA Leq, okay. Compared to
22 33 dBA had you used the L90.
23 A. That's correct.
24 Q. And what you did was to use the Leq of 39
25 and add 5 dBA to that in order to come up with your

1 design goal of 44 dBA.
2 A. Right. And, as I mentioned, that's
3 following state precedent.
4 Q. In how many other projects that you have
5 worked on for wind developers have you used the L90
6 as the background level instead of the Leq?
7 A. In all of them.
8 Q. So this is the first project in which
9 you've used the Leq as the background sound level?
10 A. That's correct.
11 Q. Isn't it true that the Leq is the poorest
12 formula for measuring sound in quiet areas?
13 A. Well, it's the average level. It's the
14 actual average level that happened over every
15 ten-minute measurement period. However, no, it's not
16 the -- it's not normally used to quantify the
17 background for this kind of an application. I'm only
18 using it to follow the de facto State standard.
19 Q. And you would agree with me, wouldn't
20 you, that the Leq is the poorest metric for measuring
21 background -- for measuring sounds in quiet areas?
22 A. No, I wouldn't say it's -- well, you
23 could measure the Lmax, that would be the absolute
24 poorest, but no, the Leq is not normally used. I
25 don't normally use it.

1 Q. I'm going to hand you what's been marked
2 as UNU Exhibit 15.
3 ALJ TAUBER: Mr. Van Kley, for the record
4 could you explain what UNU Exhibit 15 is?
5 MR. VAN KLEY: Yes, your Honor. UNU
6 Exhibit 15 is an article or it's a paper written by
7 George Hessler of Hessler Associates entitled
8 "Measuring ambient sound levels in quiet
9 environments."
10 ALJ TAUBER: Thank you. The exhibit is
11 so marked.
12 (EXHIBIT MARKED FOR IDENTIFICATION.)
13 Q. You're familiar with this paper, right,
14 Mr. Hessler?
15 A. Yes, I am. I think you pointed it out
16 last time to me.
17 Q. Yes, I did. And I asked the same
18 question about it too.
19 A. Yeah.
20 Q. Got the same answer.
21 Let me refer you to the first page of UNU
22 Exhibit 15. Please look in the Abstract, sentence
23 three starting with words "It is suggested" which
24 states: "It is suggested that LA50 may be the most
25 informative while LAeq is the poorest metric for

1 measurement in quiet areas." Do you see that?
2 A. Yes, I do.
3 Q. Okay. And you don't disagree with this
4 sentence, do you?
5 A. No. Only to the extent that you can get
6 even worse by using the Lmax or the instantaneous
7 maximum, but no, no, I would agree with that. I
8 don't, as I say, I don't normally use the Leq for
9 this kind of a design.
10 Q. Okay. And this paper is authored by
11 George Hessler, Jr., of Hessler Associates, correct?
12 A. Yes, it is.
13 Q. Hessler Associates is your company?
14 A. Yes.
15 Q. Who's George Hessler, Jr.?
16 A. That's my father.
17 Q. Now, looking at the bottom of that first
18 page you will see that a very quiet suburban or rural
19 area is defined as having a LA90 level of 31 to 35
20 inclusive, correct?
21 A. That's correct, yes.
22 Q. With the average being 33 dBA LA90,
23 right?
24 A. Right.
25 Q. Okay. And in the background study that

1 you performed for the Buckeye II wind project, you
2 found the most representative L90 to be 33, correct?
3 A. That's correct.
4 Q. And just to be clear for the record, the
5 reference to "LAeq" simply means the Leq for
6 A-weighted noise.
7 A. That's correct.
8 Q. And A-weighted noise is also referred to
9 as dBA.
10 A. Correct.
11 Q. Looking at the conclusions of the paper
12 on the last page, there are two sentences at the
13 beginning of the conclusions that state "It is shown
14 that LAeq is not a good metric for quantifying levels
15 in quiet environments, at least if the data is to be
16 used for noise impact studies. LA50 and LA90 are
17 better metrics." Do you see that?
18 A. Right.
19 Q. I read that correctly?
20 A. Yes.
21 Q. Okay. And you agree with those
22 statements, don't you?
23 A. Yes, I do.
24 Q. And, in fact, in your paper for the
25 Minnesota Public Utilities Commission you essentially

said the same thing, right? If you'd look at page 28, I'd like to refer you to the last paragraph on page 28, I'll just read some of the text to you and you tell me whether I've read it correctly.

"The average A-weighted sound level, or LAeq, which is the fundamental metric for highway noise surveys and the calculation of the Day-Night Average Level, Ldn, is unsuitable for wind turbine background surveys in rural areas because this level is extremely sensitive to contaminating noise events such as from occasional traffic, planes flying over or dogs barking - things that cannot be relied on to be consistently present and available to potentially mask project noise on a permanent basis."

Now, you agree with that sentence that you wrote in this paper, right?

A. That's why I wrote it, yeah.

Q. Okay.

A. Now, I would add the whole point of this -- well, let me step back for a minute. We used the Leq and did a critical wind speed analysis to figure out what wind speed is most relevant and came up with 39 dBA. Now, as we talked about, I don't normally use the Leq and I'm only using it to go along with the State precedent here.

1 Now, that calculation or the derivation
2 of 39 plus 5 comes out to a project design level of
3 44. Now, the reason I accept that is because of
4 other research that we've done that demonstrates that
5 as long as a wind turbine project level is below 45,
6 the adverse reaction to it is extremely small.
7 So it's just a coincidence that the
8 background level derived from the survey comes out to
9 a design level of 44 and that agrees with our
10 recommended regulatory limit of 45; that's why I am
11 accepting of using the Leq in this case.
12 Q. All right. Well, you've mentioned that
13 twice now and I promise you we will get to that --
14 A. Okay.
15 Q. -- later in your discussion.
16 A. Okay.
17 Q. Reading on on page 28 of UNU Exhibit 14,
18 the last sentence on that page states "The LA90
19 measure, on the other hand, automatically excludes
20 these events for the most part and essentially
21 defines the true 'background' noise floor." And you
22 agree with that sentence, right?
23 A. Right.
24 Q. Let me just do an illustration to show
25 what averaging does to a noise level as a way of

1 showing how the Leq works. An Leq can be measured
2 over any time period that you choose, right? For
3 example, ten minutes or a day or whatever.
4 A. Correct.
5 Q. So let's just assume that we're measuring
6 or calculating the Leq for a period of ten minutes,
7 and let's assume that for nine minutes the sound
8 level is at 30 dBA and then during one minute we have
9 a car pass by with a dBA of 60, okay? What would the
10 Leq for that ten-minute period be?
11 A. If I had to guess, and I do, it would be
12 40, perhaps.
13 Q. Well, it would be 50, wouldn't it?
14 A. That could be right.
15 Q. Okay. And then according to the formula
16 that you used to recommend a limit for Buckeye
17 Wind II, if this averaging exercise for the Leq had
18 produced 50 dBA, then you would be proposing a limit
19 of 55 dBA which is 5 dBA over the Leq background
20 level.
21 A. No. That's incorrect. If the survey
22 results showed that the Leq nighttime level was
23 higher than 40, I would have abandoned that approach
24 and just cut it off at 45.
25 Q. But if you had taken the approach, you

1 would have ended up with 55.
2 A. Yes.
3 Q. What do you need to do in order to
4 confirm that you'd get an Leq of 50 dBA in the
5 illustration that I've just given you? Do you need a
6 paper to scratch out some numbers, or a calculator?
7 A. You'd have to essentially integrate it
8 over that ten-minute period to come out with the
9 energy equivalent average level.
10 Q. Okay. Well, that sounds complicated
11 so --
12 A. It is.
13 Q. -- we won't ask you to do that from the
14 bench. What hours of the day are included in your
15 nighttime Leq for Buckeye Wind II?
16 A. 10 p.m. to 7 a.m. is the night.
17 Q. And that's based on the hours in which
18 people are usually asleep.
19 A. Correct.
20 Q. Wind turbine sound is usually more
21 noticeable than other types of sound due to its
22 variable churning character, correct?
23 A. That's right.
24 Q. And you concur that a limit of 5 dBA over
25 whatever is accepted as the background level is an

appropriate limit for wind turbines.

A. It's a limit that seems to have worked fairly well. It derives from, more from conventional power plants that produce a very bland and steady noise, a 5 dBA increase over that is generally not that perceptible.

Wind turbines, on the other hand, have a character to the noise that makes them more easily heard, so the 5, it really can't be used in the same way, although when it is, it seems to be a pretty good predictor of -- or a pretty good way of establishing the threshold for an impact, we found, somewhat to our surprise.

Q. Now, isn't it true that even you hold the opinion that as a general rule an increase of up to 5 dBA above the preexisting LA90 sound level is usually found to be acceptable, whereas greater increases should be avoided for wind projects?

A. Correct. Yeah.

Q. And isn't it also true that where the L90 sound level for the background sound is below 35 dBA L90, that wind projects should have a design goal of 40 dBA or less at all residences?

A. They should have -- ideally, they should have a design goal of 40. An ideal design goal of

1 40. That's the optimal level that, well, from what
2 we found is largely associated with practically no
3 adverse reaction.
4 Q. Well, look again at UNU Exhibit 14 which
5 is the paper that you wrote for the Minnesota Public
6 Utilities Commission. I'd like to refer you to page
7 3 of that document, specifically the second
8 paragraph, and I'd like to look at the last three
9 sentences of that paragraph which read as follows:
10 "As a general rule of thumb, an increase of up to 5
11 dBA above the preexisting LA90 sound level is usually
12 found to be acceptable whereas greater increases
13 should be avoided. This design approach only holds
14 for background levels of about 35 dBA or above. When
15 lower background sound levels are found a design goal
16 of 40 dBA or less at all residences should be
17 sought." Did I read that correctly?
18 A. Right.
19 Q. Okay. And as you sit here today you
20 don't disagree with those three sentences from your
21 paper, do you?
22 A. No. No, what I'm saying there is if the
23 background level is found to be so low as to be
24 insignificant, let's say of 30 or 20 dBA, then there
25 will be no appreciable masking of any kind and then

you would then revert to an absolute design goal of 40 if that can be managed, which is often quite difficult.

Q. But here, for the Buckeye II wind project area, you found an L90 dBA of 33, correct?

A. Right.

Q. And that's below the 35 dBA that you've referenced in these sentences, correct?

A. That's correct. Yeah, ideally we would want this project to be 40.

Q. I don't think we established what the purpose of this paper is that you authored for the Public Utilities Commission of the state of Minnesota and that is marked as UNU Exhibit 14. Can you tell me what the purpose was?

A. It was to offer guidelines on how to go about establishing a design goal for wind projects, what regulatory limits to apply to them and then how to test them once they're completed to see whether they're in compliance.

Q. And this paper was funded by the U.S. Department of Energy?

A. The National Association of Regulatory Utility Commissioners.

Q. Okay. Looking at the cover page of the

1 document, lower right-hand corner, doesn't it say
2 "Funded by the U.S. Department of Energy"?
3 A. Yeah, I think they're above NARUC. Yes.
4 Q. So the purpose of this paper was to
5 provide siting guidelines and other information to
6 the state of Minnesota.
7 A. Correct.
8 Q. Go to page 32 of Exhibit O in the
9 application. I'd like to look at Table 3.3.1 which
10 is entitled "Critical Design Wind Speed."
11 A. Okay.
12 Q. Specifically looking at the wind speed of
13 6 meters per second, this chart pertains to nighttime
14 Leq background levels against wind speed, correct?
15 A. Correct.
16 Q. Okay. Now, what you're doing here is
17 you're comparing the amount of background sound using
18 the Leq metric against the amount of speed at which
19 the wind travels at hub height naturalized 10 meters
20 above the ground, right?
21 A. Yes. The wind speeds across the top are
22 the -- yeah, the wind speeds at 10 meters, standard
23 elevation of 10 meters, that's correct.
24 Q. And the theory behind your identification
25 of a critical design wind speed is that you believe

the difference in the sound level between the wind at hub -- or, the wind that is produced at ground level and the amount of noise coming from the turbine has the greatest differential between them at a speed of 6 meters per second.

A. Yeah. What this table is saying is that under -- at that particular wind speed the turbines are likely to be the loudest relative to the amount of background noise available.

Q. And you come up with a differential of 66 decibels at a wind speed of 6 meters per second.

A. Right. That's kind of an, almost a dimensionalist number that doesn't mean anything, it's just the maximum differential.

Now, if we were to take -- if we were to take any other case here, the contour plots -- well, when we use this 105 sound power and 39 background, we would model it out to the 44 designed threshold. Now, that falls at a particular place under this scenario.

Now, if we used any other wind speed, what would happen is that the nominal impact area, so to speak, would shrink towards the turbines. It's only at 6 meters per second that it has the maximum outward spread.

Q. Now, what you've just said is based on your assumption that there will actually be wind blowing near the ground surface, right?

A. No. This has nothing to do with the ground wind at all. These wind speeds, specifically the 6 meter per second value associated with the 39 dBA sound level, that 6 meter per second value is derived from the masked-top anemometers and on this site there's two towers that were 80 meters, so essentially we're looking at the hub height wind that the turbines would see, that's been normalized to 10 meters to keep everything apples to apples. But this 39 was occurring during those wind conditions when the wind speed up high was 6 meters per second after normalization.

Q. Yeah, I think --

A. I know that's confusing, but what we're correlating is the wind speed that the turbines would see to the sound level measured down near ground level and the wind speed at ground level does not play in here.

Q. What's making the noise, then, if the wind at ground level is not playing a role in this computation?

A. Well, there's still sound out there.

It's not zero even when it's fairly calm at -- even when the winds are fairly calm.

Q. Okay. But there are situations, are there not, when the normal background noise, that is the noise that is there when the turbines aren't, may be below 39 dBA Leq?

A. Yes.

Q. Some situations.

A. This 39 is the mean level that was measured under those wind conditions. Half the time it was higher than 39, half lower.

Q. Okay. And isn't it true that there are conditions in which the wind speed at the hub height of the wind turbine may be vigorous yet the wind at ground level may be fairly calm?

A. Right. Yeah, and this 39 dBA sound level reflects that.

Q. But it averages out the calm periods with the noisier periods at ground level to come up with your Leq of 39, correct?

A. Well, it's the mean of the entire survey, so there were periods when it was quieter than that, but there were just as many periods when it was more noisy.

Q. And during the time periods when it was

quieter than that, then the turbines are more likely to be heard, correct?

A. Yeah. That's correct. That happens at every site.

Q. Would you go to Exhibit O of the application, page 37. I'd like you to look at the last sentence at the bottom of that page where it says "Wind turbines can also produce a periodic swishing sound, known as amplitude modulation, that can become pronounced during period of high wind shear (high winds aloft and lower winds near the surface) and/or during stable atmospheric conditions (higher temperatures aloft and cooler temperatures near the surface)." Do you see that?

A. Yes, I do.

Q. Okay. And then the next sentence says "This distinctive sound, when it occurs - and it does not always occur - makes turbine noise much more noticeable than if it were steady in character." Did I read that correctly?

A. That's correct.

Q. Okay. And what you're referring to in these two sentences of Exhibit O are situations in which the sound at ground level is lower than usual because of the wind shear or stable atmospheric

conditions that you describe in these sentences, right?

A. Yes.

Q. Okay. The stable atmospheric conditions are also known as thermal layering?

A. Yes. It's talking about the air temperature being warmer above the surface than at the surface.

Q. And that phenomenon produces a condition in which the winds aloft at turbine height could be moving fast, whereas the conditions at ground level could be calm or fairly calm.

A. Now we're talking about two different things. We're talking about the thermal layering of the temperature in the atmosphere which is not directly related to the wind gradient. They're two different things.

Normally when there's a stable atmosphere and it is warmer above the surface, that's normally associated with low winds because winds would disturb that and stir things up.

Q. Then what creates the greater difference between the noise at hub height and the noise at ground level during stable atmospheric conditions?

A. Well, there's a couple of things going

on. When you have a high wind shear gradient, you have a differential in wind speed between the top of the rotor and the bottom which tend to generate or cause more noise to be generated than if the flow were laminar or more straight up and down.

And then at the same time if the air temperature is warmer up above, it has the effect of defracting the sound propagation or the sound waves coming from that turbine, it defracts them downward because sound travels faster in warmer temperature.

Q. And in the situations of wind shear or stable atmospheric conditions that we've been discussing it is likely that residents living nearby turbines are going to hear the turbines during those conditions even if the limit for those turbines had been established at 5 dBA above the Leq background, correct?

A. Yeah. Yeah, those conditions would be times when the project would be more audible than normal. Now, as I mentioned a minute ago, that phenomenon happens at every wind site and to go back, I know you said you're going to get to it, but to go back to our recommended design goal of 45, that is a long-term average sound level from the project and, as I mentioned, from what we've seen there's very,

very little adverse reaction whenever the sound level is below that at a number of other sites.

Now, all of these other sites are subject to wind shear and thermal gradients and night happens at those sites as well as this site, there's nothing unusual about this site. So those things happen all the time, but what we're finding is as long as the long-term level is less than 45, there's, surprisingly to us, few complaints.

Q. The turbines still may be able to operate if there is little wind at ground surface, correct?

A. Yeah. Most certainly.

Q. Because the wind at hub height is faster than the wind at ground level.

A. Yeah. It almost always is, yes.

Q. And during the times of wind shear or stable atmospheric conditions there is even less preexisting sound to mask the turbine sound than would be present if you did not have the conditions of stable atmosphere or wind shear.

A. It sounds like three questions ago but, yeah, those conditions would make the project more audible than at other times, yes.

Q. Are you familiar with a paper concerning the topic that we've been just discussing by G.P.

1 Van den Berg entitled "The sound of high winds: The
2 effect of atmospheric stability on wind turbine sound
3 and microphone noise"?
4 A. Oh, yes, that's an often quoted thesis
5 that he did some years ago.
6 Q. In fact, you've quoted it in your papers,
7 haven't you?
8 A. Yeah. Yeah. I've talked to him directly
9 about it.
10 Q. Okay. And, in fact, you cited that paper
11 in UNU Exhibit 14 which is the paper that you did for
12 the Minnesota PUC, right?
13 A. Did I?
14 Q. Page 7.
15 A. Okay. Where on page 7?
16 Q. All right, it would be reference 10 on
17 page 64 and that reference is found in the first full
18 paragraph on page 7.
19 A. Okay. Yeah, there it is. Yep.
20 Q. All right. And Mr. van den Berg was well
21 into his career at the time he wrote this paper,
22 right?
23 A. I guess you could say that.
24 Q. Okay. I mean, he was in his 50s, wasn't
25 he?

A. I'm not even sure he's that old right now. He doesn't look that old. I don't know where he was in his career when he wrote this.

Q. Okay. Well, the fact that, I mean, this was a doctoral thesis that he wrote, right?

A. That's correct.

Q. Despite that fact you and other people commonly cite this paper for his study with regard to the types of conditions we've been discussing.

A. Right.

Q. And this was -- he was not a college student in the presently understood sense of the word when he wrote this doctoral thesis.

A. Okay, if that's what you're getting at, yes, he was an adult I guess you would say.

Q. And he had been in his career as an acoustician decades prior to that time, right?

A. I don't have his résumé on the top of my head.

Q. You used a model in order to calculate the expected noise levels outside of nonparticipants' residences around the turbines in the Buckeye II project, correct?

A. That is correct.

Q. What model did you use?

A. It's called CADNA/A. C-A-D-N-A/A.

Q. This model has a margin of error of 3 dBA plus or minus, correct?

A. The program is simply an automated version of ISO standard 9613-2 which I would say generally has a plus or minus 3 uncertainty associated with it.

Q. And to perform your model you also had to look at the sound levels expected to be produced by the turbine model you were using in the model -- in the noise model that you did, correct?

A. Right. You start with the sound power level of the turbine.

Q. Which turbine model did you use to perform your noise model?

A. It was the Nordex N100 here.

Q. Okay. And you used information from the manufacturer of that model to determine what the noise levels from the model were expected to be.

A. Correct.

Q. Okay. And the manufacturer used a standard known as IEC 61400-11 to estimate those sound levels?

A. Well, more than estimate. That's a very exacting test standard. I've done it, it's very

1 difficult to do, but you get a pretty good -- a very
2 good answer as to the sound power level.
3 Q. But even that exercise has a margin of
4 error of 2 dBA, doesn't it?
5 A. Generally speaking, yes.
6 Q. So based on the margin of error of 3 dBA
7 from your noise model and the margin of error of 2
8 dBA from the calculations performed on the sound
9 levels of that turbine model by the manufacturer, the
10 results of your model could have a plus 5 or a minus
11 5 dBA margin of error.
12 A. That's incorrect. The errors don't add
13 up arithmetically. You have to take the sum of the
14 squares.
15 Q. Well, whether or not the margin of
16 error -- the margins of error in those two exercises
17 match up to 5 dBA, isn't it true that, generally
18 speaking, the models that you've run to predict noise
19 from turbine installations do have a margin of error
20 of plus 5 or minus 5 dBA?
21 A. No. I would say it's much tighter than
22 that with respect to the mean project level. And we
23 know that because we've had an opportunity to test
24 wind turbine sound levels of numerous individual
25 houses at numerous sites and then compared that to

1 what was modeled.
2 Now, in the discovery I was asked to
3 produce examples of that and I went back through my
4 files and I developed I think it was 34 .pdfs that
5 show modeled versus -- that showed essentially
6 agreement between modeled and measured levels at
7 various sites all over the country, and I just got
8 tired of making .pdfs after 34 so that's why there's
9 that number.
10 Q. All right. Would you look at UNU Exhibit
11 14 which, again, is the paper that you did for the
12 Minnesota PUC. And I'd like to direct your attention
13 to page 12 of that document.
14 Go to the bottom of that page to the last
15 sentence that also spills over into the next page,
16 and let me read you that sentence. "Extensive field
17 experience measuring operational projects indicates
18 that sound levels commonly fluctuate by roughly
19 plus-minus 5 dBA above the mean trend line and that
20 short-lived (10 to 20 minute spikes) on the order of
21 15 to 20 dBA above the mean are occasionally observed
22 when atmospheric conditions strongly favor the
23 generation and propagation of noise"
24 A. Correct.
25 Q. Okay.

A. Yeah.

Q. You don't disagree with that, do you?

A. No. I wrote that. But what that plus or minus 5 is, that's not referring to the model accuracy. The model, as I say, predicts the mean level with I would say much greater or much narrower error range than 5.

Now, the actual project sound level fluctuates quite commonly by plus or minus 5 due to varying wind conditions, but I'm talking about the model matching the mean level.

Q. You've testified in another proceeding involving the siting of a wind project known as the Highland Wind Farm in Wisconsin; is that correct?

A. Yes. Just recently.

Q. I'm going to mark your testimony from that proceeding as --

MR. VAN KLEY: Exhibit 16 I believe, your Honor?

ALJ TAUBER: Correct, 16.

The exhibit is so marked.

(EXHIBIT MARKED FOR IDENTIFICATION.)

Q. All right. Do you have Exhibit 16 in front of you?

A. Yes, I do.

Q. Okay. And that is a transcript of the proceeding for the Highland Wind Farm in -- what state I did say that was in, Wisconsin?

A. It's Wisconsin, yes.

Q. Yes. Is that right, that's the transcript from that proceeding that you testified in?

A. Correct.

Q. Okay. And the pages that are included in that exhibit are a transcript of your testimony in that proceeding, correct?

A. It's certainly what it looks like here.

Q. You were under oath for your testimony?

A. Of course.

Q. Okay. Would you go to page 510 of that document, please. And I'd like to read to you the question starting with line 18 and read the question and your answer which spills over into page 511.

The question is: "All right. But you agree with me that models -- your data shows that the models are generally consistent but not perfectly on track with reality?"

Your answer: "Yeah. What the model gives you is the long-term average level from the project at a given point and what we always made

1 clear in our reports is that that is the average, and
2 the actual level is going to vary commonly by plus or
3 minus 5 dBA, sometimes by more. It will get noise
4 spikes like we were looking at a few minutes ago in
5 that sample. That's just the nature of a wind
6 turbine."
7 Did I read that correctly?
8 A. Such as it is, yeah. That's basically
9 what I just said a few minutes ago.
10 Q. All right. And you were telling the
11 truth when you testified here, correct?
12 A. Yeah.
13 Q. Okay. So if the limit on noise for
14 Buckeye Wind II is set at 45 dBA on an Leq basis,
15 then the actual noise could be as high as 50 dBA or
16 even higher, correct?
17 A. Yes, that's correct. The sound level at
18 every wind project fluctuates like that and it's
19 generally impossible to maintain a specific limit in
20 the vicinity of 40 to 50 dBA at all times under all
21 conditions; that almost never happens.
22 Q. Would you go to the application, not
23 Exhibit O, but the main text of the application which
24 would be in Volume I of the binders.
25 A. Okay, I've got Volume I.

Q. Okay. Go to page 72, please.

A. Okay.

Q. Did you write this portion of the application? Maybe I should be more specific. Starting on page 67 of the application and going through the top of page 80, you will see a discussion about noise issues, correct?

A. Yes, I see a discussion of noise. And to answer your previous question, I did not write this.

Q. You did not write the discussion on the pages that I have just identified?

A. This was evidently drawn from my report, but I didn't actually write it.

Q. Okay. I'm going to direct your attention to some language on the bottom of page 72 of the application and then we'll go back to your report in Exhibit O for a question. I'd like to refer you to the sentence under Assessment Criteria at the bottom of page 72.

A. Okay.

Q. And I'd like to read the first sentence to you which states: "In the absence of any specific local or federal noise regulations, the project's potential noise impact will be compared to reactions observed at operational wind projects in similar

settings, and evaluated in accordance with OPSB precedent on other approved wind projects in the State, such as the noise conditions imposed under the Timber Road I, Timber Road II and Black Fork wind projects."

Did I read that correctly?

A. Yes.

Q. Okay. Now, to be fair to you let's go to some language that you drafted which I believe you will find similar on page 44 of Exhibit O. And look at that page under the heading of Conclusions. And I'd like you to look at the third paragraph under Conclusions.

A. Right.

Q. And you'll see that the second sentence states "Moreover, the Ohio Power Siting Board (OPSB) has previously approved a noise standard for other wind projects in the state, which limits the sound emissions due to wind projects to no more than 5 dBA above the average nighttime Leq sound level."

Did I read that correctly?

A. Yes.

Q. So, essentially, you're saying the same thing in this sentence that I just read as is said on page 72 of the application that I just read, correct?

A. Correct.

Q. Okay. Now, did you write the sentence on page 44 of your report that I read to you?

A. Yes. Certainly.

Q. Where did you get the information concerning the other wind projects that have been approved in the state that you believe use a similar standard for noise control?

A. From the, I believe the certificates for several projects were given to me with what those projects were approved for and in each case there was an Leq value of something plus 5.

Q. Did you read the entirety of the certificates in those cases?

A. No.

Q. Did you read enough of the information in those certificates to determine whether or not there was any opposition to the noise limits set in those cases by intervenors or by any other person?

A. No. I know nothing about that. I just read what was approved.

Q. Was the Timber Road II certificate one of the certificates that you reviewed?

A. It may well have been, but I'm not sure what specific projects they were at this point.

Q. Would you turn to page 45 of Exhibit O.

MR. SETTINERI: Your Honors, at a certain point would we be able to take a short recess?

MR. VAN KLEY: This is fine.

ALJ TAUBER: Why don't we take ten minutes right now then and we'll reconvene at 3:35. Off the record.

(Recess taken.)

ALJ TAUBER: Let's go back on the record. Mr. Van Kley.

MR. VAN KLEY: Thank you, your Honor.

Q. (By Mr. Van Kley) Mr. Hessler, I think I had just directed you to page 45 of Exhibit O of the application, and I would like you to take a look at that page right now. At the top of that page you will see four bullet points which are the recommendations you made for the noise limit in your noise study, correct?

A. That's correct.

Q. And the first one, reading from the top, is a relative design goal of 40 dBA at nonparticipating residences, correct?

A. 44 dBA.

Q. Yeah, I'm sorry.

And then the second recommendation is a

1 recommended regulatory limit of 45 dBA at
2 nonparticipating residences based on your study that
3 you've been trying to get to for a couple of hours
4 now, right?
5 A. That's correct.
6 Q. Okay. And then you say in that same
7 bullet point, "Note that the 44 dBA criterion above
8 takes precedence over this suggested limit," right?
9 A. Right.
10 Q. So, according to your report, you're
11 saying that the recommendation for the regulatory
12 limit of 45 dBA should take second place, that is the
13 first recommendation of 44 dBA should take precedence
14 over your recommendation of 45 dBA based on your
15 study, right?
16 A. Yeah, that's correct, because it's one
17 less, so let's go with that.
18 Q. Okay. Why did you write in the report
19 that it should take precedence over the 45 dBA?
20 A. Only because it was 1 dBA lower and
21 that's perfectly fine with me. Whether it's 44 or 45
22 is really immaterial.
23 Q. Okay. Looking at your direct testimony
24 in this case, which has been marked as Company
25 Exhibit 11, would you turn to page 8 of that

1 testimony, answer 16.
2 Towards the bottom of that page you write
3 that you would suggest amending a condition, I guess
4 it's condition 49, that has been recommended by the
5 staff to read that "The facility shall be operated so
6 that the facility noise contribution, other than
7 short-term excursions, does not result in noise
8 levels at the exterior of any currently existing
9 non-participating residence that exceed the greater
10 of: (a) the project area ambient nighttime Leq (39
11 dBA) plus five dBA; or, (b) the validly measured
12 ambient Leq plus five dBA at the exterior of any
13 currently non-participating residence." That's what
14 you wrote, right?
15 A. That's correct.
16 Q. Okay. So here you are recommending that
17 the condition to be added to the certificate be the
18 greater of (a), which is the 44 dBA, or (b), which is
19 the 45 -- wait a minute, I'm reading this wrong.
20 (a) is 44 dBA, right?
21 A. Right.
22 Q. And then (b) is the validly measured
23 ambient Leq plus 5 dBA at any nonparticipating
24 residence, so that's something -- a different concept
25 than what you put on page 45 of Exhibit O, isn't it?

A. Yeah, the part (b) to that is something that was in the condition. I didn't come up with that, it was already in there. I'm essentially just keeping it.

Q. So what you're talking about there is to measure compliance with the certificate's condition, one of the options that you recommend would be that the ambient Leq could be measured in the field in the future during the time that perhaps noise complaints are investigated and then you compare it to the total noise volume that represents what the turbine is contributing in addition to the background noise.

A. Well, what that's saying is, (a) is essentially saying 44 dBA, we can simplify it to that. (b), I think what that is getting at is that if the background level during some future survey at a particular house, for instance, is found to be higher than 39, then the limit would be 5 plus that number. I believe that's what was intended by that part of the condition.

As I say, I didn't write that, it was just already in there.

Q. But once the turbines are operating, you can no longer measure the background level at a home that is subject to turbine noise unless you turn the

turbines off; is that right?

A. There's two ways of doing it, one is to turn the turbines on and off, that's the best way, there is another way and that is to, and we do that when it's impractical to turn the turbines off, you can measure -- put monitors off of the site around the site several miles away, usually in the four cardinal directions, and measure. You can usually determine from that what the likely background would be on the site at any given time.

Q. Well, what happens, though, if the normal background sound of a nonparticipating residence is lower than 39 dBA Leq and the compliance level is set at 44 dBA, then what you have occurring there is the turbines will be allowed to impose more than an increase of 5 dBA on that residence, right?

A. Yeah. The 44 kind of translates just to an absolute number. It was derived on a relative basis, but it ends up just being an absolute. And what this is saying is, okay, meet 44 or, if it's higher, the background level plus 5.

Q. So by asking the Board to rewrite its condition in the way that you have suggested, you would provide the wind company with the opportunity to impose more than a 5 dBA increase of sound on an

Leq basis on a particular home than otherwise would be allowed to impose on that home if you just had a limit of 44 dBA.

A. Well, let me reiterate I didn't write that part of the condition. That was just -- I just carried that over.

Q. Uh-huh.

A. The point of this part of the testimony is, is I'm suggesting that the phrase "other than during short-term excursions" be added. That's what I'm modifying here. That was not in there. It just said the facility shall be operated so that the noise contribution does not result in levels more than 44, and what I'm suggesting is that it should say "other than during short-term excursions" because, as we mentioned few minutes ago, every wind project has noise spikes and, essentially, every project will always go over some specific limit like this, so there has to be, in fairness, some allowance for that.

Q. Yeah, I'm looking back at the recommended staff condition 49 in the Staff Report and you are right, the "greater of" language does appear in the staff's report. But notwithstanding who wrote that proposed condition it is true, isn't it, that if the

wind company were able to choose the greater of those two alternatives, that could result in a residence being exposed to more than 5 dBA above background levels?

A. Yeah, that's correct. That proviso that if the background level is higher than the initial goal is kind of a commonly occurring proviso that anticipates a situation where let's say at some house there's a grain dryer going that goes all day every day the whole year and then, let's say the background level there is 50, then that part of the condition which is just say, well, you can go 5 over that at that particular location, I don't think that that second part will probably ever come into play in this project.

Q. Well, conversely, if you have a residence that consistently experiences less than 39 dBA Leq as its background and you give the wind company a limit of 44, then that home would be exposed to more than an increase of 5 dBA above background.

A. Yes, it would, but that doesn't necessarily imply that that would be a problem. As I mentioned, if it's under 45, there's very, very few complaints. Irrespective of the background level, by the way.

Q. All right. Let's talk a little bit about your study that you've been trying to get me to ask you about for a while now. Let's go to page 29 of Exhibit O of the application.

All right, before I get there, though, let me just follow up on what you just said, and that is with respect to your statement that even if you're over -- even if the turbines produce more than 5 dBA above background, that you believe that's acceptable as long as they are limited to 45 dBA or less. Have I accurately stated your position?

A. Yes, that's correct.

Q. All right. We'll come back to that in a moment.

Let's go to page 29 of Exhibit O. All right. Page 29 discusses the study you have been mentioning throughout your testimony that you performed to determine the level of noise that people find to be acceptable when they're living near wind farms, right?

A. The paper was written as a result of doing a number of compliance surveys at completed projects. It was essentially a by-product of doing that work, it wasn't embarked upon specifically to research this subject.

Q. Yeah, your survey was not primarily designed to evaluate the impact of noise on the community, right?

A. That's right, yes.

Q. Just kind of happened out of some work you were doing there.

A. Well, it wasn't that. I wouldn't describe it that way. What it was specifically was that we set up monitors to evaluate whether various projects were in compliance with their requirements and selected as monitoring positions all of those houses where the operator had received any kind of call or concern about noise.

And the operators were very motivated to measure at these locations and just kind of tell us about anybody that had any concern and we went and we used that as one of many monitoring positions.

So out of that we were able to determine what the sound level was at all of those houses and then also talk to all of those people and see what they -- how they felt about it. And also we measured at a number of other points that were at houses that are at the maximum proximity to turbines even though they didn't complain and got to talk to those people about how they felt about it as well.

But in the end we prepared a paper that was published in January of 2011 that summarizes the findings from five surveys that were completed at that point, we've done more since that just confirming the answer.

Q. I think you indicated that this is a compliance survey?

A. Yeah.

Q. What's a compliance survey?

A. It's to determine whether the project was meeting its specified limit such as 44 in this case.

Q. What was the limit established for that wind project?

A. Most of these had 50 dBA as the limit at houses.

Q. And that resulted in complaints?

A. Yes, but remarkably few.

Q. But, apparently, enough so that someone called you to investigate the complaints.

A. No. These were people that had called the operations people and some had very serious complaints, others just had mild concerns, but they had called the operations center. And then we were told by those folks where these locations were and all of the people there were more than happy to have

the sound measurement at their houses.

Q. So you were hired by the wind company to investigate these complaints?

A. Well, we were hired to determine whether the project was in compliance or not. And, like I said, as a by-product of that we were able to measure and quantify the number of complaints and sound levels at those houses.

Q. Who paid you to do this work?

A. It was the project.

Q. The wind company.

A. Yeah.

Q. Okay. And the wind company hired you to do this work because they wanted you to evaluate complaints that had been made against their operation.

A. No. They wanted to -- in many cases it was required by the local authority that the sound emissions be tested after the project was completed. So I think in most cases that's why it was done.

Q. But you were hired by the same wind company to do this work that potentially could have been the subject to -- or which could have been required by the government to take mitigation measures to address those complaints if you found

that they were valid, right?

A. Yeah, if we found that the project was out of compliance at any of these houses, that's what we would report.

Q. Okay. But you were hired and paid by a company that had every incentive to want results that showed there was not a problem with noise in the community.

A. Well, yeah, I'm sure they all hoped for that answer, but that is what happened. And mainly because the limit was 50 dBA.

Q. Did you find that any of the complaints were valid?

A. That's subjective. Some of the complaints were, you know, taken very seriously by the people, they were genuinely upset, but then what we often found was that the person that lived next door wasn't bothered at all by it. It's highly individual.

Q. Well, we've already established that different people react differently to the same noise stimuli, right?

A. Yeah, I think we talked about that.

Q. Okay. Well, it's true, isn't it, that a noise that bothers one person may not bother another

1 person who is more tolerant of the noise?
2 A. Uh-huh.
3 Q. Right?
4 A. That's correct.
5 Q. Okay. So it's not unusual to find that a
6 certain volume of noise may bother one person but may
7 not bother the next-door neighbor. Right?
8 A. That's what we found, yes.
9 Q. Okay. Now, what do you mean by your
10 statement that this was subjective? What was
11 subjective?
12 A. I think the question was whether the
13 complaints were valid or not.
14 Q. Right.
15 A. Yeah.
16 Q. And you said something about it being
17 subjective. I'm trying to figure out what you meant
18 by that.
19 A. Right, well, how do you define "valid"?
20 If it was -- if the project level was over the
21 permissible limit, I would say that's a valid
22 complaint.
23 Q. Okay. And did you find that any of the
24 noise levels were over the permissible limit at that
25 facility?

A. Well, this study concerned five different facilities and I believe the projects were in compliance at all of them, at all positions.

Q. Okay. So they were all in compliance. Did they all have 50 dBA limits?

A. Most if not all. I think one may have been 45, but most were 50.

Q. And were there complaints at the wind farm that had the 45 limit? There must have been or you wouldn't have investigated it, right?

A. Yeah. Yeah. There were complaints at all of them, but I guess the finding or the bottom line was that the number was very small and percentagewise what we found was that there was a 4 percent rate of complaint relative to the total population close to the project for all sound levels up to 50 dBA. But, importantly, if the level was below 45, the number of complaints was 2 percent of the total number of houses within 2,000 feet of a turbine. In other words, two in every hundred had an issue.

Q. How many of those households that complained were being exposed to a level of noise of 44 dBA or greater?

A. I don't have specific numbers for that,

and the way I looked at it was number of complaints relative to the total population, and the reason I did that was because that is the way you posed this same question to me a couple of years ago. It's down to you, that specifically, why I looked at it this way.

Q. I'm glad I could have a good influence on you.

And how many households complained about noise that was between 40 and 44 dBA?

A. From one to three at these five sites which had from 91 to 268 houses close to turbines.

Q. Now, when you say "close to turbines," you're talking about all the houses within 2,000 feet?

A. Right.

Q. And when you throw out your figure of 2 percent of the population complained, you're talking about 2 percent of all the people living within 2,000 feet of the turbine. Right?

A. Right.

Q. Okay. And did you find that the levels of noise on an Leq basis was at least 44 dBA throughout that entire 2,000-foot area around the turbines?

A. No. It would normally fall to a lower level at 2,000 feet. Somewhat lower.

Q. So you have diluted the percentage of people who are annoyed by averaging the people who are exposed to levels of 44, 45, you pick the number, with people who are exposed to lower levels of noise.

A. No. The reason I came up with that 2,000-foot setback was because at that distance you could normally, a project is normally still quite audible and present. But if I had picked a wider area, I would have encompassed exponentially more houses. So it just had to be set at some point.

Q. But you could have compared the number of complaints to the number of people that were exposed to certain levels of noise --

A. Right.

Q. -- such as the 45 level that you've recommended in this case, right?

A. Right, uh-huh.

Q. But you didn't do that.

A. No. As I say, because this is the way you were interpreting Peterson's work a couple of years ago so I wanted to express it on equal terms.

Q. The complaints that you investigated were complaints that had been made by the people living in

1 the area to the wind companies, right?
2 A. Right.
3 Q. And it's true, isn't it, that the wind
4 companies did not make a written record of these
5 complaints when they came in?
6 A. Many, if not all, have a log of
7 complaints.
8 Q. Why don't you go to your testimony from
9 the Wisconsin case which has been marked as Exhibit
10 16.
11 MR. SETTINERI: Just to clarify the
12 record, is that testimony or is that a transcript?
13 MR. VAN KLEY: We're going to his
14 testimony in the transcript that's marked as UNU
15 Exhibit 16.
16 Q. And I would like you to look at page 487,
17 please look at the question starting at line 16 on
18 page 487 of this transcript which reads "Okay. And
19 this -- to obtain the complaint data, you went to the
20 company to get their records, correct?
21 Your answer: "Well, it was just a matter
22 of talking with the operations people. No records
23 per se."
24 Question: "So you didn't receive
25 anything saying here's our stack of written

complaints?"

Answer: "We asked who has ever called with any kind of concern about noise. And they -- then they told us. There may be more. That's possible."

And you were telling the truth when you testified in this Wisconsin case?

A. Yeah. Yeah, I'm just adding that I recollect that in many cases they do have complaint logs which I forgot when I was saying this.

Q. You forgot about the logs --

A. We didn't look at any complaint logs, but now that I think about it I think they're kept at most projects as a matter of course. But we didn't go through and systematically go through those, but we just asked, okay, where are the problems, and we were told.

Q. And that's something that you forgot about when you were under oath in Wisconsin?

A. It's something that I remembered between then and now.

Q. You did not provide questionnaires to the people living near the turbines to find out who was being bothered by the noise, did you?

A. No. No, it wasn't -- it was never

1 intended to be an exhaustive study.
2 Q. It wasn't intended to be a scientific
3 study either, was it?
4 A. I think it's plenty scientific in its own
5 way.
6 Q. In its own way, huh? Okay. Well, did
7 you --
8 A. No. No, I did not set out to do a
9 research project like Peterson, for instance. That
10 was never the intention. We did these compliance
11 surveys and they started -- we started noticing
12 similar results as we went along and then decided to
13 incorporate that information into a technical paper.
14 That's what we did.
15 Q. Uh-huh. So you never set out with a
16 design to obtain a representative number of responses
17 to questions about whether they were bothered by
18 turbine noise.
19 A. No. That's an entirely different project
20 and it is difficult to do.
21 Q. Not every person who is annoyed by
22 turbine noise is going to complain to the wind
23 company responsible for that noise, are they?
24 A. Right.
25 Q. And, in fact, there are people who were

1 bothered by the noise or there may have been more
2 people bothered by the noise than what you knew
3 about --
4 A. Right.
5 Q. -- when you were doing that work.
6 A. That's why I said in this Wisconsin
7 testimony that very thing. But I will add that the
8 operators were very keen to measure at any
9 conceivable place where they thought or knew there
10 was a problem. They were very interested in having
11 data at every location they knew there was an issue.
12 So I don't believe they were concealing complaints.
13 Q. But, as you say, not everybody --
14 everybody bothered by the noise may not have wanted
15 to complain.
16 A. Yeah. Absolutely. Sure. Sure.
17 Q. Yeah. Because that would mean that,
18 essentially, they're confronting the company, right?
19 Some people just don't like to confront other people.
20 A. Well, I will say some of these are just
21 simply concerns about noise. They weren't even
22 complaints in the normal sense of the word. They
23 were just: I'm not sure whether I'm real happy with
24 it. Some of them were very mild, in other words.
25 Q. What was the lowest mean sound level

being experienced by a residence within your study area of 2,000 feet from a turbine?

A. I can't give you a specific number on that. If it was a single turbine, you would be able to predict the level the distance away from it, but when you have complex turbine arrays, the level is different in different directions and it's very hard to say.

Q. Okay. Were any of the complaints that you looked at from landowners who had leased their properties to the wind company?

A. Yes.

Q. How many of them? How many percent would you say?

A. I would say one at some of the sites. One at one site, none at another site, one at another site. It was rare, but sometimes participants want as many turbines as possible to stack them up like cordwood and then they're sorry, and that's what happened here. That's some of these complaints.

Q. Yeah. Conversely, other participating landowners who want to maintain a good relationship with the wind company would be less likely to complain about the noise, right?

A. Possibly.

Q. What percentage of the people within 2,000 feet of a turbine were participating landowners?

A. Well, I certainly don't have a specific number, but quite often it's a fairly large percentage.

Q. Did you see the leases that any of the landowners participating in the five projects that you investigated had with the wind companies?

A. No.

Q. Do you know whether or not those leases prohibited the landowners from complaining about noise or any other issues?

A. Well, I didn't see them, so I wouldn't know.

Q. So you don't know.

A. Huh-uh.

Q. No?

A. No.

Q. On page 29 of Exhibit O of the application I would like to direct your attention to the paragraph just above the title "Sound impacts at project boundaries." Tell me when you've reached that location.

A. Okay.

Q. The first sentence states that ". . . there were virtually no complaints (only 1 person at one of the five sites) below a project sound level of 40 dBA." How many total people are you aware of at those sites were exposed to a project sound level below 40 dBA?

A. Well, that would be a sizeable number because that would extend beyond the 2,000-foot arbitrary limit I'm setting. Beyond that point the project level is -- project levels are all less than 40 out to some distance.

Q. I meant within the 2,000-foot investigation area that you looked at. How many people were exposed to less than 40 dBA on a mean Leq basis within those areas?

A. Yeah, well, we measured at any complaint location whether it was in 2,000 feet or not. I think the one case there where it was in the 30s was, I think that house was beyond the 2,000 feet, it was quite some distance away, but we included it as a complaint at that site.

Q. Okay. So, going back to my question, can you answer my question as to how many households were exposed to less than 40 dBA Leq within the 2,000-foot radius of a turbine?

A. No, I can't put a number on that, but we included anyone that complained at any sound level in the study.

Q. How many people did you interview in the process of doing that study?

A. Well, I think we talked to most of the people that had complaints. That number is on the order of 24 total, but we also measured, as I mentioned, at a number of other positions at all of these sites as well.

Q. When you interviewed these people, did you tell them that you were working on behalf of the wind company?

A. Yes. Certainly.

Q. Did any of the people that you sought to interview refuse to give you an interview?

A. Not specifically. I think some people might not have been home or something, we weren't able to talk to them. It wasn't a formal interview. We just met with them, talked about what we were doing, got their cooperation on where to put the monitor at their house, wherever they liked to put it, those sorts of things, how they felt about the noise, what it sounded like, were there any problems, sleep problems, whatever.

Q. These 24 people that you talked to were included all the persons that you talked to including those who had submitted complaints and those who had not submitted complaints that you also interviewed?

A. No. That was the total number of houses in these five surveys where there were clients that we measured at. Typically, we measure at 10 to 12 positions per survey, so we measured at many, many more spots than just at the complaint houses.

Q. Well, what total number of people did you interview to find out whether they were being bothered by noise?

A. Well, I think it was most of the 24 that appear in this study plus quite a number at houses of my picking because they were very close to turbines. And we talked to folks there that had, as I mentioned, project sound levels of 50 or even more and it was just remarkable how many people are not bothered.

Q. And how many of those people did you talk to?

A. Quite a few more than 24.

Q. Do you have a number?

A. A larger number than 24, let's put it that way.

Q. Were any of those people that you interviewed among the participants in the wind project or participating landowners?

A. Yeah, many of those were participants because it was simpler to get permission.

Q. It's true, isn't it, that the highly variable nature of wind turbine noise appears to lead to sleep disturbance?

A. Yes. It does in some cases, yes.

Q. In fact, isn't it true that between 20 and 25 percent of the people exposed to turbine noise between 40 and 45 dBA will be highly annoyed?

A. No, I wouldn't agree with that.

Q. No? Okay. Well, let's go back to your Minnesota paper which is UNU Exhibit 14 and I'd like to direct you to page 11. Okay. Go to the second paragraph of that page, please.

A. Yes.

Q. And find the sentence that starts with the words "In general." About halfway through that paragraph.

MR. SETTINERI: Your Honors, I would ask that the witness have time to review the page prior to sentences being read.

ALJ TAUBER: Certainly.

MR. SETTINERI: Thank you.

Q. And I'd like to read that sentence to you. "In general, the results suggest among many other important findings that a project sound level in the 40 to 45 dBA range can lead to relatively high announce rates of around 20 to 25 percent; however, it important to understand that these numbers refer to the percentage of those with exposure to such sound levels and not the entire population in the vicinity of the projects." Do you see that?

A. Right. That's exactly it.

Q. Okay. And you don't disagree with the sentence you wrote in this report, do you?

A. No. What that's saying is that if four people were exposed to 45, one of them would complain, that sort of thing.

Q. Okay. Isn't it true that you are aware of instances in which homeowners have abandoned their homes to get away from turbine noise?

A. Yes, I am.

Q. And would you tell me where that has happened in your experience?

A. Well, I recently was testifying at the Highland -- in the Highland proceeding in Wisconsin that you alluded to earlier and before I testified

the opposition group brought in some folks that lived near another project in Wisconsin, the Shirley project, and these three people, a representative from each household, gave testimony as to -- well, basically, that the noise was bothering them to the extent that they had to move away from the project area.

So I'm aware of those three instances. I haven't been to that site. I don't know why that is or anything more about it at this point.

Q. Do you know what noise level those people were exposed to?

A. No, I do not.

Q. Your recommendation that the Buckeye II project be required to meet a limit of 45 dBA is inconsistent with what you recommended for the Buckeye I project, isn't it?

A. Yes, it is, because at the time of the Buckeye I project I proceeded in the way that I normally do using the L90 background as a basis for deciding what the project design limit should be. Between then and now it's come to my attention that there is a precedent here for using the Leq, so I've adopted that approach.

Q. And isn't it true that in the Buckeye I

1 project you recommended that the limit for noise
2 outside of the residences would be no more than 40
3 dBA Leq?
4 MR. SETTINERI: Could I have that
5 question repeated, please?
6 ALJ TAUBER: Sure.
7 (Record read.)
8 MR. SETTINERI: I'll object,
9 mischaracterizing the testimony from that proceeding.
10 MR. VAN KLEY: Well, I'm just asking him
11 whether that was it. I'm not characterizing
12 anything. It's up to the witness to tell me whether
13 I'm right or not.
14 ALJ TAUBER: I'll allow the witness to
15 answer the question.
16 A. Yes, the Buckeye I project was designed
17 to limit the sound level at any nonparticipating
18 house to 40 after numerous optimization studies and
19 movement and relocation of turbines to achieve that.
20 Q. Were any of the turbine sites that you
21 evaluated for Buckeye I eliminated from consideration
22 in Buckeye I due to the noise impacts but then
23 included in Buckeye II?
24 A. I don't know.
25 Q. Based on the fact that the noise limit

you've recommended for Buckeye II is higher than the one you recommended for Buckeye I, it's conceivable that that could have occurred; isn't it?

MR. SETTINERI: Again, I'll object to lack of foundation as to that he recommended a noise limit in Buckeye I.

MR. VAN KLEY: I think he's already testified to that.

MR. SETTINERI: That was to design goals. These are very precise topics we're discussing here, and design goals versus noise limits are different.

THE WITNESS: Yeah, that's correct. Yeah, thank you for bringing that up.

ALJ TAUBER: Hang on one second.

We'll allow the witness to answer the question.

A. Yeah, it's coming back to me now. Yeah, 40 was taken as an ideal design goal for the project and I don't think it was achieved at every single -- I think there was a couple that it could not be met at.

But that wasn't the, I don't think that was the condition or the regulatory limit that ended up being imposed.

Q. Okay. What's your understanding as to

1 the limit that was imposed?
2 A. I believe it was that the project always
3 should not exceed the levels as modeled.
4 Q. And what were the levels that were
5 modeled?
6 A. Well, it's an unusual condition, that's
7 the only time I've ever seen that, I don't recall.
8 It's been a couple of years.
9 Q. Well, the modeled levels that were
10 incorporated into that condition were all under 40
11 with the exception of two or three that were slightly
12 above 40, correct?
13 MR. SETTINERI: I'm going to object on
14 relevancy grounds as to questioning the Buckeye I
15 noise condition at this time at the level we're going
16 into it.
17 ALJ TAUBER: I think we're veering a
18 little bit outside the scope.
19 MR. VAN KLEY: Could I just address that,
20 your Honor?
21 ALJ TAUBER: Sure.
22 MR. VAN KLEY: It appears, based on the
23 testimony of this witness, that the entire reason
24 that he chose a recommended limit of that 45 dBA is
25 based on the Board precedent. Buckeye I is also

1 Board precedent and it's Board precedent with respect
2 to this project area. So, if anything, this
3 testimony is more relevant to his recommendation than
4 those other five instances that he keeps referring to
5 that provided the basis for his 45 dBA limit.
6 MR. SETTINERI: Your Honor, this is a
7 collateral attack on Buckeye I. We have a separate
8 project here with a separate condition that's been
9 recommended by staff. The witness is giving
10 testimony as to the Buckeye II design and modeling,
11 it was cumulative modeling done, but the Buckeye I
12 condition is not at issue in this proceeding.
13 MR. VAN KLEY: We agree completely. But
14 we disagree that it is a collateral attack on
15 Buckeye I. There is nothing we can do about the
16 conditions in Buckeye I at this point in time and we
17 realize that.
18 However, the conditions in Buckeye I are
19 distinctly relevant to what's being recommended or
20 what should be recommended for Buckeye II because we
21 have limits that are much lower in Buckeye I than
22 what he is currently recommending for Buckeye II
23 despite the precedent that's been provided in Buckeye
24 I so, if anything, we're using Buckeye I as support
25 for our position rather than to try to collaterally

attack it.

ALJ TAUBER: To the extent the witness has answered questions about modeling between the two projects and opened the door, we will allow the question under the very narrow scope related to the models. And we're going to keep a tight track with these questions, we really want to make sure we're staying within the scope and boundaries of this application.

MR. VAN KLEY: Yes, thank you, your Honor.

Q. (By Mr. Van Kley) All right. So going back to my question, Mr. Hessler, isn't it true that with respect to your modeling in Buckeye I, which was incorporated by reference into the limit for Buckeye I, that all of the noise exposures to residents in your modeling for Buckeye I were below 40 dBA with the exception of several that were slightly above 40 dBA?

A. Yes, I think that's correct.

Q. Okay. Now, to go back to my question that was on the table before we got into this discussion which hasn't been answered yet, do you believe that it is conceivable that some of the turbine sites that you had to bypass in Buckeye I due

to that modeling may have ended up as turbine sites in Buckeye II because you are now recommending a more lenient limit?

A. No. I don't know what happened with the turbines that needed to be removed or -- from Buckeye I. And the -- when I first heard about this, that Buckeye II was going to be in between the Buckeye I turbines, my first assumption was that it was going to -- that was going to not be a good situation, but it turns out that there's enough separation between the groups of turbines in Buckeye I that there's enough open area between them that it is possible to put a second project in there without unreasonable noise levels. I'm somewhat surprised by that.

Q. But that's the case only if you propose a limit of 44 dBA; isn't that right?

A. Yes. And, as I mentioned, I believe that's a reasonable limit. Now, the 40 that came up in Buckeye I, we have always regarded that as an ideal design target if possible to do that, but as a regulatory limit we have never recommended anything lower than 45. Regulatory limits are different than design goals.

Q. But, as I believe you've already stated,

1 the condition that you've characterized as being
2 somewhat unusual in the Buckeye I certificate
3 converted those ideal goals into limits.
4 A. That is what happened in effect, yes.
5 Q. All right. Now let's go to plot 5 of
6 Exhibit O of the application. This would be in the
7 maps, the aerial photographs in the back. And for
8 the record, it's easiest to find these by going
9 backwards from the tab for Exhibit P and you'll find
10 a series of plots numbered from 1 through 6, and I
11 would like to direct the witness's attention to plot
12 5.
13 MR. SETTINERI: And you are in Exhibit?
14 MR. VAN KLEY: Exhibit O of the
15 application.
16 MR. SETTINERI: Thank you.
17 Q. Why don't you explain what you are
18 depicting in general terms in plot 5.
19 A. It looks like somebody spilled their
20 coffee, but that's not what it is. It's an
21 illustration of the areas that are above 40 dBA due
22 to Buckeye I by itself -- and, by the way, that is
23 the blue areas, Buckeye II by itself, and that is the
24 light green areas, and the cumulative effect of both
25 projects at the same time and that is the red area.

Q. All right. And does this plot depict residences?

A. Yes. All the black dots on there are nonparticipating residences.

Q. Can you tell me approximately how many nonparticipating residences will be exposed to more than 40 dBA for the cumulative impact of Buckeye I and Buckeye II?

A. Well, there's no way to cap it. I'd say it's a sizeable number.

Q. Okay. You can't tell that number by looking at plot 5?

A. Not without taking a pen and meticulously counting them all. It would be better to look in the -- we could tell fairly easily from the noise model software.

Q. Now, logically you would think that if a turbine was imposing more than 40 dBA on residence all by itself, then that turbine should also impose -- that turbine in combination with other turbines would also impose more than 40 dBA on that residence, right? There's something else going on here, right?

A. Can you start that one over again?

Q. You look stumped. Let me just lead you

to the answer. Isn't it true that in order for the combination Buckeye I and Buckeye II noise model to stay below 44 dBA you had to propose that some of the turbines operate in a low noise mode?

A. That's correct, yes.

Q. Okay. How many of those turbines did you make that recommendation for?

A. I believe it was 16.

Q. Okay. And, if I recall correctly, you looked at the operating modes for the Nordex N100 which is the model, which is the turbine model that you performed the noise model on, right?

A. Yes. I think there are several models being considered, that one had a marginally higher sound power level, that's the only reason it's used here.

Q. Yeah. And that model has four low noise operating modes, right?

A. Yes.

Q. And those -- or is it five? Is it 1, 2, 3, and 4, or is it zero --

A. Mode zero is normal operation and then there's low noise 1, 2, 3, 4.

Q. Okay. So there's four low noise operating modes.

A. Yeah.

Q. Operating mode 4 is the mode that produces the least sound of those operating modes.

A. Right, 5 dB below the normal.

Q. Okay. So with respect to the model that you performed, those 16 or so turbines would have to operate in mode 4 at night.

A. Yes.

Q. Okay. Now, if you subsequently found after operations started that those turbines were not complying with the 44 dBA level set by the certificate, if the Board adopts that as a limit, then you no longer have the option for those turbines to operate them in a lower noise mode than has already been included in your noise model, right?

A. That's correct.

Q. Whereas if all the turbines were modeled in accordance with their normal operating mode, then if you found out after operation that you had a problem, you could always pull them back to a low noise operating mode to fix the problem.

A. Correct.

Q. But you won't have that option for these 16 or so turbines if this project is built the way you've modeled it.

A. That's correct. You would have the option with neighboring units that could possibly help the situation.

Q. Now, I notice that there was a statement that the Gamesa G97 model does not have a low operating mode. Is that an accurate statement?

A. Where did that statement come from?

Q. Look at page 73 of Volume I of the application.

A. Yeah, I see that.

Q. Okay. Is that a true statement based on your personal knowledge or based on any knowledge that you have? Let me first ask you whether it's true that the Gamesa model does not have a low noise operating mode.

A. Well, I know the Gamesa G87 has low noise operating modes because we were hired by Gamesa to go and measure and verify that it was quieter and we did that.

The G97 just has a larger rotor. I would assume it would have that same capability, but I'm not familiar with the G97.

Q. Okay. So as you sit here today you don't know if the statement included in the application on page 73, that the Gamesa model does not have a low

1 noise operating mode, is accurate or not?
2 A. I don't know. It's probably -- well, I
3 don't know. Let's leave it at that.
4 Q. Okay. The second part of that sentence
5 says that the Gamesa model emits lower sound levels.
6 Do you know whether that is true?
7 A. I don't know the details about the G97
8 model.
9 Q. So if the G97 model was installed for
10 Buckeye Wind II and it does not have a low
11 operating -- a low noise operating mode, you have no
12 way of telling whether your model is still going to
13 be accurate since your model uses the low operating
14 mode for the Nordex N100.
15 A. That's correct. Yeah, we'd have to look
16 into that and rerun the model, et cetera.
17 Q. Is it true that any necessary noise
18 abatement must essentially be designed into the wind
19 project while it's in the planning stage?
20 A. That's the best time to incorporate it,
21 yes.
22 Q. Why is that the best time to incorporate
23 it?
24 A. Because then you have all options. You
25 can remove or move a turbine to attenuate the sound

levels at any given point. Once it's operational, then you're down to low noise operation or curtailment, turning it off at night for instance.

Q. Do you know how many nonparticipants' residences are located within a half mile of the turbine in the Buckeye II project as currently designed?

A. No.

Q. Looking at plot 5 again, can you tell that there are entire subdivisions located between some of the turbines in this project?

A. Well, there's groups of houses that are small communities and things that are generally just outside of the 40 contour. Inside of 40 there's individual houses here and there.

Q. Let's talk about low frequency for a few moments and then we'll wrap up your cross-examination.

A. All righty then.

Q. If you keep your answers short, you can get out of here quickly.

Low-frequency noise cannot be ruled out as a potential problem at wind farms, can it?

A. Yeah, up until recently my belief was that it could essentially be ruled out, but I'm

1 changing my mind on that a little bit.
2 Q. Okay. And, in fact, you testified about
3 that in the Wisconsin case, right?
4 A. Correct.
5 Q. And you stated that it could not be ruled
6 out as a potential at wind farms at this point?
7 A. Right. And I recommended that it needs
8 to be looked into further, specifically at that
9 Shirley site, to understand what's happening there so
10 that it can be predicted and prevented hopefully.
11 Q. And, in fact, it's your view that the --
12 that it was low-frequency noise that may have caused
13 those homeowners to move out of their homes.
14 A. Well, that's a possibility, but it's
15 really not known. The jury is out on what is
16 happening there. We had recommended a detailed study
17 of those three houses at the Shirley project using
18 highly specialized instrumentation capable of
19 measuring down to I think .1 hertz accurately. We
20 were going to measure inside of houses and outside to
21 try to understand the problem. That was supposed to
22 happen last week but did not. My understanding is
23 it's rescheduled for December.
24 Q. Isn't it your opinion that these
25 homeowners were being bothered by inaudible

1 low-frequency sounds that can cause adverse symptoms?
2 A. At that hearing I had just heard the
3 testimony from those people and commented on it
4 almost immediately thereafter to the effect that
5 possibly it was infrasound below the threshold of
6 hearing that might have been the issue there. We
7 really don't know yet, though.
8 Q. Low-frequency noise passes through a wall
9 of a home more easily than high-frequency noise does,
10 correct?
11 A. Oh, much more, yes.
12 Q. Have you ever measured low-frequency
13 noise from turbines?
14 A. Yes. It's very difficult, though.
15 Extremely difficult. You can go out in a field and
16 wave a sound level meter and get an answer and it
17 will look like there's very high levels of
18 low-frequency noise, but all you're getting is the
19 pseudonoise that we talked about earlier which
20 affects the low end of the frequency spectrum.
21 So you get an answer, but it's not the
22 real sound emissions from that or any source. For
23 instance, at one site in Wisconsin this winter we
24 measured at one position that's surrounded by 20 V90
25 turbines and we got out of the car and it was roaring

1 noise and we took a measurement, and then we called
2 operations and had them turn all those turbines in
3 that sector off and it sounded the same.
4 The levels in all frequencies including
5 the low frequencies were the same. You could hardly
6 tell the difference. It was just wind blowing
7 through the trees and everything else and pseudonoise
8 in the actual measurement data.
9 So the only way to accurately measure
10 low-frequency noise is to use a technique from the
11 IEC standard where you put the microphone on a ground
12 board where the wind speed is technically or
13 theoretically zero, and then what we're finding is
14 you have to augment that with secondary windscreens,
15 which we're in the process of developing through
16 field trials right now where I mentioned we were on a
17 standard committee, it's to come up with a standard
18 method for measuring low-frequency noise in the
19 presence of wind.
20 My father's the chairman of the
21 committee, and we're working on windscreen designs,
22 but the point is it's extremely difficult to measure
23 with confidence and accuracy what's going on.
24 Q. And that's because the wind outdoors may
25 interfere with your microphone?

A. Yes, especially at these extreme low frequencies we're talking about.

Q. But that problem would not be present if you measured the low-frequency noise inside of the building.

A. Yes. That's correct.

Q. Okay. Now, just looking at the dBA levels, that is the A-weighted levels, of noise that you might measure will not be an accurate measurement of low-frequency noise, right?

A. Oh, no. The A-weighted level has nothing to do with the low frequency, what's going on in the low frequencies.

Q. Have you ever measured low-frequency noise from turbines inside of anybody's house?

A. Had we done the work last week I could have said yes. It's being planned.

Q. Okay. Did you perform any model on the low-frequency noise for the Buckeye II wind project?

A. It's not something that lends itself to modeling. We modeled it in the sense that we used the octave band frequency spectrum of the turbine sound power level down to 31 hertz, which covers most of the -- or the conventional part of the frequency spectrum, but the issues we're talking about are less

than or below that 31 hertz. Even the -- I don't even think Nordex publishes a value at 31 hertz. We had to estimate it. But it's not something that can be modeled.

Q. So the answer to the question is you did not model the low-frequency noise.

A. Yeah. You can't model it, essentially.

Q. And the procedure that you've just mentioned does not cover the infrasound portion of low-frequency noise?

A. Yeah. That's correct. The extreme low frequency levels, well, the levels below let's say 60 hertz fall off rapidly and approach zero so the values are insignificant.

MR. VAN KLEY: Okay. I have no further questions at this time.

ALJ TAUBER: Thank you. Mr. Margard?

MR. MARGARD: Thank you, your Honor. I have just a couple, and I will keep it very brief.

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CROSS-EXAMINATION

By Mr. Margard:

Q. Good afternoon, Mr. Hessler.

A. Good afternoon.

Q. You amended your testimony after you

1 originally filed it in this case, right?
2 A. Yes.
3 Q. And you did so because after further
4 reflection you wanted to change your response to
5 question No. 16, correct?
6 A. That's correct.
7 Q. And initially you had indicated that you
8 believe that the Applicant could accept the
9 condition, specifically condition No. 49, with
10 respect to sound levels that was put forward in the
11 Staff Report of Investigation, correct?
12 A. Correct.
13 Q. And then you subsequently recanted that
14 position and suggested an alternative; am I
15 characterizing it correctly?
16 A. I suggested an amendment, a small
17 amendment, to the language that would allow for
18 short-term excursions above the nominal limit of 44
19 that's being proposed.
20 Q. And you did so because, as you indicate
21 in your amended testimony, you say that it is
22 impractical for any wind project to maintain a sound
23 level below a given threshold all of the time under
24 all conditions, correct?
25 A. Exactly.

Q. And, in fact, you've answered in similar fashion to a number of questions put to you by Mr. Van Kley this afternoon, haven't you? I wrote down a couple. I noted one that said it's often quite difficult to manage an absolute level.

A. Correct.

Q. I also noted another comment that it was impossible to maintain a specific limit.

A. That is correct. The way that's been handled in the past in the compliance surveys that I've done is that if the project level measured over a two-week period, and that's normally the period that we use to measure so we get all different wind speeds and many nights and many days, if that level is in compliance 95 percent of the time or more, to my mind the project is meeting the requirement or it's certainly the intent of the requirement.

And on all of these projects we have measured levels that have exceeded the requirements commonly, but it's usually by a very small percentage. Maybe 10 measurements out of 2,000 will be above that sort of thing; that's typical.

So all I'm saying in this suggested amendment is that those sorts of small exceedances are inevitable and should be considered acceptable.

1 Q. In an earlier response today you
2 indicated that there are some means that can be taken
3 to help keep sound within limits including low noise
4 operation and curtailment, for example. Are there
5 other means that can be employed by the developer, by
6 the operator, to keep operation within specified
7 noise limits?
8 A. Not really. The options are limited.
9 Once the project is there, there's not a lot that can
10 be done reasonably or practically about the noise.
11 Q. So that I understand the nature of the
12 practical difficulty, could you explain to me what
13 the operator would have to do employing these methods
14 to be able to ensure that operation was always within
15 the prescribed limits? What would be required of the
16 operator to meet the condition as it's stated in the
17 Staff Report?
18 A. I think even if the nearest units to a
19 particular point of interest were operated in low
20 noise mode all the time and the mean level was
21 considerably below the target, there would still be
22 occasions when the level momentarily or for 10
23 minutes or 20 minutes went above whatever the limit
24 is. Some of the excursions can be 10, 15 dB. So
25 when I say "impractical," you can't design the

1 project to be 15 below 44, say, to ensure compliance
2 all of the time; you'd only be able to build two
3 units or something.
4 Q. And am I reading your testimony correctly
5 that you believe that the complaint resolution
6 process is adequate to take care of those occasional
7 excursions beyond limits?
8 A. Yeah. I believe the complaint process
9 here goes so far as to say the -- if it's,
10 presumably, if it's consistently over, the unit will
11 be dismantled.
12 Q. You've also testified today that you have
13 some experience with situations where complaints have
14 been made by residents and some follow-up action has
15 been taken. Are you aware of any difficulties with
16 complaint processes in projects with which you're
17 familiar?
18 A. Most of the complaint processes that I've
19 seen in projects that I've been involved in
20 essentially say here's the phone number, you call it,
21 we'll log it in and we'll respond and we'll do
22 whatever we can do. And quite often there aren't a
23 lot of options.
24 Q. And just so I'm clear, your experience
25 with these complaint resolution processes has been,

shall we say, anecdotal. You haven't had a specific role or responsibility in participating or evaluating those processes, have you?

A. No, we haven't been involved in establishing the complaint procedure or taking measurements to verify, specifically in relation to a particular complaint. As I mentioned before, we've done plenty of measurements at the houses of people that have complained, but not only for that reason.

MR. MARGARD: Thank you, your Honor. I have no further questions.

ALJ TAUBER: Thank you.

Mr. Settineri, redirect?

MR. SETTINERI: Thank you, your Honor. No further questions for this witness, your Honor.

ALJ TAUBER: Thank you.

And the Bench doesn't have any questions either, so you may be excused. Thank you, Mr. Hessler.

THE WITNESS: All right. Thank you.

(Witness excused.)

ALJ TAUBER: Mr. Settineri.

MR. SETTINERI: Thank you, your Honor. At this time we'd like to move into the record Company Exhibit No. 11.

ALJ TAUBER: Are there any objections to Company Exhibit 11, the direct testimony?

MR. VAN KLEY: No.

ALJ TAUBER: Hearing none, it shall be admitted into the record.

(EXHIBIT ADMITTED INTO EVIDENCE.)

ALJ TAUBER: Mr. Van Kley?

MR. VAN KLEY: We're not going to move any of the exhibits we marked.

ALJ TAUBER: Thank you.

Mr. Settineri.

MR. SETTINERI: Thank you, your Honors. At this time may we take a short five-minute break?

ALJ TAUBER: Yeah, we can do that.

MR. SETTINERI: I appreciate it.

ALJ TAUBER: Let's go off the record.

(Recess taken.)

ALJ CHILES: Let's go back on the record. Mr. Settineri. I'm sorry. Mr. Petricoff.

MR. PETRICOFF: Thank you, your Honor. At this time we would like to call Chris Shears to the stand.

ALJ CHILES: Please raise your right hand.

(Witness sworn.)

ALJ CHILES: Thank you.

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CHRISTOPHER SHEARS

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

DIRECT EXAMINATION

By Mr. Petricoff:

Q. Would you please state your name and business address for the record.

A. My name is Christopher Shears. Business address is 1251 Waterfront Place, Third Floor, Pittsburgh, Pennsylvania.

Q. And, Mr. Shears, what is your title?

A. I am the chief development officer of EverPower.

Q. And on whose behalf do you appear today?

A. I appear on behalf of Champaign Wind LLC.

Q. Thank you.

MR. PETRICOFF: Your Honor, at this time we would like to have marked the direct prepared testimony of Christopher Shears as Company Exhibit No. 12.

ALJ CHILES: It is so marked.

(EXHIBIT MARKED FOR IDENTIFICATION.)

Q. Mr. Shears, do you have a copy of Company

Exhibit No. 12?

A. My testimony?

Q. Your testimony.

A. Do I have my testimony? Indeed I do.

Q. Thank you. And are there any changes or corrections that you would like to make to that testimony?

A. No.

Q. And if I were to ask you today the questions that are listed in Exhibit 12, would your answers be the same?

A. They would.

MR. PETRICOFF: Your Honor, the witness is available for cross-examination.

ALJ CHILES: Thank you.

Let's begin with Ms. Parcels.

- - -

CROSS-EXAMINATION

By Ms. Parcels:

Q. Good afternoon, Mr. Shears. Thank you for being so patient.

A. That's fine.

Q. I just have a few questions for you. You indicate in your answer to question 1 in your direct testimony that you have been employed with EverPower

as an officer of Champaign Wind and senior VP. How long have you been employed by EverPower?

A. Since April 2008.

Q. Since 2008. How long have you been a resident here in the United States?

A. The same time as that. I came over to the U.S. at that point from the U.K.

Q. And then in your answer to question 2 you indicate your core areas of activity for EverPower are Pennsylvania, New York, and Ohio. Do you also have a wind farm in California?

A. Yes, we do.

Q. Can you give me the name of that facility?

A. It's called Mustang Hills.

Q. And when did EverPower acquire that facility?

A. Earlier this year. I think we closed in April. Yeah, it was unique for us in that we had acquired a built wind farm rather than one we developed ourself.

Q. Okay. Your answer to question 3, you noted that you graduated from Wye College in 1994 with a Bachelor of Science degree in countryside management.

1 A. Yes.
2 Q. What is countryside management?
3 A. It's probably a sort of somewhat quaint
4 British colloquialism, but it's effectively an
5 environmental science bachelor's.
6 Q. Would you equate that in the American
7 education field as a Bachelor of Science in
8 environmental science, then?
9 A. Yes, I think so.
10 Q. Okay. You noted that you had extensive
11 experience in the U.K. with Renewable Energy Systems
12 and as chair of the British Wind Energy Association,
13 and you note that you oversaw all areas of industry
14 representation to government. Can you tell me, did
15 you coordinate at any time with the Civil Aviation
16 Authority as the director of the British Wind Energy
17 Association?
18 A. Actually, probably before I was chairman
19 I was vice-chairman and at that time I led a -- led
20 work for the association in coordinating a working
21 group on FAA issues, or the equivalent of FAA, CAA
22 issues in the U.K. between the industry and the
23 aviation industry.
24 Q. This is great because you're anticipating
25 my next question. Would the CAA, then, be the

1 equivalent of the FAA in the United States?
2 A. Exactly. Yes.
3 Q. So would you characterize them as a
4 regulatory body or more advisory or both?
5 A. The CAA is a regulatory body and makes
6 advisory -- has an advisory capacity as well, but I
7 think fundamentally a regulatory body.
8 Q. Okay. And then you also noted that you
9 participated in development of projects in Poland and
10 Australia. Does Australia have, to your knowledge,
11 another agency that corresponds with the CAA in the
12 U.K. and the FAA in the United States called the
13 Civil Aviation Safety Authority?
14 A. That, I'm not sure. I'll have to take
15 your word that is the case.
16 Q. Okay. Again, I was asking if you knew.
17 A. I'm certain they must have an agency, but
18 I don't know that for sure.
19 Q. Okay. And have you kept up to date with
20 wind developments in the U.K. since 2008 when you
21 moved to the United States?
22 A. In an arm's length kind of way. I can't
23 claim to be the fount of knowledge that I was when I
24 was obviously there working with it every day, but
25 I've kept an eye on developments there, sure.

Q. And you said you participated in a sort of working group when you were the chair, and I think you said vice-chair, you worked in sort of an advisory role with the CAA on developing policies for aviation around wind turbine farm installations?

A. Yes, that is correct. The focus of it was more -- was more related to radar issues than sort of physical interaction, but, you know, part of it was the consultation process as well.

Q. Did you yourself have occasion to fly as a passenger -- I guess I'll back up.

Are you qualified as a pilot?

A. I'm not, no.

Q. Okay. Did you have occasion to fly as a passenger in and around wind turbine installations either by airplane or helicopter?

A. Not in close proximity, no.

Q. Returning back to your role and involvement and communications with the CAA, I want to direct your attention to what's been marked as City Exhibit 6. It should be up there, it's a one-page document. It's marked on the front as "CAP 764, CAA Policy and Guidelines on Wind Turbines" and it's dated January of 2012.

A. Exhibit 6, did you say?

Q. City Exhibit 6.

A. Sorry. I just located UNU Exhibit 6.

Q. If you need a copy, I can give you one.

A. That may be the fastest way to do that.

Q. Now, you characterize the CAA as equivalent to the FAA in the United States. So would you call that CAA a government body that's subject to whatever the U.K.'s public records laws are?

A. Yes. I think that's true, yes.

Q. And does that cover sheet there appear to be an official sort of publication from the CAA?

MR. PETRICOFF: Your Honor, I'm going to object at this time. We don't have a foundation that he recognizes this document.

ALJ CHILES: The objection is sustained. I think you need to lay a better foundation here before we proceed.

Q. Would you recognize the logo of the CAA based on your work with the CAA?

A. Yes.

Q. Okay. And is that the CAA logo on the front of that document?

A. I believe so, yes.

Q. Okay. The reason that -- and I'm not going to be offering that document into evidence, but

1 I just wanted to give that to you, if you flip it
2 over on the back, there is an excerpt from what was a
3 60-page document and it talks about helicopter main
4 routes. Could you take a minute to familiarize
5 yourself with that passage.
6 A. Sure.
7 MR. PETRICOFF: Your Honor, at this
8 point, until he has stated that he has familiarity
9 with the document, especially since it's one page of
10 60, I'm going to object to any line of questioning
11 concerning it.
12 ALJ CHILES: The objection is sustained.
13 Q. Okay. Then, Mr. Shears, you said you've
14 kept familiar with developments in the British wind
15 industry at an arm's length sort of fashion. Are you
16 aware personally of any sort of developments or
17 regulations that have been passed pertaining to
18 helicopter operations around wind turbines in the
19 U.K.?
20 A. No. No, not specifically. I mean, I'll
21 briefly answer this in that I think, having read this
22 for the very first time and not knowing the full
23 context of this document, noting it's January 2012, I
24 believe this pertains to flight paths out in the
25 North Sea to I assume oil rigs, I know that was an

1 issue that cropped up years ago, and those are very
2 defined corridors because of extreme weather events
3 and what have you they have.
4 So I think that's what this is pertaining
5 to in relation to offshore wind farms, but that's
6 just supposition with a very quick look at it.
7 Q. So there were offshore wind farms in
8 development when you were chair of the British Wind
9 Industry Association?
10 A. Yes.
11 Q. Was that a concern at the time, the
12 interference with helicopter routes to the oil rigs?
13 A. No.
14 MS. PARCELS: Okay. Nothing further for
15 this witness, your Honor.
16 ALJ CHILES: Thank you.
17 Mr. Selvaggio.
18 MR. SELVAGGIO: Thank you.
19 - - -
20 CROSS-EXAMINATION
21 By Mr. Selvaggio:
22 Q. Good evening, Mr. Shears. My name is
23 Nick Selvaggio, I'm the Champaign County prosecutor
24 and I, along with my colleague Jane Napier, represent
25 the board of Champaign County commissioners and the

1 townships affected in the project area. The
2 questions I have for you are not meant to confuse you
3 so if you have any requests for clarification, just
4 let me know, okay?
5 A. Thank you.
6 Q. I first would like to start with your
7 direct testimony and on page, or the answer to
8 question 1, I'd like to just define some of the terms
9 involved. You indicated that you're the chief
10 development officer for EverPower Wind Holdings.
11 Would you share with me the organizational structure
12 in terms of where that places you in line from
13 Mr. James Spencer who's the chief executive officer
14 of, I believe, EverPower?
15 A. Yes. I report to our CEO Jim Spencer and
16 am one of the management team of six people on the
17 senior management team of the business.
18 Q. So would you describe yourself as being
19 in the inner circle?
20 A. If you want to describe it like that,
21 yes.
22 Q. Okay. And by that I mean if there were
23 to be a new project started, you would certainly know
24 about it.
25 A. Yes.

Q. And you would know about it, presumably, before Mike Speerschneider -- well, let me ask. Do you know who Mike Speerschneider is?

A. I do, yes.

Q. And if I describe him to be the senior director of Permitting and Government Affairs for EverPower, you would be familiar with that?

A. I would, yes.

Q. Does Mr. Speerschneider have authority over you or does he report to you?

A. Neither. He is also a member of the management team, the newest member, about a year ago now I think. His role is Director of Permitting and Policy. Obviously, I work very closely with him on a day-to-day basis, but we're a pretty matrixed team in how we approach development.

Q. Back in 2009 would he have reported to you?

A. Yes.

Q. Okay. So I would presume that he doesn't have any authority to start -- he would not have had any authority to start a new project without your knowledge. Fair statement?

A. That's correct.

Q. Okay. And as Chief Development Officer,

then, you would have knowledge of your projects not only in Ohio, but Pennsylvania, New York, Washington, Oregon, and now California; is that correct?

A. Correct. Yes.

Q. Okay. I notice that there's a -- that for this Buckeye II project there's the parent corporation of Champaign Wind, and before I get to that, we've had some initial discussion on the first day of testimony using the terms "Champaign Wind" and "Buckeye Wind" to describe the project in this application. What is the formal name of this project?

A. It's the Buckeye II project is the project name. The entity is Champaign Wind LLC.

Q. And how did you come up with the name Buckeye II?

A. It seemed like the obvious name given the proximity to the first phase.

Q. And when you say "proximity," is it fair to describe the proximity as it's within the same project footprint as Buckeye I?

A. Yes, I think it --

Q. Relatively.

A. Relatively speaking. And I'm not, from a legal point of view, quite what the boundaries are I

haven't doubled checked for both phases, but I agree.

Q. And I'm not asking you for a legal conclusion, just a common sense community perception.

A. Yes.

Q. Okay. And so the decision to name a limited liability corporation Champaign Wind for EverPower, why was there a secondary company knowing that Buckeye Wind was the first company that sponsored the first project?

A. I think the decision we took was, and we still take, is that the first phase of Buckeye is a discrete project that we might choose to construct on its own merits, but the second phase, as I'm sure you're aware, was a combination of additional land that we had plus the acquisition of additional lands from a developer in that area, so standard corporate practice, we set up a separate LLC in order to hold the assets of Champaign -- of Buckeye Phase II.

Q. Just so that I was clear because I don't know that I clearly heard the first part of that, you indicated that the first phase was a distinct project? Was "distinct" the word that you used or "discrete"?

A. You can use either. My point is that it's a stand-alone project.

Q. Well, I want to --

A. We view it that way.

Q. You viewed it as stand-alone, okay. Part of the reason for asking about the dual corporations has to go with some of the documents that the county and county engineer would no doubt have to execute and it just seems that we will be replicating work if we have two sets of road use agreements, two sets of permits, two sets of, you know, there's a lot of confusion that can result from that. Certainly that wasn't the intent, but given the -- well, let me ask you the question.

Would you agree with me that confusion could be unnecessarily raised by having these two distinct companies?

A. I can understand how there might be some confusion, yes.

Q. And so would it be in the best interest of government officials to actually have the same company promoting the dual projects?

A. Well, both companies are a hundred percent owned entities of EverPower, so I'll make that point. And, you know, depending on the future scenarios, as I say, we look at Phase I as a discrete phase that we could build before Phase II, assuming

1 all other issues come together. And there is a
2 scenario where both phases I think reasonably might
3 get built together subject to time.
4 Q. Well, certainly if you were granted the
5 certificate by the Power Siting Board and if, in
6 fact, the matter was appealed to the Supreme Court,
7 and, if the Applicant prevailed, before turbines were
8 bought would there be any reason to have different
9 turbines for Buckeye I versus Buckeye II?
10 A. I think that -- I don't know. Possibly.
11 It depends on that timing. You know, you do see wind
12 farms which have a mix of two different technologies
13 within the same broad general development area. In
14 those scenarios generally I think, from my
15 experience, those have been different project LLCs
16 and are financed separately, not always, but I think
17 that can happen with sort of the phasing approach.
18 But that's, yeah, it's going to be an
19 issue of timing as to what the right approach would
20 be. But, I mean, I think from my understanding of
21 the situation here a lot of, you know, you mentioned
22 sort of road use agreements and the like, clearly if
23 we built the first phase, then a lot of that learning
24 and documentation that's done on something like a
25 road use agreement would, I would imagine, translate

to a future second phase.

Q. In question 2 of your testimony you indicated that you were responsible for identifying and progressing EverPower wind farm projects. And we've already established that EverPower in Ohio at least, well, and in Champaign County, has had Buckeye I and Buckeye II. Would you tell me or further define for me what you mean by "identifying and progressing"?

A. We adopt a sort of phased approach to how we identify projects and doing phase work, but, you know, we'll look at there's a lot of elements that come together when we look at a particular wind farm location and those can be high level policy issues, market issues, down to environmental issues and all the other issues set out in the application.

So we are constantly doing that. Clearly, we've been very successful in building a number of wind farms over the last few years and we're continually monitoring, reviewing our pipeline of projects and kicking some out, frankly, and also looking to bring in new opportunities where they make sense for us to execute our business strategy.

Q. Thank you.

In the second sentence of answer 2 you

1 state "This includes overseeing all the key inputs
2 into the development process which can broadly be
3 categorized as managing and positions, assessing wind
4 resource." Would you describe for me or further
5 define for me what you mean by "and positions"? Does
6 that mean siting?
7 A. I think my copy here says "categorized as
8 managing land positions." Maybe that's an error --
9 MR. PETRICOFF: That's correct.
10 A. -- in your publication.
11 Q. Well, I must apologize to you. Your
12 attorney has given me a copy. I don't know why I
13 have what I have, but it's my error so I apologize
14 for that.
15 So using the phrase, then, "managing land
16 position," would you share with me, does that mean
17 siting?
18 A. In a broad sense, yes. I mean, I think
19 "siting" captures a number of these issues listed
20 here and I'm sure contribute to the siting of the
21 project. Land is, obviously, one key component of a
22 project. Siting is the availability of land and
23 landowners who wish to participate based on all the
24 constraints mapping we do to identify prospective
25 sites.

1 MR. SELVAGGIO: For the record, I realize
2 what happened. I circled the phrase and my marker
3 went through the "L" so when I said "managing and
4 positions," again, that's still my error, but that
5 clarifies the record.
6 Q. With regard to the phrase "advanced
7 stages of development" further down in answer 2 where
8 you state "I currently oversee about 1,000 megawatts
9 of projects in the advanced stages of development,"
10 and then ". . . further, 1500 megawatts in earlier
11 stages," would you share with me what the difference
12 is between an advanced stage of development and an
13 earlier stage of development?
14 A. Broadly speaking, it's what I classify as
15 us taking a decision to move from Phase I to Phase II
16 development. So Phase I is really us looking at a
17 lot of the fatal flaw issues around a project,
18 understanding some of the key variables, seeing if we
19 can secure things like a land position to make the
20 project viable.
21 At that point we'll have a full internal
22 review and decide is that project something that
23 we're prepared to commit capital to to move to Phase
24 II which is really when we start expending
25 significant -- significant expenditure on

environmental studies and other components to develop and permit the project.

Q. With regard to the application, if you would turn to your chief executive officer's affidavit which I believe is the third piece of paper in Volume I.

A. I have it.

Q. Okay. And in paragraph 1 of the affidavit would you agree with me that he uses the term "Buckeye Wind II" as the project description for the townships of Goshen, Rush, Salem, Union, Urbana, Wayne, in Champaign County?

A. Yes.

Q. Okay. If you would turn, then, to Volume II, and starting with Exhibit G -- I'm sorry, starting with Exhibit E as in Edward, on the second page would you agree with me that they use the term "Buckeye II Wind Farm" in the report that's prepared by Hall & Associates?

A. Yes.

Q. In Exhibit F, in the cover page that's dated February 24th, 2012, in the first paragraph under "Dear Mr. Wilmore," would you agree with me that they use the project name "Buckeye II"?

A. Yes.

Q. In Exhibit G, the economic impact assessment, would you agree with me that Camiros, who prepared the impact study for you, for the Applicant, used the term "Buckeye II" to describe the wind farm?

A. Yes.

Q. In Exhibit H in the title page would you agree that, again, Hall & Associates used the phrase "Buckeye II" to describe the wind farm project?

A. Yes.

Q. And in Exhibits I, J, and K regarding the bird and bat, both, migration report, study report, and netting report, that the company Stantec consulting used the term "Buckeye II" to describe the project?

A. That's correct.

Q. In Volume III in Exhibit N would you agree with me that EDR company used the phrase "Buckeye II Wind Project" in their description of the photographs?

A. Yes.

Q. In Exhibit O would you agree with me that David Hessler used the term "Buckeye II Wind Project" to describe the project study for environmental sound survey and noise impact?

A. Yes.

Q. In Exhibit P would you agree that EDR company's again used the phrase "Buckeye II Wind Project" to describe the project with regard to the shadow flicker report?

A. That looks correct, yes.

Q. And would you agree with me that in Exhibit Q that same company, EDR, did the same thing?

A. Yes.

Q. And then, finally, in Exhibit S would you agree with me that the Ohio Department of Transportation Aviation makes reference to a Buckeye Wind Ph.2 which I presume to be Phase II in the subject line item of their letter?

A. Yes.

Q. And in Exhibit T would you agree with me that Comsearch referred to this project as "Buckeye Phase II" with regard to their Wind Powered GeoPlanner Off-Air TV Analysis?

A. Yes.

Q. Okay. Where would these consultants that presumably you as the Applicant hired, where would they have gotten the term "Buckeye II" from?

A. Because that would have just been the term we would have been using in consultation with them.

1 Q. So that's a term that comes from
2 EverPower Holdings.
3 A. I expect so, yes.
4 Q. All right. Do you have accessible to you
5 up there Union Neighbors United Exhibit 8?
6 A. I think I do.
7 Yes.
8 Q. Would you take a moment to take a look at
9 that two-page stapled document.
10 A. Just so I'm sure we're looking at the
11 same document, this is the draft agenda U.S. Fish and
12 Wildlife?
13 Q. Yes, sir.
14 A. Okay.
15 Q. Have you seen this document before?
16 A. I may have, I can't recall.
17 Q. It's addressed to -- Michael
18 Speerschneider would be the individual that would
19 have been employed with EverPower in July of 2009; is
20 that correct?
21 A. Correct. Yes.
22 Q. And on the second page of the document --
23 MR. PETRICOFF: Your Honor, I'm going to
24 object. He said he didn't recognize the document so
25 at this point I don't think he can be examined on it.

MR. SELVAGGIO: He said that he may have seen it before, he's not sure.

MR. PETRICOFF: I would say that that means he doesn't recognize it.

MR. SELVAGGIO: It doesn't make a difference for purposes of -- in the state's [verbatim] opinion it doesn't make a difference for purposes of this cross-examination which would go not to the substance of the document but his credibility as a witness.

MR. PETRICOFF: This is so far outside the scope of his testimony that it's all irrelevant.

MR. SELVAGGIO: He's the chief development officer. It's extremely relevant.

ALJ CHILES: The objection is sustained.

MR. SELVAGGIO: May I approach the witness?

ALJ CHILES: You may.

(EXHIBIT MARKED FOR IDENTIFICATION.)

Q. Mr. Shears, I'm handing you what has been marked as County Exhibit 1 for identification and that, sir, is a copy of your direct testimony taken from October, that was filed stamped October 27th, 2009, with the PUCO. Do you recognize that sir?

A. I do.

1 Q. I'd like you to turn to page 17 and
2 there's discussion in question 25 about "the
3 Applicant is to develop an HCP" -- which is, I
4 believe, known as a Habitat Conservation Plan -- "and
5 obtain the associated Incidental Take Permit (ITP)
6 from the USFWS regarding the potential take of
7 Indiana bats." And you were asked is this condition
8 acceptable to the Applicant.
9 And on page 18 you indicated: "Yes, we
10 have already begun the process to obtain an ITP from
11 the USFWS and fully expect to operate the project
12 within the ITP conditions." Do you see that?
13 A. I do, yes.
14 Q. Now I'd like you to take a look at the
15 UNU Exhibit 8, second page on the agenda, No. 4B
16 where it says "HCP" and, then little "iii,"
17 incidental take permit limitations. Do you see that?
18 A. I do, yes.
19 Q. And then in paragraph 3 it says "Relevant
20 Indiana bat life history." Do you see that?
21 A. Yep.
22 Q. Does the information on this agenda seem
23 consistent with your prior testimony in question 25
24 of County Exhibit 1?
25 MR. PETRICOFF: Your Honor, I'm going to

1 object. There's nothing in the direct testimony
2 about the Habitat Conservation Plan, about bats, and
3 certainly anything that has to do with the case
4 08-666 is outside the scope of this proceeding.
5 MR. SELVAGGIO: I completely agree with
6 Mr. Petricoff that the subject matter that we're
7 speaking of, it's outside the project application in
8 this case, however, it's not being offered for that
9 purpose. Instead, it's being offered for his
10 credibility with regard to a prior inconsistent
11 statement and the state is laying the foundation for
12 that prior inconsistent statement.
13 ALJ CHILES: I'll allow the question for
14 the very limited purpose that you expressed, but we
15 can't go too far beyond the bound of this specific
16 project.
17 MR. SELVAGGIO: I couldn't agree more,
18 Judge. Thank you.
19 THE WITNESS: Could you repeat the
20 original question, please?
21 MR. SELVAGGIO: May we have the court
22 reporter do that?
23 ALJ CHILES: Please.
24 (Record read.)
25 MR. PETRICOFF: Your Honor, I want to

1 renew my objection that, once again, he has not
2 testified that he recognizes or is familiar with UNU
3 Exhibit 8 so how can he make a comparison.
4 ALJ CHILES: Can you read the question
5 back to me one more time, please.
6 (Record read.)
7 MR. PETRICOFF: Your Honor, I would note
8 that the agenda is part of UNU 8.
9 ALJ CHILES: I'm sorry, what?
10 MR. PETRICOFF: That the agenda being
11 referred there is the second page of Exhibit UNU 8.
12 ALJ CHILES: The objection is sustained.
13 I think to the extent you want to ask the witness the
14 question you expressed you need to lay a better
15 foundation.
16 Q. (By Mr. Selvaggio) Mr. Shears, have you
17 ever heard the phrase "Buckeye Wind I"?
18 A. Yes.
19 Q. And how would you -- what is the basis of
20 your knowledge for that phrase, Buckeye Wind I?
21 A. The first phase of the two Buckeye
22 phases.
23 Q. Okay. Have you ever heard of the phase
24 Buckeye Wind II?
25 A. Yes.

Q. And what's the source of your knowledge for that?

A. A lot of the questions I've answered already, it's common, you know, it's a known term within our business.

Q. And you would agree with me that not only have you heard of that term, but that David Hessler and the Cultural Resource Analysts and Hall & Associates and Camiros and the Stantec Consulting have also heard that phrase, Buckeye Wind II.

A. Yes.

Q. Would you tell me, if you know, how the U.S. Fish and Wildlife Service would know about Buckeye II on July 17th, 2009?

A. Because it's listed in this agenda, I would imagine.

Q. Well, do you remember being asked by your attorneys back in 2009, October of 2009, whether the condition to develop an HCP and obtain the associated ITP is acceptable, and you responded by saying "Yes. We have already begun the process to obtain an ITP from the USFWS and fully expect to operate the project within the ITP conditions"? Doesn't that suggest that you knew about it as well?

A. I'm missing the inconsistency. I'm

1 sorry, I don't understand the question.
2 Q. Okay.
3 A. This agenda was in July. The testimony
4 was in October. It's a statement of fact that we've
5 commenced that discussion with the U.S. Fish and
6 Wildlife Service.
7 (EXHIBIT MARKED FOR IDENTIFICATION.)
8 Q. Sir, I'm handing you a document which has
9 been premarked as County Exhibit 2.
10 A. Thank you.
11 Q. If you will turn to page 105 -- well,
12 first of all, this purports to be your testimony
13 given before the Ohio Power Siting Board on Monday,
14 November 9th, 2009. If you would turn to page 105,
15 and on line 22 do you recall being asked the
16 question: "What additional phases are you planning
17 for the Buckeye Wind Project?" And do you recall
18 giving the answer: "We have no specific plans at
19 this moment"?
20 A. I do recall that, yes.
21 Q. Okay. I'd like you to turn to page 182,
22 and starting with lines 6 reading through line 18 do
23 you recall being asked the question: "Are there any
24 other sites included in the current six townships
25 that we've named that are intervenors?"

1 Answer: "Potential future applications
2 for additional turbines?"
3 Question: "Yes."
4 Answer: "As I said earlier, we do have
5 some additional land positions and we have no
6 immediate plans to propose any further turbines, but
7 we have a very -- a lot of work to do with this
8 particular application." Do you recall that?
9 A. Well, not specifically, but now I've read
10 it, yes, it's on the record.
11 Q. Okay. So given your statement under oath
12 on November 9, 2009, compared with the information
13 that is purported to include an EverPower
14 representative with the U.S. Fish and Wildlife on
15 July 2009, would you care to change your sworn
16 testimony?
17 MR. PETRICOFF: Your Honor, I'm going to
18 object. We are back to UNU 8. This is a document
19 that was prepared by U.S. Fish and Wildlife. He
20 doesn't recognize it. Their use of I and II I think
21 is irrelevant and it certainly does not support this
22 line of questioning.
23 ALJ CHILES: Sustained.
24 MR. SELVAGGIO: Your Honor, it goes
25 directly to his credibility as a witness as to

1 whether he's giving truthful testimony under oath.
2 ALJ CHILES: The witness has testified
3 that he's not familiar with UNU Exhibit 8, so the
4 objection is sustained.
5 Q. Mr. Shears, how would you know that
6 you've already -- that back in 2009 you had begun the
7 process to obtain an ITP from the Fish and Wildlife
8 Service?
9 A. How did I know that?
10 Q. Yes.
11 A. Because we had commenced that process.
12 Q. And how would Fish and Wildlife know that
13 there was a Buckeye II? You've previously testified,
14 haven't you, that --
15 MR. PETRICOFF: Your Honor, I'm going to
16 object.
17 MR. SELVAGGIO: I'm not done with my
18 question yet, Counsel.
19 MR. PETRICOFF: I'll let you finish the
20 question. I'm sorry.
21 Q. You've already testified that you are one
22 of six in the management team, that
23 Mr. Speerschneider would not or anybody else under
24 you would not have started a project without your
25 knowledge, that you are the chief development

1 officer, so the mere fact that this memo went to
2 Speerschneider is irrelevant for purposes of what
3 your knowledge base is; isn't that true, sir?
4 MR. PETRICOFF: Now, your Honor, I want
5 to object. The premise of this is that U.S. Fish and
6 Wildlife knew about Buckeye II. We do not have U.S.
7 Fish and Wildlife here, we don't know what they meant
8 on this exhibit, and for that reason the question
9 must be stricken.
10 ALJ CHILES: Do you have a response,
11 Mr. Selvaggio?
12 MR. SELVAGGIO: It goes directly to his
13 credibility. It's a prior inconsistent statement.
14 It goes directly to his credibility, and if the Power
15 Siting Board is going to assess his credibility and
16 give weight to his testimony as to the safety of
17 turbines, it's directly relevant as to whether he can
18 give truthful testimony under oath.
19 ALJ CHILES: Can you read back the
20 original question for me, please.
21 (Record read.)
22 ALJ CHILES: The objection is sustained.
23 We've already established that the witness is not
24 familiar with this memo. I assume you're referring
25 to UNU Exhibit 8.

1 MR. SELVAGGIO: I understand the court's
2 ruling, but I do dispute that that's what the witness
3 says. That's what counsel said the witness said, but
4 the witness's first answer to whether he had seen
5 this document before wasn't that he had never seen
6 it, he just didn't recall, and we believe that
7 there's an evidentiary difference to that. But I
8 appreciate the court's ruling and I'll move on.
9 Q. (By Mr. Selvaggio) Mr. Shears, I believe
10 that your company has indicated that setbacks for
11 safety purposes are appropriate at being measured
12 from residential units; is that correct?
13 A. I believe so, yes.
14 Q. And that figure that's been tossed around
15 is 900 and, I think 41 feet; am I correct?
16 A. I think that's correct, from the nearest
17 residence.
18 Q. Right.
19 A. I believe so.
20 Q. Okay. And you're here to testify on the
21 safety of the wind industry in general; is that
22 right?
23 A. Yes.
24 Q. I'd like you to, if you would, please,
25 take Volume III of the application and turn to

1 Exhibit R under the Turbine Safety Manual.
2 A. I have that.
3 Q. And if you would, up in the right-hand
4 corner of the safety information portion of the
5 document there are page numbers up at the right-hand
6 corner. Do you see that?
7 A. Yes, I do.
8 Q. Sir, if you would turn to -- well, first,
9 unless I'm mistaken, do you agree with me that this
10 is a Gamesa, if I'm -- am I pronouncing that
11 correctly?
12 A. Gamesa.
13 Q. Gamesa Safety Information Manual; is that
14 right?
15 A. Yes.
16 Q. Okay. If you would turn to page 42.
17 A. Yes.
18 Q. Down at the very bottom in section 7.2 it
19 says "Procedure in event of fire. In the event there
20 is any type of fire near the wind turbine, immediate
21 contact -- immediately contact the substation to
22 disconnect the grid. The area must be cleared and
23 cordoned off in a radius of 400 meters (1300 feet)
24 from the turbine." Do you see that?
25 A. I do see that, yes.

Q. Okay. If we were to use this safety setback that the company has proposed and if there were a fire, how would the company cordon off the middle of a home?

A. Well, I think I'm a little bit from what I can see here you're mixing some apples and oranges a little bit in the sense of, you know, we have to look at the likely event of this happening, number one, and the track record of the industry and the likely occurrence of this fire happening.

In the event, in the very unlikely event this situation did occur, and we had used a Gamesa turbine and everyone had agreed on this safety procedure, I assume we would knock on the door and say "Excuse me, can you please leave your home while we deal with this incident."

Q. And so which half of the house would you have them leave, the half of the house on the inside of the radius or the half of the house, I mean would it be safe for them to go to the other half of the house?

A. I doubt it. I mean, I look at that as a very simple safety measure which would be akin to a gas leak in a road or something like that where one would like to evacuate surrounding buildings, it's a

very unlikely occurrence but you've got to put some protocol in place.

Q. Well, I'm not suggesting that you as the Applicant are looking to put industrial machines in areas that don't have good track records, that's not what I'm suggesting. What I am suggesting, however, and would like you to either agree or disagree is that this particular safety manual recommends that, well, it doesn't recommend, it mandates the area must be cleared and must be cordoned off in a radius of 1300 feet from the turbine. I mean, there's no, Hey, if you guys feel like it, is there?

A. Well, this is not a statutory document in that sense. This is a safety document that they have developed and would inform the management plan, the operational management plan, and all the safety management component of that plan. So I'm not sure it's a mandate, but clearly it would be given significant weight in that safety plan that we would put together.

Q. So when EverPower is sponsoring trainings for our local emergency service providers, are you, as the Applicant, suggesting that there are some safety rules that can be followed and some that shouldn't be followed because we as an industry don't

1 think you have to?
2 A. No, I'm not suggesting that for one
3 moment. What I'm just suggesting is that the
4 characterization of this as a statutory requirement,
5 I'm not sure that's the right terminology for it. I
6 think it's, you know, clearly there's a lot of detail
7 in this safety manual and I don't see any reason, I
8 haven't studied it in detail but, you know, we would
9 follow the lion's share of everything that's in here
10 if not all of it.
11 I just think this is, again, it's sort of
12 apples and oranges in terms of I think what you're
13 getting to with your question about, you know, people
14 leaving their home in that situation. I mean, I
15 think we would go to that home and say, hey, look --
16 I'm sure it would be evident to them that this event
17 is happening -- we think it's prudent for you to
18 leave your home until it's resolved.
19 Q. Well, if you -- I'm sorry, were you
20 finished with your sentence?
21 A. I am finished, yeah.
22 Q. Okay. That was inappropriate of me to
23 interrupt you.
24 If in the end your company picks this
25 wind turbine model, are you telling us that you would

1 not follow this procedure that they've delineated in
2 their safety manual?
3 A. No, I'm not saying that. All I said was
4 I think the term "statutory" is something that I sort
5 of take an issue with in terms of how you define
6 that. You know, is this a legally binding obligation
7 upon us? I don't think so. Does it make perfect
8 sense for us to follow this guidance as set down in
9 here? I would imagine that would be absolutely the
10 case.
11 If it's, you know, we would go to that
12 home, as I've set out, and alongside this we will
13 have developed our own protocol which I think is
14 something we're mandated to do under the Power Siting
15 Board conditions, and we'd have a prudent plan for
16 these eventualities.
17 Q. Do you consider this to be relevant
18 information for the Power Siting Board to consider
19 when assessing safety?
20 A. Sure. Yeah.
21 Q. Well, the reason I ask, if you would turn
22 to page 103 of County Exhibit 2, there was some
23 discussion over setback distances and there was
24 discussion about the Nordex, that the Nordex
25 turbine -- and you were asked in line 20: "Did

1 Buckeye Wind or EverPower provide this document to
2 the staff of the Ohio Power Siting Board?"
3 You answered: "I do not believe so."
4 You were asked: "Why not?"
5 And you said, "I'm not sure it's
6 particularly relevant." So are you changing your
7 definition of what you believe is relevant or not
8 relevant?
9 MR. PETRICOFF: Your Honor, I'm going to
10 object. This concerns the other application, not the
11 one at bar at the moment.
12 ALJ CHILES: Mr. Selvaggio.
13 MR. SELVAGGIO: I'm asking the court to
14 consider a prior inconsistent statement. It goes to
15 credibility.
16 MR. PETRICOFF: Your Honor, it's not
17 inconsistent if it's not in this case.
18 ALJ CHILES: The objection is sustained.
19 Q. (By Mr. Selvaggio) Mr. Shears, are there
20 other safety issues in wind turbine machinery that
21 you consider are discretionary principles to follow?
22 A. That covers a lot of territory as a
23 question, and I'm sort of running through in my mind
24 any number of scenarios where that question may be
25 applicable. Look, you know, our number one priority

is to operate safely as you can I'm sure understand --

Q. Absolutely.

A. -- and imagine it's the core of everything we do. It's the first item on our board agenda. The very last thing we want to do is have an incident at our facilities.

So in that context the sort of things I've set out to you of what we -- we develop protocols looking at all the available information and we come up with a operational safety plan which we implement, and we've done I think that very successfully at our operating wind farms.

Is there some hypothetical situation where we disagree with something that's being stated somewhere and come up with a different plan? Potentially, but it's, you know, supposition.

Q. So if safety is at the core principle of your mission statement, and in your own application you offer an exhibit for a certificate of operability that suggests a safety radius is 1300 feet for a particular incident no matter how remote, why wouldn't you suggest to the Power Siting Board that the setback should at the very least, the minimum setback should at the very least be increased from

941 to 1300 feet?

A. That's my earlier point. I think it's -- you're comparing sort of apples and oranges. You're looking at a situation where that event has occurred here. It's a bit like saying you should have a 50-mile exclusion zone around a nuclear power station in the event something goes wrong. Clearly, day-to-day the nuclear industry does everything they can to mitigate that eventuality. And that's exactly what we will do in this situation.

What we're talking about is in the event that situation has occurred despite all mitigation and focus that we have on it, how do we manage that incident at that time. I think it's different, I'm sure you understand my point, but there's two different components.

Q. I appreciate what you're saying and I'm asking this next question not in a legal sense but in a business model sense. Are you, then, saying that you're willing to take the financial risk of not following a safety manual in a turbine you select because of the remoteness of the incident?

A. I think we've been over this. I'm not saying that. I'm saying that in all likelihood we will follow that protocol. I don't see why we

wouldn't, we'll knock on that door and say this convenient is happening, please leave your home.

Q. I'm -- I did it again.

A. This event is happening, you know, we recommend you leave your home at this time like any emergency event of that nature.

Q. So given that, and I think you and I agree that no matter how remote, we would deal with the situation as defined in the safety manual, why not just agree with the -- why not just recommend to the Power Siting Board that you want to increase your setback?

A. For all the reasons I've set out to you on numerous occasions.

Q. Okay. The last series of questions I have go to, again, your development experience and why Champaign County was selected. You would agree with me that Champaign County has some of the best wind in the state?

A. Yes.

Q. And you would agree that there's an availability of transmission to connect and move the power within the state?

A. Yes.

Q. And certainly the bigger the rotor and

1 the turbine, the better the ability to capture more
2 energy?
3 A. Yes.
4 Q. And it's really a function of physics
5 that you have an increased swept area of the blade
6 and there's more energy hitting it and, therefore,
7 you're able to generate more and capture more
8 kilowatt-hours.
9 A. That's correct.
10 Q. Given that there are 56 turbines that
11 will be added to the sited area where we already know
12 that there are going to be 70 turbines, would you
13 agree with me that there's a cumulative increase in
14 the noise level and that's factored into the design
15 of the project and, therefore, a setback distance
16 would have to vary?
17 A. Gosh, a lot of points in there. Number
18 one, I'm not the noise expert. The Phase I as
19 permitted is 52 turbines in the end. Is there -- I
20 believe we've undertaken a full cumulative noise
21 study as part of our submissions to this, so yes.
22 Q. Well, in general, one car driving down
23 the road creates less noise than two cars driving
24 down the road, correct?
25 A. There's an amplification effect, yes.

Q. And so would you agree that there's a cumulative increase in noise the more turbines you put in the same spot?

A. Yes.

Q. And as such that's why one of the factors -- that's one of the factors why the setback distance may have to vary.

A. Yes.

Q. All right.

A. I think I characterize the, you know, generally, emitting noise conditions is a very significant component of our site design.

MR. SELVAGGIO: Okay. Thank you, sir. I appreciate your patience as we worked through those questions. That's all I have.

ALJ CHILES: Thank you.

Mr. Van Kley.

MR. VAN KLEY: Thank you, your Honor.

- - -

CROSS-EXAMINATION

By Mr. Van Kley:

Q. Good evening, Mr. Shears.

A. Good evening. It's nice to see you again.

Q. It's nice to see you too.

I want to start with just a few general questions for you. Following up on what Mr. Selvaggio has asked you concerning Buckeye I and Buckeye II, are the two projects entirely separate or will they be entirely separate or will they be interconnected through, for example, transmission lines that will be constructed as part of the construction of each of the projects?

A. As I've said before, I think the Phase I is, we look at it as a stand-alone project, and we believe we could move forward to construct that as is.

The Phase II would integrate into Phase I, if it came later, that's how we've tried to design it, and I'd say there is a scenario where, subject to how timing would go, that both phases would be constructed simultaneously.

So, for example, as I think we've set down in the documentation, we're using the same interconnect point, certainly Phase II would use the same substation as the first phase. So there is some shared facilities between the phases, yes.

Q. As part of the Buckeye II facility you're going to install some transmission lines, right?

A. Phase II?

Q. Yes.

A. Yes.

Q. Okay. And --

A. Well, I'm sorry, just be careful on the terminology. I mean, we will have a collection system which will collect the power and move it to the substation where it will connect to the transmission line.

Q. Okay. So your understanding of the term "transmission line" is that is the line that belongs to the electric utility company.

A. Correct.

Q. Okay. And the lines that come from the turbines you will refer to as collection lines.

A. Yes.

Q. Okay. Will the collection lines from Buckeye II merge with the collection lines for Buckeye I before they arrive at the transmission line, or will they be entirely separately connected to the transmission line?

A. Gosh, I'm not sure I can comment with too much definition on that question. I think, you know, the second phase, some of those collection lines could follow some of the Phase I lines. There's a lot of detail around that design.

Q. I see that substations are also included in the Buckeye II design.

A. Yes. It would be the same substation.

Q. Will the Buckeye I and the Buckeye II projects both use any of the same substations?

A. They would use the same interconnect substation, so into the DP&L system we have designed it such that that will be where both phases would connect to the transmission system, yes.

Q. I see that the Buckeye II project also includes operation of maintenance buildings and associated storage yard. Will both of the projects use the same buildings and yard?

A. I would envisage so, yes. I mean, again, it comes to a degree of phasing, if we built Phase I and had the O&M facility for that, we may decide for whatever reason that we would prefer to have a second facility somewhere else on the project, but the intent is to share as many facilities as possible between the phases. It makes sort of common sense.

Q. You were answering some questions from Mr. Selvaggio about fires, and I -- fires and turbines, and I believe you characterized fires as a unusual occurrence or something along those lines?

A. Yes.

Q. Okay. Are you aware of a database that's kept by the Caithness group concerning accidents at wind farms?

A. I was not until reviewing evidence for this hearing.

Q. Okay. So as part of your review for this hearing have you read through the incidents reported in that database?

A. I have looked through that database, yes.

Q. And you noticed that the database reports some fires at turbines?

A. Yes.

Q. Okay. Do you recall whether you have independently heard about any of those fires from other sources besides that database?

A. I'm not sure -- it's difficult to correlate with that database in terms of exact occurrence, but, I mean, I can tell you that, obviously, having been in the industry for a long time, I'm aware of several fires which have occurred at turbines, yes.

Q. Okay. Are you aware of a fire that occurred in a wind turbine in the Allegheny Ridge Wind Farm in Pennsylvania?

A. I am aware of that. It was -- I think it

1 happened before I came to the U.S., but I am aware of
2 that incident, yeah.
3 Q. Actually, it happened in July 2012,
4 didn't it?
5 A. The Allegheny Ridge? In that case I'm
6 not aware of that incident.
7 Q. Might have been a different fire at
8 Allegheny Ridge?
9 A. Possibly. If you can lead me to
10 something specific, I might be able to help you.
11 Q. Well, let's see if I have any more
12 details about that particular incident that might
13 prod your memory. You're aware of the fire, that the
14 fire occurred, or does it refresh your recollection
15 of this incident if I would tell you that it occurred
16 in Blair County, Pennsylvania, and that the Blue Knob
17 Fire Department responded to the fire and wasn't able
18 to put it out due to it being out of reach? Does
19 that help you at all?
20 A. No, I'm sorry, it doesn't.
21 Q. All right. What other fires are you
22 aware of that have occurred in wind turbines?
23 A. You know, I can recall two or three
24 incidents from recollection. Mostly none have
25 occurred on facilities that I have been involved with

either personally or through the companies I've worked for.

But thinking back in the U.K. I can recall a couple of fires which occurred on facilities, it seems to be that, and again this is somewhat anecdotal, just my interpretation of these fires is that -- the ones I've seen have occurred or heard about seem to have occurred fairly soon either during construction or soon after the turbine's up or fairly soon into the operational phase of the project either through something not being put together correctly or an oil leak or something of that nature which has sparked a fire.

Obviously, when those events happen, although very rare, they're very visible and so they create, generally create a significant amount of coverage. But, you know, there's a handful of incidents I can sort of recall.

Q. Based on your familiarity with wind turbines is there anything that a fire department can do to put out the fire that is as high as the hub of the wind turbine?

A. Generally not. I think accepted practices is best just to let the nacelle burn, obviously the sort of discussion we had before, make

1 sure you have a safe setback to allow that to happen,
2 but that's sort of common practice. You know, it
3 doesn't make sense to put some firefighter's life in
4 danger for purposes of putting that fire out at that
5 height.
6 Q. And when a fire burns in a wind turbine,
7 isn't it true that there will be sparks and burning
8 debris that will travel some distance away from the
9 nacelle?
10 A. Yes.
11 Q. Does the wind industry, to your
12 knowledge, have any database that would reveal the
13 occurrence of blade failures or blade throws or fires
14 or any other accidents at wind turbines?
15 A. I'm not aware in the U.S.A. that such a
16 database exists. I know that the American Wind
17 Energy Association maintain a database, a voluntary
18 database mind you, of incident reportings where
19 there's been a -- someone's been injured. But in
20 terms of actual incidents of mechanical issues, if I
21 can phrase it that way, I'm not aware of a single
22 U.S. database that does that.
23 Q. This database from AWEA contains
24 information only about accidents that have resulted
25 in injuries to humans?

A. That's my understanding, yes.

Q. Okay. Have you seen it?

A. As I said, that is a voluntary database. I have not seen that, no.

Q. You have not seen it? And when you say it's a voluntary database, that means that it contains only the incidents that the wind companies have chosen to report to AWEA?

A. Yes.

Q. Understanding that you haven't seen the database, do you know whether any of the injuries that have been reported are injuries occurring to members of the public as opposed to employees of the wind farm?

A. I am not aware of any member of the public, no, being injured.

Q. Are you aware of an airplane accident in Wisconsin in which four people were killed after their airplane crashed into a wind turbine?

A. I've heard reference to it. I don't know a lot of details about it, or I know no details about it.

Q. Right. Have you heard about a parachutist who was killed when he rammed into a wind

1 turbine?
2 A. I believe so, yes. In Germany, I think.
3 I'm not sure if that's the case. I guess I sort of,
4 whilst clearly those incidents are tragic and I'm
5 sure being fully investigated, "members of the
6 public" in that context is a slightly different
7 definition of what I was thinking in my mind of, you
8 know, sort of passive members of the public in and
9 around wind farms.
10 Q. What, if any, blade throws have you heard
11 about from sources other than the Caithness database?
12 A. You know, clearly, again, just having
13 been involved in the industry, one has noted that
14 there have been incidents of blade failure. I think,
15 you know, I would put it that way rather than blade
16 throw. You know, blades have failed in different
17 ways at different facilities. Yes, so I am aware of
18 some.
19 Q. Okay. Are you aware of any incidents in
20 which blades have become detached from the turbine
21 tower and fallen to the ground or been thrown from
22 the tower?
23 A. Yes.
24 Q. Approximately how many of those incidents
25 have you heard about from sources other than the

1 Caithness database?
2 A. Gosh. I've been doing this a long time
3 so probably since 1994 I might suppose 50. Could I
4 name all those for you? Absolutely not. But I'm
5 just thinking about level of frequency that might
6 have occurred over that period of time from press
7 clippings and discussions.
8 Q. Yeah, my next question was going to be to
9 ask you to name them all, but in light of the hour,
10 we'll forego that pleasure. That pleasure being only
11 mine, I guess.
12 I'm looking at your answer to question 8
13 in your direct testimony and I see here that you
14 state that ". . . the operation of wind farms has far
15 fewer safety related incidents even on a proportional
16 basis than other means of obtaining energy such as
17 the mining of coal or the drilling for oil." I was
18 curious about a few of the things that you said in
19 that sentence, the first being when you refer to the
20 "proportional basis" for the safety records of those
21 respective industries, what are you comparing in the
22 proportion?
23 A. What am I comparing? I think I'm making
24 a general point that if one looks at incidents of
25 serious injury or death from different energy

1 sources, then, you know, wind compares very favorably
2 against these other forms. You know, I know the U.S.
3 coal industry, there's been a thousand deaths in the
4 U.S. coal industry since 1940 I think it is, so --
5 and obviously many thousands before that. Luckily,
6 we don't have to mine our resource in that context,
7 so the drilling of oil, I think we all would be
8 familiar with some of the major instances and
9 fatalities associated with oil drilling.
10 But I think it's important to sort of try
11 and also compartmentalize these risk issues. You
12 know, I think a lot of -- looking through the
13 Caithness database a lot of the incident reporting in
14 there was related to construction phase of projects
15 and, you know, clearly, again, something we take
16 very, very seriously and, touch wood, you know, have
17 had a very strong record to this point in the
18 construction of our projects. But, nonetheless, over
19 the years there have been incidents and some
20 fatalities relating to that. Those people are
21 engaged, obviously, very directly in those
22 construction projects.
23 And then you have sort of the public side
24 of the issue as well, say my kind of general
25 definition of general passive public around

1 facilities.
2 And then that becomes, I guess, a lot
3 more of a gray area in terms of cause and effect of,
4 you know, emissions from coal stations impacting
5 nearby residents over long periods of time and a lot
6 of science and litigation around that issue. So I
7 guess this is a very general statement looking at the
8 round of issues pertaining to safety.
9 Q. So if I'm understanding your testimony
10 accurately, then, when you compared the safety record
11 for the wind industry and the coal mining industry
12 and oil drilling industry in this sentence, you were
13 talking about their overall safety record, not just
14 the impacts on the safety of nonemployees of those
15 companies.
16 A. Yes, I think that's correct.
17 Q. Okay. And of course as you've already
18 mentioned, if you're looking at the overall safety
19 record of the wind industry, there have been deaths
20 that have occurred during construction of wind
21 turbines, right?
22 A. Yes.
23 Q. And there have also been deaths of
24 employees who were engaged in the operation or
25 maintenance of those facilities, right?

A. Right. I believe so, yes. But, you know, I think it's very important to context those incidents. You know, this industry is growing very quickly over a relatively short period of time and the incidents have been, I think, quite low as a -- considering the rapid pace of growth which I think is a testament to the industry and how it's gone about developing itself and, to a degree, self-regulating itself through its trade associations and other safety entities. But clearly we're always striving to improve that record.

Q. How many wind companies have you worked for?

A. Two.

Q. So it would be EverPower and one other company, then.

A. Correct.

Q. What's the name of the other company?

A. Renewable Energy Systems, Limited.

Q. Do they have operations in the United States?

A. They do, yes.

Q. What was your position for the other company?

A. Well, I joined there as a graduate so I

1 was a project manager for specific projects in the
2 mid-1990s and then over time began to oversee more
3 development activities across the business managing
4 different facilities and different people, I also
5 then got involved with the British Wind Energy
6 Association in parallel, well, I was part of that job
7 function over time, sort of ending up as director of
8 U.K. development.
9 Q. Has EverPower or any of its subsidiaries
10 ever experienced a blade failure?
11 A. No.
12 Q. How about your other employer, your past
13 employer, has it experienced any blade failures?
14 A. I can think of one incident. Now,
15 something may have occurred in the last few years
16 since I've been here I'm not aware of, but I can
17 recall one incident of a lightning strike for a
18 project in the west country of the U.K., Cornwall,
19 which was an older wind farm built in the early-1990s
20 where a lightning strike kind of delaminated that
21 blade and it sort of just folded outwards. It was a
22 managed incident and the turbine was stopped and the
23 blade replaced.
24 Q. Does EverPower -- I'll withdraw that.
25 A. It's not a call we wish to receive in the

office, as you might imagine, so we try everything we can to avoid those.

Q. With respect to your answers to questions 6, 7, and 8 in your direct testimony, is any of the -- is the information upon which you are basing your answers based solely on information concerning the six turbine models that have been identified in your application in this case as being suitable for the Buckeye II project?

A. Referring to question 6?

Q. Six, 7, and 8.

A. I mean, no, they're a more generic statement of my experience throughout my career in this industry. Turbines continue to evolve and change over time. I mean, we have experience with operating a couple of the turbines which are listed as candidate machines for this project.

Q. Are you aware of any other project for wind turbines that has actually been built that is built within a mile of a thousand or more residences?

A. Yeah, a number. Wind turbines generally can appear in lots of different situations, in my experience, and I think it's fair to say the majority are in remote locations by design for various constraints that we have placed upon us, noise and

1 others.
2 In terms of proximity sort of rather than
3 individual residents, which I think is your point, in
4 terms of proximity to a town or settlement I can cite
5 our Highland and Highland North Wind Farms in Cambria
6 County, Pennsylvania, which a number of those
7 turbines are within a mile of Beaverdale which
8 probably isn't a thousand residents or so, a thousand
9 homes.
10 In the U.K. going back a little bit
11 further, you know, I think there are, I'm aware of a
12 good number of individual turbines in particular that
13 are located adjacent to office facilities,
14 residential areas, a lot closer than that.
15 I sat next to one for five years in my
16 office at Renewable Energy Systems a hundred yards
17 outside my window which was probably in proximity to
18 that many people. So it's difficult to generalize
19 but I think there are a number of examples where that
20 occurs.
21 Q. Isn't it true, speaking of the U.K. and
22 turbines that are in close proximity to people, isn't
23 it true that recently an official of the U.K.
24 government announced that there would be no more
25 approvals of onshore wind turbines?

1 A. There's an interesting debate between the
2 political -- between the government in the U.K. right
3 now, it's a coalition government and there's -- yes,
4 a new energy minister is appointed who is, call it a
5 little out of line with government policy. I haven't
6 followed it closely, but, I mean, I would go to the
7 fact that this year will be a record year
8 installation for wind both on and offshore in the
9 U.K. and the current conservative government is very
10 supportive of wind.
11 Whether that may change with this new
12 energy minister, he's a junior minister sitting below
13 the main sort of cabinet-level minister, remains to
14 be seen, but I'd be surprised.
15 Q. And the expressed basis for this
16 minister's statement was that it was at least in part
17 based on people's responses of annoyance at all the
18 wind turbines being built up on shore, isn't it?
19 A. Yeah. I think it's fair to say, as far
20 as I can understand, that he doesn't support wind
21 turbines. His, I don't know what his constituency is
22 in the U.K., maybe there's been some particular
23 issues lobbying in that area, but generally speaking,
24 again, from my experience over time government has
25 been very supportive of renewable energy in the U.K.

I think they are somewhat beholden to foreign sources of fossil fuel and are working very hard to, as a consequence, to -- and tied to climate change, to install a lot more renewable energy sources alongside gas.

Q. Could you turn to page 2 of the application which you will find in Volume I on your bench.

A. Yes.

Q. I'm looking at some language in the paragraph headed "General Purpose of the Facility" which would be the second paragraph on that page. And --

A. I'm sorry. Is this page 2? Sorry.

Q. Yeah, page 2 of the application.

A. Yes.

Q. And do you see paragraph 2 on that page which is labeled "General Purpose of the Facility"?

A. I do, yes.

Q. Look at the third line of that paragraph where it refers to serving the needs of electric utilities and their customers.

A. Yes.

Q. Okay. Help me to understand what -- to understand what part the wind industry plays with

1 regard to providing electricity to electric utilities
2 and their customers. How does it physically fit in
3 with the utility's needs?
4 MR. PETRICOFF: Your Honor, at this point
5 I am going to object. This is pretty far afield from
6 the direct testimony which has to do with safety.
7 MR. VAN KLEY: Your Honors, in 33 years
8 of practice I don't think I have ever heard that
9 objection sustained by any court of law. It is the
10 rule in Ohio, unlike some jurisdictions, that the
11 scope of cross-examination of a witness is not
12 limited to the direct testimony examination; that
13 witness is available for cross-examination on any
14 relevant issue in the case. So I think the
15 objection's invalid.
16 MR. PETRICOFF: In that case, just taking
17 the last part of the statement if, in fact, we're
18 looking at relevancy and the question is how do wind
19 turbines fit into the electrical grid for utilities
20 and utility service, pretty far afield from an
21 application.
22 MR. VAN KLEY: Well, first of all,
23 Mr. Petricoff has just misstated my question. To
24 make sure it's clear I'll restate the question. But
25 I'm asking the question that's directly related to

what Buckeye Wind or what Champaign Wind put in the application so it's obviously relevant.

ALJ CHILES: Did you want to restate that question?

MR. VAN KLEY: I will. Thank you, your Honor.

Q. (By Mr. Van Kley) Here's what I don't understand and perhaps you can answer this question for me: It's true, isn't it, that the production of electricity from wind turbines is intermittent rather than continuous?

A. I'd like to call it variable rather than intermittent. It's not on and off, it's variable.

Q. Sometimes it produces more electricity -- sometimes a wind farm will produce more electricity than other times due to the variability in the amount of wind, right?

A. Yes.

Q. Okay. Now, how soon after the wind farm produces -- converts the wind into electricity does that electricity have to be used on the grid in order to not be lost?

A. Immediately.

Q. Okay.

A. Immediately, yeah.

Q. All right. Now, is it true, then, that the electrical utility's operation of their coal-fired boilers that produce steam for the traditional power plants have to stay on a constant level of operation to fill in the valleys from the slower production of electric power from the wind companies that are contributing to the grid there?

A. No.

Q. Why is that not the case?

A. There's a very long answer, and I'll try and kind of paraphrase the key issues. The grid system or transmission system is a very complicated beast. There's an awful lot of, millions, obviously, of users taking energy from that at any moment in time which is varying all the time, peaks, well-known peaks and troughs.

And then you have generators serving that load coming on and off as well, some scheduled maintenance, some unscheduled maintenance, a lot of which is pretty firm, you know, coal, as you say, gas, nuclear which is probably the most must-run on the network.

And then you have renewable sources which have many positive attributes but mostly one of them is not that they are what we call dispatchable, you

1 know, we do have to follow when the resource is
2 there.
3 So I always try and look at this issue
4 and say, think of the transmission system as a tank
5 of water, a big tank of water where there's a lot of
6 pipes coming out of the bottom and some bigger pipes
7 coming in the top and the grid operator, PJM in this
8 area, needs to keep that tank at just the right level
9 at any moment in time.
10 So I think when you have that variable
11 nature going on of demand and you have us probably as
12 the only variable resource coming into that tank,
13 then what becomes critical is how big are we in that
14 tank, you know, as to how we need to imagine us as a
15 resource.
16 So at low levels of penetration I would
17 classify that as sort of 5 to 10 percent of the total
18 system. You have a lot of spinning reserve, spinning
19 reserve of spare generation in the system already
20 which is there to -- alongside us as a renewable
21 resource. So it's only when you get to higher levels
22 of penetration that you may need to look at how you
23 manage that effectively on the grid.
24 And I agree with you, in areas where
25 there's a lot of renewables now coming onto the grid,

1 and Europe is a very good example in Spain and
2 Germany and Denmark, the U.K., there's a lot of work
3 going on around how you do this most efficiently and
4 at least cost.
5 Everything that I've seen, and I haven't
6 studied every recent piece of literature on this, is
7 that until you're getting up to high levels of
8 penetration depending on how supply and demand are
9 balancing, then the system can operate very
10 efficiently.
11 I think the whole science of that is
12 evolving and will evolve in the U.S. as penetration
13 levels increase. Probably the single biggest
14 situation I can think of in the U.S. where this is an
15 issue is in the Pacific Northwest where you have a
16 lot of wind energy being built in the last few years
17 in the Columbia River Gorge which peaks -- it's quite
18 a predictable wind, but it's a thermal wind, it peaks
19 in the summer so you've got a lot of generation
20 coming off at that time, so they kind of know that
21 it's going to happen and they manager accordingly.
22 There's some friction up there with the existing
23 hydro facilities they have.
24 So, sure, there are issues where this is
25 being addressed. And I could go on, but -- it's a

complicated issue, but I think the industry is well aware of it and managing it very well.

Q. Okay. With regard to the issues you say are being addressed, do those issues concern the wasting of electricity that has been produced by a wind farm?

A. Well, I've never seen anything too specific. You might wish to point me to something which suggests that is happening in any significant fashion. You know, at the relatively low levels of penetration of wind energy in the U.S. right now, I think we'll be about 4 percent this year, I'm not seeing any evidence that that's happening.

Q. Okay. I appreciate the explanation.

MR. VAN KLEY: I have no further questions.

ALJ CHILES: Thank you.

Mr. Margard?

MR. MARGARD: I have no questions, thank you, your Honor.

ALJ CHILES: Mr. Petricoff, redirect?

MR. PETRICOFF: One moment.

No question, your Honor. No redirect.

ALJ CHILES: I have no questions, so thank you, you are excused.

1 THE WITNESS: Thank you.
2 (Witness excused.)
3 MR. PETRICOFF: At this time we would
4 move to admit into evidence the company's Exhibit
5 No. 12.
6 ALJ CHILES: Are there any objections to
7 the admission of Company Exhibit 12?
8 MR. VAN KLEY: Yeah, we'll object to it
9 on the same grounds that we objected to Mr. Poore's
10 testimony yesterday which are two-fold. First of
11 all, none of the testimony concerning the safety
12 issues that are described in the witness's answers to
13 questions 6, 7, and 8 are related specifically to the
14 turbine models that are identified as potential
15 candidates in the application. And, secondly, that
16 the witness is relying purely on hearsay with respect
17 to the basis for those answers.
18 So, essentially, I'm taking the same page
19 out of Champaign Wind's prior arguments to this Board
20 in its motion in limine and motion to strike.
21 ALJ CHILES: Just to clarify, you're
22 objecting to the entirety of his testimony?
23 MR. VAN KLEY: No. I will clarify my
24 objection to state that I am objecting to just
25 questions and answers 6, 7, and 8.

ALJ CHILES: Thank you.

Are there any other objections to the admission of Company Exhibit 12?

(No response.)

ALJ CHILES: Mr. Petricoff.

MR. PETRICOFF: Yes, your Honor. The testimony provides important background information, important information in terms of experience from someone who's been in the industry a long time to put the issues in perspective and there's no requirement under the rules or the regs that everything has to be turbine specific.

ALJ CHILES: Thank you.

Consistent with our ruling on the motion in limine, the objection is overruled and Company Exhibit 12 will be admitted.

(EXHIBIT ADMITTED INTO EVIDENCE.)

ALJ CHILES: Mr. Selvaggio.

MR. SELVAGGIO: Yes, thank you, the County would like to admit Exhibits 1 and 2 just to supplement the record. The state was relying on evidence rule 611(B) for purposes of scope of cross-examination and that cross-examination shall be permitted on all relevant matters and matters affecting credibility.

1 ALJ CHILES: I'm sorry, for purposes of
2 clarity, can you explain what you mean by "the
3 state"? Just for purposes of clarity on the record.
4 MR. SELVAGGIO: I'm sorry. I think it's
5 the prosecutor side of me that came out. When I said
6 "state," I meant the County and the affected
7 townships that we represent.
8 ALJ CHILES: Thank you.
9 MR. SELVAGGIO: Thank you, Judge. I'm
10 sorry about that.
11 ALJ CHILES: Are there any objections to
12 the admission of County Exhibit 1 and County Exhibit
13 2?
14 MR. PETRICOFF: Yes, your Honor, we would
15 object. County Exhibit No. 1 is testimony from
16 another case and basically the questions it's related
17 with were not used.
18 County Exhibit No. 2 is the transcript
19 from the proceeding and, once again, you could make
20 reference to a transcript because actually that
21 exists in the other case, but it was not supporting
22 any of the testimony that was admitted.
23 ALJ CHILES: Did you have something to
24 add, Mr. Selvaggio?
25 MR. SELVAGGIO: Yes, Judge, thank you.

1 In supporting our request for admission of County
2 Exhibits 1 and 2 the state would point to rule 616(C)
3 of the Ohio Rules of Evidence regarding specific
4 contradiction, specifically, facts contradicting a
5 witness's testimony maybe shown for the purpose of
6 impeaching the witness's testimony. If offered for
7 the sole purpose of impeaching a witness's testimony,
8 extrinsic evidence of contradiction is inadmissible
9 unless the evidence is permitted by evidence rule
10 616(A) or evidence rule 616-A or evidence rule 613.
11 616(A) regards bias. A witness may be
12 impeached by any of the following methods regarding
13 bias: Bias, prejudice, interest, or any motive to
14 misrepresent may be shown to impeach the witness
15 either by examination of the witness or by extrinsic
16 evidence.
17 ALJ CHILES: Thank you.
18 Are there any other objections to the
19 admission of County Exhibit 1 and County Exhibit 2?
20 (No response.)
21 ALJ CHILES: All right. County Exhibit 1
22 and County Exhibit 2 will not be admitted.
23 All right. Is there anything further to
24 come before us before we adjourn for today?
25 (No response.)

1 ALJ CHILES: All right. Hearing nothing,
2 we'll adjourn until 9 o'clock tomorrow. Thank you.
3 (The hearing adjourned at 7:07 p.m.)
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1 CERTIFICATE

2 I do hereby certify that the foregoing is a
3 true and correct transcript of the proceedings taken
4 by me in this matter on Wednesday, November 14, 2012,
5 and carefully compared with my original stenographic
6 notes.
7 _____
8 Maria DiPaolo Jones, Registered Diplomate Reporter and CRR and Notary Public in and for the
9 State of Ohio.
10 My commission expires June 19, 2016.
11 (MDJ-4082)
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Summary: Transcript of Champaign Wind, LLC hearing - Volume IV held on 11/14/12 electronically filed by Mrs. Jennifer Duffer on behalf of Armstrong & Okey, Inc. and Jones, Maria DiPaolo Mrs.