

**In The Matter Of:**  
*McLEAN COUNTY ZONING BOARD OF APPEALS*

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*WIND FARM*  
*January 24, 2018*

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**LPGA**  
**EXHIBIT**  
**4**

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1 A. Pollution Control Board, yes.  
 2 Q. Were you involved in writing those  
 3 standards?  
 4 A. I was involved in writing the standards.  
 5 The basic standard was put together by a consultant.  
 6 But in defending the standards and bringing them  
 7 forward, there was a group of four: a professor of  
 8 economics, two professors in law, and a graduate  
 9 student, me.  
 10 Q. When was that?  
 11 A. That was about 1968 through about five, six  
 12 years.  
 13 Q. Are you familiar with, under the IPCB  
 14 regulations, what point on a property noise levels  
 15 should be measured at?  
 16 A. The Illinois rules say that you can measure  
 17 anywhere within the property line, but not closer than  
 18 25 feet to any external noise source.  
 19 Q. So if the noise standard -- or if the noise  
 20 level is above the standard at any point on the  
 21 property, it would be a violation of the IPCB  
 22 regulations?  
 23 A. Yeah. If it violates anywhere on the  
 24 property, it's a violation.

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1 Q. And why is that?  
 2 A. Well, people don't live battened up in their  
 3 houses. Hopefully, they can come outside and  
 4 entertain outside and have activities.  
 5 Q. Obviously the IPCB standards exist. Are  
 6 those the most appropriate standards, in your mind, to  
 7 measure noise levels from wind turbines?  
 8 A. As a key member in technical development of  
 9 the standards, I can say that wind farms were never  
 10 contemplated and shouldn't be considered part of the  
 11 standard.  
 12 Q. Why not?  
 13 A. Because they're just different from -- the  
 14 category they are being put in is factory noise; but  
 15 factory noise, for the most part, is compulsive  
 16 hammering or little fans, relatively speaking, on the  
 17 roof for ventilation or even bigger fans for air  
 18 pollution, but nothing like a wind turbine.  
 19 These regulations were written 60 years ago.  
 20 That's half a century and a decade. I've learned  
 21 something in those years, and the state of the art has  
 22 moved forward. The American National Standard, the  
 23 International Standard on Environmental Noise are all  
 24 two or three years old, not 60.

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1 Q. Do Illinois rules protect people from wind  
 2 turbines, current Illinois regulations?  
 3 A. I don't believe they protect adequately.  
 4 They're very inadequate.  
 5 Q. Do the IPCB regulations allow you to average  
 6 test results?  
 7 A. The board rules are a one-time. If you  
 8 break the limit, if you are over the limit in one  
 9 hour, it's a violation. It's sort of like, in my  
 10 mind, of a speeding ticket. If you go the speed limit  
 11 for two hours but speed for ten minutes, you can get a  
 12 ticket.  
 13 Q. Were you involved in preparing the  
 14 California Ridge Study with Mr. Hankard?  
 15 A. Yes, I was.  
 16 Q. Showing you what has been marked as SLG  
 17 Exhibit 3. Is that the California Ridge Wind Study?  
 18 A. Yes, it is. It's a weighty study.  
 19 MR. LUETKEHANS: For the record, this is  
 20 also Applicant's Exhibit, I think, 18?  
 21 MS. WALLEY: 13.  
 22 MR. LUETKEHANS: But this is the actual full  
 23 set. So I'm going to hand this out or whatever is  
 24 easiest for everybody. As Dr. Schomer said, it's a

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1 very heavy study.  
 2 Q. Who was that study prepared on behalf of?  
 3 A. I think I was working with Attorney Blazer,  
 4 I think.  
 5 Q. Who was their client; do you know? Was it  
 6 Invenergy?  
 7 A. I believe it was Invenergy.  
 8 CHAIRMAN FINNIGAN: Can I interrupt you just  
 9 a minute? Pull that just a little closer so we can  
 10 hear you a little better.  
 11 Q. If you could, look at page 44 of the  
 12 California Ridge Study, paragraph 7 in the  
 13 "Conclusions" section. Paragraph 7 discusses the fact  
 14 that the average of the actual measurements at  
 15 California Ridge was two decibels below the limits at  
 16 the 1,000 hertz octave band. Do you see that?  
 17 A. Uh-huh.  
 18 Q. Would this, in your opinion, justify  
 19 lowering the model by 2 decibels across the board on  
 20 this project?  
 21 A. No.  
 22 Q. In your opinion, is there anything in the  
 23 California Ridge Study that would justify lowering the  
 24 model numbers by 2 decibels across the board at the

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1 1,000 hertz octave band?  
 2 A. No.  
 3 Q. Why not?  
 4 A. Because you're dealing with predictions of  
 5 contours or isobars of noise, and I think they say  
 6 that they use ISO -- I forget the numbers of the ISO  
 7 standard.  
 8 Q. Is it 9613?  
 9 A. Yes.  
 10 Q. Go ahead.  
 11 A. A standard like that is done through many  
 12 measurements over time. They measure here 2 dB, but  
 13 they might go down the street and measure somewhere  
 14 else plus 1 dB. You have to have something that works  
 15 over time and on average.  
 16 He's not going to change iso whatever number  
 17 we said -- he's not going to change that by making one  
 18 measurement, one site measurement. This has to be  
 19 developed over time and has to be standardized.  
 20 That's not something you do on one measurement.  
 21 Q. If you were to put two wind projects right  
 22 next to each other, what would that do to the noise  
 23 levels?  
 24 A. Well, if there was equal turbines from two

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1 companies near to a house, it would go up by about 3  
 2 dB from what was predicted.  
 3 Q. How long have you been working on noise  
 4 issues related to wind turbines?  
 5 A. About ten years.  
 6 Q. Do you have an opinion as to what metric  
 7 this Board should be using to judge whether a wind  
 8 project is safe for the public?  
 9 A. I would like to see correct measurements  
 10 made, but the state of the art right now, I feel, is  
 11 A-weighted measurements. That has the most  
 12 information and most hooks that you can relate things  
 13 to. So I would recommend A-weighting right now.  
 14 Q. Do you consider noise from wind turbines to  
 15 have the capacity to create concern for human health  
 16 and safety?  
 17 A. Yes.  
 18 Q. Why?  
 19 A. First of all, they are a source of  
 20 annoyance. In acoustics, we measure high annoyance,  
 21 at least in this country -- and in most countries.  
 22 And high annoyance is not occasional annoyance or,  
 23 gee, I'd rather not hear that. It's more of an  
 24 all-consuming problem. It's just a problem a whole

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1 lot of the time.  
 2 For those people, we term that "high  
 3 annoyance." And --  
 4 Q. Do you -- I'm sorry. Please continue.  
 5 A. And all noise sources in the United States,  
 6 public, like airports, highways, factories, and firing  
 7 ranges are assessed by the percent of people highly  
 8 annoyed.  
 9 Q. Do others in your field agree with you?  
 10 A. It's widely used. It's in the ANSI  
 11 standards, in the ISO standards. It's been there for  
 12 -- since the '50s. It's widely used.  
 13 Q. Does anybody like the World Health  
 14 Organization consider this issue?  
 15 A. World Health Organization is considering it  
 16 and has a definition for well-being and health that  
 17 includes this annoyance, high annoyance, as a health  
 18 issue in terms of people's total well-being.  
 19 Q. Do you have a maximum noise measurement you  
 20 would suggest as proper to avoid this level of high  
 21 annoyance?  
 22 A. Well, what you have is you have a percentage  
 23 of highly annoyed. And if you go to a higher noise  
 24 level, that percentage goes up. The way noise is

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1 assessed is in terms of -- in essence, it's the  
 2 percentage of people highly annoyed.  
 3 Q. So -- go on. Please continue.  
 4 A. But in a practical way, I'd recommend in a  
 5 certain area -- and recently published a paper that  
 6 explains the recommendations.  
 7 Q. We're going to get to the paper in a second,  
 8 Dr. Schomer.  
 9 What is the level of dBA or A-weighted that  
 10 you would suggest is necessary to avoid high  
 11 annoyance?  
 12 A. I've been suggesting 38 to 40 dB.  
 13 Q. How did you come up with that?  
 14 A. Well, I came up with it by applying the  
 15 American National Standard, which doesn't mention  
 16 window turbines at all; but it's worked very well.  
 17 This paper is something that we developed  
 18 this last six months of last year, and here we looked  
 19 at four independent sources not related to wind  
 20 turbines, none of them. Well, one of them was.  
 21 Q. Before you get into that, that's SLG Exhibit  
 22 Number 4, that paper you're talking about?  
 23 A. Yes.  
 24 Q. Okay. Please continue. I'm sorry. The

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1 four independent sources?  
 2 A. Yes.  
 3 MR. GRIFFIN: 5.  
 4 MR. LUETKEHANS: I'm sorry, SLG 5.  
 5 A. We looked at four methods for coming up with  
 6 the noise level that was proper for wind farms, none  
 7 of them based on wind farms directly.  
 8 We looked first at Minnesota, who did a  
 9 survey of what the levels were at wind farms in  
 10 different jurisdictions mainly in foreign countries  
 11 and regions of countries. There was about 36  
 12 respondents; and the average was around 35 dB.  
 13 Probably only a few were in excess of 40 dB. Clearly  
 14 40 dB is on the high side.  
 15 The second way we did it --  
 16 CHAIRMAN FINNIGAN: We're going to stop the  
 17 clock so you can take a drink. Take your time. Stop  
 18 the clock.  
 19 Why don't you go ahead and take a drink, and  
 20 then we'll start again?  
 21 DR. SCHOMER: Okay. Thank you.  
 22 A. The second way we did it was we used the  
 23 American National Standards of Environmental Noise.  
 24 The third way we did it -- and that came up

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1 to 36 to 39 dB.  
 2 The third way we looked at it was to look at  
 3 the percent highly annoyed to wind farms as a function  
 4 of level, A-weighted level, compared with percentage  
 5 of people bothered to a certain degree for highway  
 6 noise. We equated those on the basis of the  
 7 annoyance. And that came up to somewhere around 35 to  
 8 40 dB.  
 9 And the fourth way we looked at it, there's  
 10 a new measure -- I won't go into technical details --  
 11 called Community Tolerance Limit, CTL. And here you  
 12 can get the direct decibel difference between two  
 13 different conditions or environments. And I think we  
 14 looked at the difference of either air traffic or car  
 15 traffic or both -- vehicle traffic compared to wind  
 16 farms. And we came up with a wind farm needing a 16  
 17 dB penalty.  
 18 All four of these methods come up with the  
 19 same thing, 35 to 40; and all of them are independent  
 20 of the wind farm itself. So I figure that's a pretty  
 21 strong set of data.  
 22 Q. Are there any other acousticians that agree  
 23 with this being the proper maximum level?  
 24 A. Yes.

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1 Q. Showing you what has been marked as SLG  
 2 Exhibit Number 6. Do you recognize this document,  
 3 Dr. Schomer?  
 4 A. Yes.  
 5 Q. Could you advise the Board what that  
 6 document is?  
 7 A. This was a document instrumented by George  
 8 Hessler. George retired ahead of me, which is  
 9 disappointing.  
 10 But he's well known in the power industry.  
 11 The second person in the group was Bruce Walker, also  
 12 well known, a theoretician. The third one was -- I  
 13 always forget his name.  
 14 Q. Goeff Leventhall, G-o-e-f-f  
 15 L-e-v-e-n-t-h-a-l-l.  
 16 A. Leventhall has been the go-to technical  
 17 person for the wind farm industry for many years --  
 18 and me. The four of us put together a paper for sound  
 19 and vibration. George was the one who pushed it and  
 20 deserves the credit for getting it out.  
 21 And in there, there's an indication that all  
 22 of us kind of agree around the value of 40.  
 23 Leventhall agrees exactly at 40. I think it's a  
 24 little lower by a couple of dB. George thinks it's 40

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1 to 45, and Bruce Walker thinks it's 40 if it's a quiet  
 2 area.  
 3 Q. That's dBA, correct?  
 4 A. That's dBA.  
 5 Q. I know you can't compare numbers to numbers,  
 6 but dBA at the 1,000 hertz level is -- would the 1,000  
 7 hertz level at 40, 41 compare to a dBA of 40, or am I  
 8 not asking a question that makes any sense? Fair  
 9 enough. We'll deal with that later.  
 10 Is Mr. Hessler seen as an anti-wind advocate  
 11 at all?  
 12 A. No. All three of the other people have  
 13 worked with the industry, that I know of.  
 14 Q. It's clear in your mind that some people's  
 15 health can be affected by wind turbine noise; is that  
 16 correct?  
 17 A. Yes, it is.  
 18 Q. It's not a huge number though; would you  
 19 agree?  
 20 A. I would say it's a very small percentage.  
 21 Q. Do we really know what causes those  
 22 problems?  
 23 A. We know that, at low frequencies around  
 24 factories -- we know that when wind turbines were

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1 built in a noisy fashion -- there was gas turbine  
 2 engines spread out at low frequencies for stand-by  
 3 power -- that these sources can affect people at  
 4 relatively higher levels.  
 5 My general feeling right now is that we're  
 6 getting, like, the very fringe, 2 Sigma, 3 Sigma type  
 7 of people. One in a hundred, One in a thousand can  
 8 get sick, depending upon if they are just in the wrong  
 9 place at the right time. It's a very small number,  
 10 certainly less than 4 or 5 percent.  
 11 **MR. GRIFFIN:** I would object to  
 12 Mr. Schomer's testimony on people getting sick. I  
 13 think that's an analysis for a medical doctor or an  
 14 epidemiologist and that he's not qualified to make  
 15 that conclusion.  
 16 Q. Let me ask this question instead. Forget  
 17 being sick. You have seen studies where people are  
 18 affected by wind turbines, detrimentally affected by  
 19 wind turbines, correct?  
 20 A. I have been to wind farms where I personally  
 21 have interviewed and talked with people. And there  
 22 are people that I just believe are really bothered in  
 23 terms of, like, nausea, which maybe isn't an illness.  
 24 I don't claim to be a doctor, but I can say what I've

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1 seen and heard. And there's a small percentage of  
 2 people that are bothered by wind farms worldwide, but  
 3 it's not large.  
 4 Q. Are you familiar with Cooper's Study that  
 5 was done a couple years ago at Cape Bridgewater?  
 6 A. Yes.  
 7 Q. Showing you what has been marked as SLG  
 8 Exhibit 7, is this that study?  
 9 A. Yes.  
 10 **MR. LUETKEHANS:** Sorry, another big exhibit.  
 11 **MR. SCHOMER:** There will be tests on this  
 12 tomorrow.  
 13 Q. Do you consider this an important study?  
 14 A. Yes, I do.  
 15 Q. Why?  
 16 A. Because this, to my knowledge, is the only  
 17 study that was done with a wind farm participating and  
 18 giving them power generation information and what the  
 19 status was of the turbines in the vicinity of the  
 20 houses and elsewhere, as needed.  
 21 Q. Why is that important?  
 22 A. Because, by having power level generation,  
 23 they were able to see relations that you can't see  
 24 just measuring with a microphone. I think that's an

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1 important intervening variable. It's never been done  
 2 before or since.  
 3 Q. What was this study able to see by having  
 4 that additional information?  
 5 A. He was able to see that people were able to  
 6 sense the wind turbines turning on and off, not  
 7 acoustically hear them, not see them, but sense them.  
 8 Q. So feel them in some way, shape, or form?  
 9 A. Feeling them, yes.  
 10 Q. Anything else about this study that we  
 11 should know?  
 12 A. I think that's the main thing, that the  
 13 statement that nobody can sense a wind turbine turning  
 14 on or off -- these were six people, three couples,  
 15 that were particularly sensitive, maybe the 1 percent.  
 16 But they could sense it in terms of, when turbines  
 17 went to high power, they knew it.  
 18 Q. So in your experience, you've said a small  
 19 percentage is affected. With those that are affected,  
 20 what have you seen, or what are the results or the  
 21 effects?  
 22 A. Well, the most -- the strongest people in  
 23 terms of convincing me that there's something going on  
 24 was one of the families in Shirley, Wisconsin, where

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1 it was a husband and wife and small child. The  
 2 husband couldn't -- nothing affected him, but the wife  
 3 and child were affected. They had moved out of their  
 4 house and bought another house or were renting. They  
 5 were paying on their house, but they didn't want to  
 6 sell it and stick some other family with it.  
 7 They weren't interested in a lawsuit. They  
 8 just wanted to have a house. Having somebody pay on  
 9 two houses and not going to a lawyer, that's convinced  
 10 me that something's going on.  
 11 Q. Were you always convinced that there was  
 12 some kind of cause-and-effect there?  
 13 A. That convinced me and convinced George and  
 14 convinced Bruce.  
 15 Q. That's George Hessler and Bruce Walker?  
 16 A. Yeah.  
 17 Q. From a scientific standpoint, what would you  
 18 like to see be required on wind farms that are put in?  
 19 A. We really need to be able to get power  
 20 generation data because I have another paper that's  
 21 more theoretical that really looks at this power  
 22 generation as a key. I could go into details that  
 23 would take the next hour, and I have one minute.  
 24 Q. But the Cape Bridgewater Study also seemed

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1 to relate to power or wind turbines turning on or off,  
 2 correct?  
 3 A. Yes. That's one of a dozen different things  
 4 that I've put together that seem to show what may be  
 5 going on between people and the turbines.  
 6 MR. LUETKEHANS: I have nothing further.  
 7 Thank you, Dr. Schomer. I'm sure Mr. Griffin and the  
 8 Board have some questions for you.  
 9 CHAIRMAN FINNIGAN: Does the Board have some  
 10 questions?  
 11 MR. ZIMMERMAN: Sure, I'll start. As the  
 12 turbines go faster and faster, do the decibels change?  
 13 DR. SCHOMER: The decibels change with  
 14 turbine speed, most certainly. And decibels -- the  
 15 published data show the turbines going -- the sound  
 16 going up fairly quickly with speed and then becoming  
 17 pretty much a constant as the speed continues to go  
 18 up. A little more direct with power, but I guess the  
 19 short answer was yes.  
 20 MR. ZIMMERMAN: At what point does it go up  
 21 to the levels that any of you or your four colleagues  
 22 are saying is higher?  
 23 DR. SCHOMER: See, that's part of the  
 24 problem. It's not clear that it's just the acoustic

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1 level.  
 2 In fact, to me, it -- and it's not  
 3 revolutions, because the speed that the blades are  
 4 going around does not directly relate to the power  
 5 generation. It depends upon how the blades are  
 6 configured, whether it's power generation or how much.  
 7 That's part of the reason, I think, that the power  
 8 generation may be more the key than how fast the blade  
 9 is going.  
 10 MR. ZIMMERMAN: So you're suggesting that  
 11 possibly it's the generator itself, the nacelle, as  
 12 opposed to the blades that might be causing noise?  
 13 DR. SCHOMER: No. I'm saying that, when you  
 14 have a fan or this sort of thing, the more power you  
 15 generate or blow, the blades bend; but they don't bend  
 16 if they're not doing power. You can do 14 RPM and no  
 17 power, and there's no bending because there's no  
 18 force. They're not doing anything.  
 19 But if you're generating power, then there's  
 20 force against the blades, and they bend. And I think  
 21 that they're bending into an upstream weight, and  
 22 that's when the noise comes in.  
 23 MR. ZIMMERMAN: So it's dealing with the  
 24 wake that is causing the noise or possibly causing the

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1 noise?  
 2 DR. SCHOMER: The blade going through the  
 3 wake would cause noise. That's why the downstream  
 4 generators were no good.  
 5 MR. ZIMMERMAN: They talked about the  
 6 feathering? They talked about feathering the blades  
 7 at the back end. Have you studied that as part of the  
 8 noise issue?  
 9 DR. SCHOMER: As I said, this is just -- I  
 10 have not studied -- that's not -- aerodynamics is not  
 11 my general field.  
 12 MR. ZIMMERMAN: Have you studied the noise  
 13 levels on any of those blades that have -- I call it  
 14 -- feathering at the end, which I believe is noise  
 15 reduction technology?  
 16 DR. SCHOMER: I think that the problem is in  
 17 the high end, as I said. And I think that they have  
 18 to be low noise in the high end to be really  
 19 effective.  
 20 MR. ZIMMERMAN: If they were to cut off the  
 21 high end -- so on one of the studies we had as  
 22 evidence for bats, they would not turn -- on certain  
 23 seasons, the suggestion from the Department of Natural  
 24 Resources in Illinois is that they would curtail the

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1 turbine operation below wind speeds of 5 meters per  
 2 second during a period from July 15 through October  
 3 15.  
 4 Well, that's for bats, and that's something  
 5 different. But in this case, if on the high end the  
 6 speed were curtailed, what would that do to the noise  
 7 levels?  
 8 DR. SCHOMER: I can't really say for  
 9 certain. Sometimes they may seem slower, and they  
 10 make more noise. I don't know.  
 11 MR. ZIMMERMAN: Okay. Thank you. Are you  
 12 aware of the Illinois Pollution Control Board  
 13 reviewing any of the noise standards here coming up in  
 14 the future?  
 15 DR. SCHOMER: I'm aware. I got one small  
 16 piece of paper on it.  
 17 MR. BANGERT: In any of your studies, do you  
 18 measure how the sounds from wind turbines are measured  
 19 through different building materials and how it  
 20 affects the wavelengths, the bandwidths? Can you  
 21 comment on any differences in building materials, say,  
 22 from inside homes?  
 23 DR. SCHOMER: Would it be better or worse?  
 24 Is that what you're saying?

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1           **MR. BANGERT:** Yeah. Is there any particular  
 2 type of building material that accentuates any  
 3 particular type of noises?  
 4           **DR. SCHOMER:** These are all low frequency  
 5 noises, which are pretty much the hardest to  
 6 attenuate. There's some relatively new absorbing  
 7 materials with micro-perforated openings that can go  
 8 down to lower frequencies than a normal absorber would  
 9 for the same size, and those could be used to  
 10 advantage. They could disrupt resonance better.  
 11 That's where I would start.  
 12           The low frequencies just -- for what I'm  
 13 talking about now and just a few minutes ago with  
 14 problems, it's in the audible range, around 20 hertz  
 15 to 80 hertz sound. You just don't normally attenuate  
 16 that except with mass. So if you want to build your  
 17 house with 12-inch concrete walls, you can do  
 18 something.  
 19           **MR. BANGERT:** We've heard about the  
 20 differences in the direction of the wind. Obviously  
 21 the windmills that are in the direction of the  
 22 predominant winds, we would see a difference.  
 23 Downwind we wouldn't notice them as much, and  
 24 obviously upwind we would.

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1           What are your thoughts on setbacks when  
 2 we're talking about homes in relation to siting?  
 3           **DR. SCHOMER:** First of all, I have to say  
 4 that the contours and the decibel level is what I  
 5 recommend as the way to assess and not a distance  
 6 criteria.  
 7           Having said that, we've been pretty much  
 8 recommending a kilometer or just over a kilometer,  
 9 3,300 feet roughly, something on that order.  
 10           **MR. BANGERT:** Let me get this straight.  
 11 You're saying topographically we've got more influence  
 12 than in distance, or am I misunderstanding?  
 13 Topographically, elevations or undulating ground, are  
 14 you saying that has a bigger effect than the actual  
 15 distances?  
 16           **DR. SCHOMER:** No, no. Maybe I misunderstood  
 17 your question. I thought you were asking, in lieu of  
 18 using 40 dB, what you would recommend as a distance  
 19 criteria.  
 20           **MR. BANGERT:** Yeah, let's go with that.  
 21           **DR. SCHOMER:** What I was suggesting is that,  
 22 given flat ground, it would be 3,000 or a little over  
 23 3,000 a few hundred feet.  
 24           **MR. DEAN:** What about on a more rolling

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1 landscape? Is there a difference?  
 2           **DR. SCHOMER:** Everything affects sound.  
 3 Most of it you can't predict precisely. You can just  
 4 hope the averages work out.  
 5           But as a general rule, it's going to be  
 6 quieter in the valleys and louder up high. But when  
 7 you have a source up high, it kind of radiates down  
 8 into the valleys. If you put your wind turbines down  
 9 in the valley, they'll be quieter; but I don't think  
 10 they'll have much wind.  
 11           **MR. KURITZ:** So all of this is done  
 12 beforehand on computer modeling because obviously they  
 13 have to have the studies before we can -- before we'll  
 14 let them erect wind turbines. So how good is the  
 15 modeling?  
 16           **DR. SCHOMER:** So what? How good are the  
 17 contour -- I think the contour predictions are pretty  
 18 good. I think that this is true in all the noise  
 19 sources. The physical prediction is easy. It's  
 20 predicting people that's hard.  
 21           **MS. TURNER:** Have any of your studies or any  
 22 of these that we've talked about influenced the  
 23 numbers for pollution control boards in our state or  
 24 other states? You said ours haven't changed in 50

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1 years. You said you worked on it in '68. But do you  
 2 know if any of these studies have impacted other  
 3 Pollution Control Boards' numbers?  
 4           **DR. SCHOMER:** Well, I know I helped a few  
 5 communities in New York in terms of -- I don't know if  
 6 they're never going to get a wind farm, but they  
 7 haven't gotten one yet. But I don't really know.  
 8           **MS. TURNER:** Okay. Do you know how  
 9 Illinois's numbers compare to other states, whether  
 10 they're higher or lower, the Pollution Control Board  
 11 numbers for allowable decibels?  
 12           **DR. SCHOMER:** For regular noise, Illinois?  
 13           **MS. TURNER:** Yeah.  
 14           **DR. SCHOMER:** They're pretty comparable.  
 15           **MR. ZIMMERMAN:** A question on more than one  
 16 turbine happening at the same time. You talked about  
 17 a kilometer setback. If there were two turbines a  
 18 kilometer apart but close to the same place, what  
 19 impact would that have on the decibel level? If you  
 20 have two turbines going at the same time, how much  
 21 impact does that have on the perceived noise?  
 22           **DR. SCHOMER:** Well, there's a lot of  
 23 caveats. First of all, say there's something near a  
 24 house, right? And then there's two turbines a

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1 kilometer away or, let's say, a mile away from the  
 2 house. In modeling, they would each contribute the  
 3 same amount of power so that the power would be  
 4 increased by 3 decibels. A doubling of power is 3  
 5 decibels.  
 6 **MR. ZIMMERMAN:** How does that attenuate? As  
 7 it goes away, is it on a log scale?  
 8 **DR. SCHOMER:** Pretty much a logarithmic  
 9 scale, the scaling of distance.  
 10 **MR. ZIMMERMAN:** So if you have it a  
 11 kilometer away, the noise is much larger than if you  
 12 have it a mile away?  
 13 **DR. SCHOMER:** A kilometer away would be  
 14 about 5, 6 dB louder than a mile away.  
 15 **MR. ZIMMERMAN:** Okay. Thank you.  
 16 **MS. TURNER:** You said that, in your studies,  
 17 you talked to different people who lived near wind  
 18 farms as you were out talking; is that correct?  
 19 **DR. SCHOMER:** I talked in Shirley and a few  
 20 other people. I haven't extensively talked with  
 21 people at wind farms.  
 22 **MS. TURNER:** Okay. So you haven't  
 23 extensively talked to people who lived within, but you  
 24 had said that there was one family that was paying on

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1 the two houses. How many other people did you talk to  
 2 when you were -- and that was at Shirley, correct?  
 3 **DR. SCHOMER:** That was at Shirley. I think  
 4 there were six other people.  
 5 **MS. TURNER:** Six other people you spoke with  
 6 there?  
 7 **DR. SCHOMER:** Yeah.  
 8 **MS. TURNER:** When you were doing those  
 9 studies, when you were going around, was the community  
 10 aware that you were there doing the studies?  
 11 **DR. SCHOMER:** Well, yeah, people were aware.  
 12 **MS. TURNER:** Okay. Thank you.  
 13 **CHAIRMAN FINNIGAN:** Any other questions from  
 14 the Board?  
 15 **MR. KURITZ:** Any of the groups that you  
 16 belong to, are they lobbying for these changes, trying  
 17 to get the governing boards, the state governing  
 18 boards, to adopt these and upgrade these standards?  
 19 **DR. SCHOMER:** What do you mean? Could you  
 20 clarify that?  
 21 **MR. KURITZ:** Any of the acoustical  
 22 associations that you listed that you were a member of  
 23 or had been chairman of in the past and have retired  
 24 from, are any of those lobbying state governing boards

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1 to change these setbacks, these acceptable dB levels,  
 2 and these type of things to bring this in line?  
 3 **DR. SCHOMER:** In general, ANSI standards  
 4 don't set limits. They set methods of doing things.  
 5 And the ISO only sets methods for doing things, not  
 6 limits.  
 7 In Europe, the EC, they're kind of  
 8 aggressive in setting limits. In the US, we're a  
 9 little more laid back.  
 10 **MR. ZIMMERMAN:** How do the European  
 11 standards, the limits, compare to ours?  
 12 **DR. SCHOMER:** Well, in that report, there's  
 13 about 30-some jurisdictions, a lot of them European,  
 14 that say what it is; and I don't remember them one  
 15 from another.  
 16 **MR. ZIMMERMAN:** That would be the California  
 17 Ridge report or the Australian report?  
 18 **MR. LUETKEHANS:** Neither. He doesn't have  
 19 the report. I was trying to clean it up. He doesn't  
 20 have them in front of him.  
 21 **MR. SCHOMER:** This is 5. Does everybody  
 22 have 5?  
 23 **MR. LUETKEHANS:** Yeah.  
 24 **MR. ZIMMERMAN:** So the Acoustics '17 Boston

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1 report would give some of those European standards?  
 2 **DR. SCHOMER:** This is page 6 of the Exhibit  
 3 5. The blue lines represent quieter communities.  
 4 This is the limits, and you can see the average limit  
 5 of 36 dB. I guess, if you've got a magnifying glass  
 6 -- no, it's pretty clear -- Germany is at 36. Spain  
 7 is at, looks like, 48. New Brunswick is at 25, 26.  
 8 British Columbia is at -- well, you can read those.  
 9 Well, maybe you can.  
 10 **MR. ZIMMERMAN:** Actually I can. Is this  
 11 across the board, or is this at a particular hertz?  
 12 **DR. SCHOMER:** These are the rules in those  
 13 jurisdictions.  
 14 **MR. ZIMMERMAN:** Thank you very much for  
 15 getting these for us.  
 16 **MR. LUETKEHANS:** Just for clarification, I  
 17 think you're talking hertz levels, and he's talking  
 18 dBA. Those are not similar at all. You'll see that  
 19 later.  
 20 **MR. ZIMMERMAN:** I understand.  
 21 **CHAIRMAN FINNIGAN:** Does staff have  
 22 questions?  
 23 **MR. DICK:** In your recommendation to have a  
 24 setback of 3,300 feet, was that for a 500-foot turbine



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1 or a 400-foot turbine?  
 2 **MR. SCHOMER:** I don't have anything to  
 3 differentiate the two. The dBA is going to be not so  
 4 sensitive to those dimensions. Those dimensions will  
 5 affect -- I don't want to go into too much physics,  
 6 but my general feeling is that the blade area is going  
 7 to affect the power. You double the blade area; you  
 8 double the power. Maybe that's naive, but that's what  
 9 we found with helicopters.  
 10 I also -- if you just double the size, you  
 11 don't get that much change that quickly. Doubling  
 12 size to doubling power is quite a big change in power  
 13 for what might be a few decibels in sound. So I don't  
 14 have any -- can't tell you the difference between 4  
 15 and 500, but I don't think we know it precisely.  
 16 **MR. DICK:** Thank you.  
 17 **CHAIRMAN FINNIGAN:** Would the Applicant have  
 18 questions?  
 19 **MR. GRIFFIN:** Could I get a five-minute  
 20 recess before I start?  
 21 **CHAIRMAN FINNIGAN:** Sure.  
 22 (Recess in proceeding.)  
 23 **MR. GRIFFIN:** I'm Jim Griffin with the law  
 24 firm of Schain Banks, 70 West Madison Street, Suite

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1 5300, Chicago, Illinois, 60602.  
 2 Mr. Schomer, my name, of course, is Jim  
 3 Griffin. I'm the attorney for the Applicant on this  
 4 project. I'm going to ask you a few questions here.  
 5 **CROSS-EXAMINATION**  
 6 **BY MR. GRIFFIN:**  
 7 Q. Mr. Hankard, you know, prepared the noise  
 8 model report for this project, correct?  
 9 A. Uh-huh.  
 10 Q. You should say yes.  
 11 A. Yes.  
 12 Q. You've collaborated with Mr. Hankard on  
 13 other projects, correct?  
 14 A. Correct.  
 15 Q. How many projects have you collaborated with  
 16 Mr. Hankard on?  
 17 A. I think two, but I could be wrong.  
 18 Q. In your opinion, is Mr. Hankard a competent  
 19 and qualified professional acoustician?  
 20 A. Yes.  
 21 Q. Would you agree he's highly qualified?  
 22 A. Yes.  
 23 Q. You agree that Mr. Hankard is knowledgeable  
 24 about how to prepare a noise model study?

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1 A. Yes.  
 2 Q. Have you reviewed the noise modeling report  
 3 prepared by Mr. Hankard in this application?  
 4 A. Yes.  
 5 Q. And did you prepare your own noise modeling  
 6 report for this matter?  
 7 A. No.  
 8 Q. Have you done your own modeling study  
 9 concerning this wind energy project?  
 10 A. No.  
 11 Q. Mr. Hankard testified that the project will  
 12 operate in compliance with the IPCB regulations.  
 13 You've not done any study that would confirm or deny  
 14 that conclusion, correct?  
 15 A. Yes.  
 16 Q. You have done a study?  
 17 A. No. I'm agreeing with you. I've not.  
 18 Q. Thank you for clarifying that.  
 19 So you don't dispute any of the conclusions  
 20 that Mr. Hankard makes in his report?  
 21 A. Yes, I do dispute the conclusion.  
 22 **CHAIRMAN FINNIGAN:** Pull the mike towards  
 23 you a little bit more.  
 24 A. I think that the fact that he predicts the

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1 -- the prediction has to be done using the standards  
 2 and not using the standard minus 2 dB. I disagree  
 3 with that. I don't disagree that he measured that. I  
 4 don't disagree with his predictions, but I disagree  
 5 with his correction.  
 6 Q. Are you aware that McLean County has adopted  
 7 the Illinois Pollution Control Board Regulations as  
 8 its standard for wind energy conversion systems?  
 9 **MR. LUTKEHANS:** Objection. First of all,  
 10 it's only partially true. It's an incomplete  
 11 question, and it's a legal question.  
 12 **CHAIRMAN FINNIGAN:** It's just a yes-or-no  
 13 question. If he feels qualified to answer it, he can  
 14 answer.  
 15 **MS. WALLEY:** Would you like Mr. Griffin to  
 16 repeat the question for you?  
 17 **THE WITNESS:** Yeah. Repeat the question.  
 18 Q. Let me back up a little bit. Have you read  
 19 the McLean County Zoning Ordinance as it pertains to  
 20 wind energy conversion systems?  
 21 A. I have not.  
 22 Q. So do you know what the standard is for  
 23 noise for a wind energy conversion system in McLean  
 24 County?