

PERMIT APPLICATION FOR HERITAGE PRAIRIE WIND

JUNE 18, 2024

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1 MS. HUISMAN: Good evening. Welcome to
2 the Livingston County Zoning Board of Appeals.
3 Continuation hearing for the Heritage Prairie Wind
4 Project. I'll call the meeting to order at 6:20 and
5 we'll start with the roll call.

6 MS. MILLER: Scott. Flott.

7 MR. FLOTT: Here.

8 MS. MILLER: Kiefer:

9 MR. KIEFER: Here.

10 MS. MILLER: Runyan. Randolph.

11 MR. RANDOLPH: Here.

12 MS. MILLER: Turner. Huisman.

13 MS. HUISMAN: Here. Okay. With that we
14 will be -- we've got a few announcements. Would you
15 like to go over those procedures that we wanted to
16 revisit?

17 MR. KAINS: Yes. Folks, just a couple
18 of small things, but it's been called to my attention
19 and I noticed it last night, cell phones, if you can
20 turn them off or down to keep them from dinging or
21 ringing that would be helpful. And the other thing,
22 of a technical nature, it's been called to the Zoning
23 Administrator's attention there were a number of phone
24 calls and comments about witnesses and folks up here

1 not speaking directly into microphones. So I'm going
2 to remind every witness before they start just to use
3 the microphone. It's not an easy thing to get use to
4 but, you know, we want to make sure everybody hears,
5 especially folks in the back, because many of the
6 witnesses are addressing their comments this way
7 toward members of the Board.

8 So then we have on our agenda for this public
9 hearing. There are two items of business for Heritage
10 Prairie Wind, there is case V-3-24, that's V, as in
11 victory, and that is a proposed variance from Section
12 56-619 sub E of the Livingston County Code of
13 Ordinances as to the methodology used for the modeling
14 of shadow flicker of a proposed wind farm, and the
15 other issue that we've been addressing last night and
16 will continue to address tonight is case number
17 SU5-24, that is the special use permit for the
18 establishment and siting and establishment of the
19 actual wind farm project.

20 Now, tonight, Mr. Uphoff, you have your first
21 witness will address shadow flicker and that really
22 pertains to both cases that we have here before this
23 Board.

24 Can you state with specificity whether your

1 witness can address just the variance issues
2 initially.

3 MR. UPHOFF: No, it would all be part of
4 the same content. So as we go through his testimony
5 he'll be talking about the establishing evidence
6 related to both the variance request and SUP. So if
7 we were going to be doing them separately I guess my
8 proposal would be that we get his testimony on the
9 variance and then after that let's recess then we
10 start up with SUP, then we then move to adopt that
11 testimony into the SUP testimony.

12 MR. KAINS: I think that's the way the
13 Board -- well, I guess we need to open it up to the
14 Board.

15 Does anyone have a particular feeling about
16 how we should handle it? I personally think that if
17 we have the witness testify specifically to the issue
18 of the variance first then we can have that on the
19 record. The Board doesn't have to vote on that issue
20 tonight, but I think that if the Board were to hear
21 that testimony relating to the variance initially and
22 then have questions about that specific issue then
23 we -- I think it would be cleaner. Is that --

24 MS. HUISMAN: I agree.

1 MR. KAINS: Okay.

2 MR. RANDOLPH: I agree also.

3 MR. KAINS: Okay. Very good. All
4 right. Well, I think we ought to do it that way.
5 This is a little bit unusual, folks, we usually don't
6 have two separate occasions involving one project, but
7 I think that the issue of the variance is extremely
8 important one to hear both for the Board to consider
9 and because it is a request of the Applicant, it's
10 important to them. So I think we ought to just not
11 muddy the waters and just have this taken just this
12 one issue first if that's all right with you,
13 Mr. Uphoff.

14 MR. UPHOFF: Yes.

15 MR. KAINS: Okay. Before you call your
16 witness are there any other preliminary matters that
17 you would like to address?

18 MR. UPHOFF: No, unless is there any
19 case opening for the variance, then if there is I need
20 to make a very brief opening.

21 MR. KAINS: Yes. Are there any other
22 preliminary matters, Mr. Dluski?

23 MR. DLUSKI: No.

24 MR. KAINS: Mr. Keyt, Ms. Rives?

1 MR. KEYT: No, sir.

2 MR. KAINS: Well, okay. All right.

3 Then, Mr. Uphoff, you may proceed. This is case
4 number V-3-24 variance petition by Heritage Prairie
5 Wind to request a variance from the County Ordinance
6 regarding the methodology used for modeling of a
7 shadow flicker.

8 And, Mr. Uphoff, if you want to give a brief
9 opening statement.

10 MS. HUISMAN: Brittney needs to provide
11 an overview first.

12 MR. KAINS: Okay. All right.

13 MS. MILLER: This is zoning case V-3-24.
14 This case is a variance request from the same
15 Applicant for a variance from section 56-619
16 subsection E as to the methodology used for the
17 modeling of shadow flicker for the proposed wind farm.
18 Binders with information regarding this application
19 has been available for Zoning Board of Appeals.

20 MR. KAINS: Very good, thank you.

21 All right. Mr. Uphoff, your opening
22 statement with respect to this variance issue.

23 MR. UPHOFF: Yes. Just briefly I just
24 want to help paint the picture so you understand where

1 the -- what to look for in this testimony as we go
2 through it. As it stands right now the Livingston
3 County Ordinance as it relates to shadow flicker
4 indicates that shadow flicker shall not affect and
5 occupy a community building or non-participating
6 residence in excess of 30 hours per year under the
7 planned operating conditions. That last part of that
8 sentence its very similar and it mirrors very closely
9 the language from the State law on this topic. The
10 State law at the end says that a occupied community
11 building or non-participating residence will not
12 experience more than 30 hours per year shadow flicker
13 under the planned operating conditions. But that's
14 where the State law stops right there. Livingston
15 County then went on to define planned operating
16 conditions. Livingston County defined it, quote,
17 planned operating conditions is defined as those
18 conditions that would exist if the sun were to shine
19 every day of the year with no cloud cover, end quote.
20 So what Livingston County has put in place in terms of
21 this definition is a requirement that the modeling for
22 shadow flicker be conducted under a theory where the
23 sun shines 100 percent of the time every day. Now, if
24 you go back to the State law the State law says a wind

1 tower, a commercial wind energy facility such as
2 these, quote, there's to be sited, quote, that
3 industry standard computer modeling indicates that any
4 occupied community building, etc., etc., etc., end
5 quote. So the State law talks about industry standard
6 computer modeling as being the standard by which the
7 modeling is to be conducted. So you're suppose to use
8 industry standard computer modeling. It doesn't give
9 any definition of planned operating conditions, it
10 doesn't give any definition of what the weather is
11 suppose to be. And I would submit to you that the
12 evidence you'll hear from this expert is that the
13 reason that you wouldn't define it the way that
14 Livingston County has defined it is because that
15 defies logic and it defies the industry standard.

16 So I believe the testimony you're going to
17 hear is going to establish that the industry standard
18 of computer modeling is to use verified weather data
19 from the area in question. So these weather stations
20 around the State of Illinois and including this area,
21 the accurate weather, they have for decades they've
22 had that weather data, it compiled it all into the
23 bases so that you can go back and look at a decade's
24 worth of weather data and you can see, you know, the

1 number of cloudy days versus the number of sunny days,
2 the number of hours the sun goes up and down and where
3 the sun is in relation to, you know -- you know where
4 the sun is in relation to the project area based on
5 the movements of the sun during the same time of the
6 year. So basically you've got decades worth of real
7 world data that you can -- we offering. And so the
8 standard -- and the industry standard in this computer
9 model has utilized that real world data.

10 Our request for the variance is that that's
11 the data, that's the standard of modeling to be
12 applied rather than the unrealistic and illogical
13 requirement that's in the ordinance requiring that 100
14 percent sunshine 100 percent of the time because we
15 all know that that's just not realistic.

16 So really we did the request to apply the
17 State law and not the extra definition that was added
18 by Livingston County. And I would also note that
19 Livingston County failed to include the language that
20 simply cites -- it's cited in the State law which
21 indicates that you're to use industry standard in
22 computer modeling.

23 So we're simply asking for the State law
24 requirements to be put in place, to utilize industry

1 standard computer modeling and you'll learn from this
2 the witness what that modeling is. And so with that I
3 would be happy to call the witness.

4 MR. KAINS: All right. Very good.
5 Thank you. All right. Go ahead and call your
6 witness. We would Aaron Anderson.

7 A A R O N A N D E R S O N,
8 was called as a witness on behalf of the Applicant
9 and, having been first duly sworn, testified as
10 follows:

11 MR. KAINS: Very good. Thank you. Your
12 name is Aaron Anderson.

13 THE WITNESS: Correct.

14 MR. KAINS: How do you spell your first
15 name?

16 THE WITNESS: A-A-R-O-N.

17 MR. KAINS: And Anderson?

18 THE WITNESS: A-N-D-E-R-S-O-N.

19 MR. KAINS: All right. Very good.
20 Mr. Uphoff, your witness.

21 MR. UPHOFF: Thank you.

22 **DIRECT EXAMINATION,**

23 **QUESTIONS BY MR. SETH UPHOFF:**

24 Q. Good evening. You've just stated your

1 name. If you could introduce yourself to the ZBA in
2 terms of your background and qualifications that would
3 be a great start.

4 A. Sure. My name is Aaron Anderson. I'm
5 the Senior Managing Director of Power at Burns
6 McDonnell Engineering Company. Burns and Mac is a
7 company of about 15,000 people. We specialize in
8 engineering, architecture and construction projects.
9 I've been with Burns McDonnell for a bit more than 17
10 years. Spent the entirety of my career in the wind
11 industry and during that time I've supported more than
12 100 projects where we've analyzed shadow flicker
13 including nearly a dozen in the State of Illinois.

14 By way of education I have undergraduate
15 degrees in Physics and Mechanical Engineering and a
16 master's degree in Engineering Management and I'm also
17 a licensed Professional Engineer in multiple states
18 including the State of Illinois.

19 So what we want to do is talk about shadow
20 flicker, the analysis that was put together and what
21 those results mean. So I would just like to start
22 these by talking about what flicker is so we all have
23 a common understanding.

24 So when we talk about shadow flicker the

1 industry words is commonly referred to is that shadow
2 flicker occurs any time a wind turbine blade passes in
3 front of the sun casting a shadow, pretty straight
4 forward. What may be less straight forward is that
5 there are four requirements that always have to be
6 true for flicker to apply. Number one, it has to be
7 sunny. Without the sun you cannot cast shadow.
8 Number two, the turbine must be in operation, ie.,
9 when the turbine blades are rotating. Number three,
10 depending where a turbine is facing a receptor, as
11 this results in the widest-possible shadow being cast.
12 There cannot be any obstructions in between that can
13 block that flicker from occurring. Examples would be
14 sun position, wind direction, side roads, out
15 buildings, farms, hedge rows, etc., etc. And then
16 whatever the receptor is and in most cases that's an
17 occupied residence that's got to be in the line of
18 sight of the shadow for the flicker to accumulate at
19 that location. And then lastly I'll give you is that
20 flickers are predictable and very common at certain
21 times of year at certain times of day and you'll see
22 that in our results as you get them. Those times of
23 year are most commonly being the fall and in the
24 spring and that has to do with nothing more than the

1 sun and how it rises and how it falls and during
2 certain times of the day most notably in the early
3 morning and the late afternoon or evening as the sun
4 comes down or going down over the horizon.

5 As Mr. Uphoff explained, we did consider both
6 the State and local requirement here. So at Federal
7 level shadow flicker does not regulate any way, shape,
8 or form. At the State level the Illinois State citing
9 guidelines there is a requirement that no
10 participating residence or community building shall
11 exceed 30 hours per year under planned operating
12 conditions. Very typical. Very similar. We've done
13 these in dozens and dozens of counties and that is
14 without question the form in all of the locations of
15 the day. And then very similar within the Livingston
16 County Zoning Ordinance the same language applies but
17 with a further stipulation that planned operating
18 conditions are defined to include sunny days only or
19 specifically every day considered a sunny day. That
20 is very atypical in our experience. They mostly
21 explain operating conditions on a turbine as when the
22 turbine is operating, whether a reasonable amount of
23 sunshine, might be the direction the turbine might be
24 pointing, where those are at relative to rain, etc.,

1 which I'll walk you through here in a moment. So in
2 our experience industry form is 30 hours per year.
3 Having further definition of only sunshine being
4 considered or 100 percent of the time days being sunny
5 is very uncommon.

6 We did all of our analysis in a software
7 program called the WindPRO, and industry-leading
8 software package for the design and planning of wind
9 energy projects to predict the expected amount of
10 shadow flicker with respect to every wind turbine
11 location. WindPRO is used by us for 100 percent of
12 the time and our competitors will use it as well in
13 the analysis that we see from them.

14 How the software works, it incorporates a
15 number of inputs, the sun's path, topography of the
16 Project Site, locations of the receptors and turbines,
17 wind turbine specifications and the anticipated wind
18 speed and direction distribution to calculate shadow
19 positions and orientations at one-minute intervals
20 over a complete year. So -- and it moderates these
21 things but then it aggregates any and all shadow
22 flicker that accumulates under those operating
23 conditions for each receptor that we plug into the
24 model. We'll show you here in a moment.

1 There are a number of inputs that we take
2 into consideration. Our goal when we put these
3 together is to make them in realistic and
4 conservative. And what I mean by that is we want it
5 to represent how the wind farm will actually operate,
6 but where possible err on the side of being
7 conservative where when we see these results our
8 expectation is that whatever that's actually observed
9 in operation that the actual results would only be
10 less than that because of the conservatives, and I'll
11 walk you through.

12 The two layouts that were considered for that
13 the wind turbines were the General Electric, the GE
14 wind turbines and then our layout of the Vestas V163
15 wind turbines. Operationally they work very similarly
16 in terms of what they look like. They're quite
17 different which I'll show you here in a moment. So we
18 considered both of those. In both cases there's 71
19 turbines in each of those layouts within Livingston
20 County. We also went through and we marked all
21 receptors, where the receptor that could be or it is a
22 home occupied or otherwise. We do our best as we go
23 through those to try to distinguish what is occupied
24 and what is not and do that by an aerial imagery

1 marking all of the homes in the footprint of the
2 project and then using folks on the ground here in the
3 county to help us understand was that thing that
4 looked like a home above really a barn or a home, and
5 someone no longer lives in, etc. When in doubt we go
6 in there towards is it occupied and modeling it as
7 such. So there are 289 of those in Livingston County
8 that are in the study. We model those within WindPRO
9 the software that we use with a study called
10 greenhouse mode. The greenhouse mode means that every
11 home is modeled that has windows on every single side.
12 So there is no location, there is no direction that is
13 not susceptible to shadow flicker, meaning it's
14 alleged to reasonably at that receptor from every
15 direction. In reality, in practice you would have
16 drapes, you would have homes, you would have hedge
17 rows, you would have other things blocking it, but in
18 this case we modeled this with windows on all sides.

19 Continuing with inputs. As I mentioned, we
20 had two different turbine models, the General Electric
21 and the Vestas wind turbine. The dimensions of these
22 are a little bit different. The Vestas wind turbine
23 has a hub height of -- which you can see there on the
24 screen of 113 meters, compared to General Electric at

1 about 98. Conversely, the Vestas turbine has a rotor
2 diameter meaning from tip to tip of the blades of 163
3 meters. The GE turbine has a little bit smaller at
4 154.

5 We also modeled those turbines operationally
6 with the data we were able to receive once we were in
7 operation. So that accurately is modeled for wind
8 data and rotational speed. So we take wind data from
9 the site and then the operation of that machine so we
10 can see when its spinning. Like I said, there's four
11 conditions that have to be true for shadow flicker to
12 occur. One of them is that the turbine is spinning.
13 So we model it as such. We also model the rotational
14 speed.

15 Final note on inputs, one option that we do
16 have in the model is that we do not utilize is
17 obstacles. So as I mentioned these are things like
18 trees, buildings, silos, barns, hedge rows, anything
19 that would block a shadow from getting to a home we
20 disregard those. We'll omit them entirely from our
21 model. So it's like bare terrain. It's highly
22 considered which is the most conservative way we were
23 allowed to do that. We also model the terrain so that
24 the turbine sits up higher which is not really the

1 case so it's allowed to cast its shadow further within
2 the model and affect the potential of more homes. So,
3 again, trying to be as conservative as possible. And
4 then the last thing we do in terms of inputs is model
5 the relevance of flicker. In this case the common
6 factor is that flicker will not propagate for
7 diameters. So in all the previous slides that we said
8 that on the Vestas machines the rotor, the tip to tip
9 is 163 meters. We multiply that by 10 which is about
10 1630 meters, that's how far a shadow is allowed to go.
11 Within more dimensional terms it's almost a mile that
12 a shadow would be allowed to propagate in a model
13 which is again very conservative. Realistically in
14 the light it will diffuse so that amount of space we
15 wouldn't in reality actually should see shadow flicker
16 at all.

17 Once we have all of the inputs it's time to
18 have some results. So we aggregate all those in
19 WindPRO, the software that I mentioned and we present
20 the results both numerically and graphically. One
21 thing you'll see here in one of the graphical methods
22 that we present those shadow flicker creates a very
23 predictable butterfly shape. And by butterfly I mean
24 the amount of flicker that occurs to the northwest,

1 northeast, southeast and southwest seems to be greater
2 than immediately south or immediately north, for
3 example. And the reason for that is because the sun
4 doesn't rise directly in the east it tends to rise
5 more to the southeast so that it casts a shadow to the
6 northwest, and so on and so forth. So all that's
7 accounted for and put together. We also present it
8 this way, so every single receptor and this is just
9 one rectangle for receptor 10. What you'll see here
10 is along the bottom, the scales are months, so
11 starting on of my left-hand side, January, February,
12 March throughout end of the calendar year on the far
13 right and then on the vertical axis it starts at 5:30
14 in the morning and goes till 8:30 in the evening.
15 Every block, every little bit of color represents a
16 turbine where the flicker is being caused at that
17 receptor at that time. So, for example, the first
18 green blob that you see in the far left means roughly
19 between January 1st and roughly between the third week
20 of January between the hours of 8:00 a.m. and 8:45
21 a.m. flicker would happen potentially under the
22 scenario that we've modeled at that receptor from
23 whatever the range we represented, let's say it's
24 turbine 1. The blue blob would represent turbine 2,

1 so the geometry changes and the sky roughly between
2 let's call it the second week of February or the
3 fourth week of February between 7:00 and 7:30 a.m.,
4 again, flicker would potentially occur. This is very
5 common graphics you'll see in one of the receptors
6 there. When we talked earlier it typically occurs
7 early in the morning or late in the evening for the
8 exact it's facing in the other direction and most
9 commonly in the spring and fall is where we would see
10 it. Regardless of the amount of flicker that is
11 happening at a receptor it is not from January 1st to
12 31st in these receptors to occur, it's very narrow
13 pockets and very specific times of the year that that
14 happens and you can see every single receptor when it
15 occurs and it's recorded.

16 Q. Mr. Anderson, sorry. Before we move on
17 from that particular slide. When we're looking at the
18 calendar this would seem to me that it allows
19 opportunity for the operator to be able to focus in on
20 very specific windows of time both in terms of weeks
21 of the year and hours of the day; is that right?

22 A. That's correct.

23 Q. So that would allow more focused
24 monitoring of the potential shadow flicker during

1 those specific time periods; is that right?

2 A. That's correct.

3 Q. So, for example, using this one you
4 mentioned that there were a few windows of time and
5 then weeks in the spring, but then it appears that
6 through the majority of the summer months there would
7 be no potential for a shadow flicker at that
8 particular --

9 A. Correct.

10 Q. -- residence; is that right?

11 A. Correct.

12 Q. So in terms of monitoring, as the -- it
13 would be different for every receptor but you would be
14 able to utilize these calendars to get an idea by the
15 time you hit the -- potentially the six month mark of
16 the year you would have a pretty good idea of how much
17 flicker, how that has accrued through that point and
18 then you'd also be able to relatively closely predict
19 how much more you might expect before the end of the
20 year; is that right?

21 A. Correct.

22 Q. So if, for example, you had a receptor
23 that by June on this particular calendar had reached
24 14 to 15 hours of flicker in the first 6 months you

1 may be able to reasonably predict that if we're near
2 close to 30 hours by the time you get to the end of
3 December; is that right?

4 A. I would agree.

5 Q. So therefore if you wanted to adjust
6 that in the second half of the year you could pick
7 some time periods when flicker would expect to occur
8 and you could curtail or stop the turbine for several
9 hours during those windows of time, reduce that
10 flicker and that overall the accumulated flicker at
11 that receptor so it would fall below the 30 hour
12 requirement; is that correct?

13 A. That's exactly right.

14 Q. So through the course of monitoring you
15 would be able to adjust throughout the year in order
16 to make these types of conditions be met; is that
17 right?

18 A. Yes.

19 Q. So it's not as if you would need to wait
20 until the end of the year and look retroactively as to
21 whether or not to determine you exceeded the 30 hour
22 limit?

23 A. You would know in realtime, yes.

24 As an addition to that, while the modeling

1 itself is very complicated the location of the time is
2 very well known and very predictable. We use these
3 results to do exactly what was just described with
4 accuracy of when flicker is actually occurring. There
5 are actually specific times of day, specific times of
6 the year when it happens is very predictable and well
7 known. I would offer though that this is based on the
8 model with the maximum amount of time that it
9 occurred. There are a number of parameters where --
10 or conditions where the turbine may not be operating,
11 the wind may not be blowing, could be a cloudy, rainy
12 day and there's just no opportunity for a shadow to
13 exist that would cause the results to change the
14 shadow flicker.

15 Q. And so, again, to follow-up on that
16 because you've used conservative inputs that makes
17 these estimates that you have here essentially the
18 maximum that could occur; is that right?

19 A. Correct.

20 Q. And so most likely the real world
21 conditions would end up being less than what's
22 projected in these?

23 A. Less, yes.

24 Q. And also going back to the industry

1 standards, when you're doing your modeling via
2 industry standard you were using the real world
3 weather data to cast these models; is that right?

4 A. Correct.

5 Q. Okay.

6 A. Just as an example of a summation
7 numerically of what those would look like. There are
8 two rows. One for the GE layout, one for the Vestas
9 layout. Vestas V-163 with 71 turbines in each county
10 and a two-thirds being by residences in Livingston
11 County. Within the GE layout, for example, there were
12 three receptors who are participating in the project
13 that met or exceeded 30 hours per year. There were 14
14 receptors -- or residences that are non-participating
15 in the project that were at or above 30 hours per
16 year. Conversely for the Vestas it would be 5
17 participating in excess of 30, 19 non-participating in
18 excess of 30.

19 Q. Then, Mr. Anderson, so when you talk
20 about the numerical results, the last five you were
21 showing us are the graphical or the calendar results,
22 all of those for each receptor were encapsulated into
23 that comprehensive report that you prepared for the
24 application in this proceeding; is that correct?

1 A. Correct.

2 Q. And there was an initial graft that was
3 filed with the application and then there was a
4 subsequent revised graft that was filed with the
5 addendum to the application; is that fair?

6 A. Correct.

7 Q. And so if the Board wanted to see that
8 second and revised most up to date version in the
9 addendum that would be located at approximately page
10 184 of the addendum as far as you understand it; it
11 that right?

12 A. Correct.

13 Q. And so I was -- just for the Board's
14 information that's where the full report of
15 Mr. Anderson's most current revised findings would be
16 located as it relates to modeling that was done on the
17 industry standard computer modeling scenarios; is that
18 right?

19 A. Correct.

20 Q. So the report that is located there that
21 was just referenced is based upon industry standards
22 you've been modeling using that real world weather
23 data and the results that you showed up here on the
24 screen right now, those are the results from that

1 industry standard real world modeling; is that right?

2 A. Correct.

3 Q. You also then did some modeling based
4 upon the input parameters from the Livingston County
5 Ordinance requiring 100 percent sunshine 100 percent
6 of the time; is that correct?

7 A. Yes, we did.

8 Q. And then those findings were
9 encapsulated in the one page memorandum that you put
10 together; is that accurate?

11 A. Correct.

12 MR. UPHOFF: And for the Board's
13 information that one page memorandum would be located
14 in end of the slide show presentation in the binder
15 that was provided to you.

16 Q. And that memorandum, Mr. Anderson, was
17 dated June 14th of this year; is that correct?

18 A. Correct.

19 Q. And in that memorandum it lays out a
20 table that mirrors the table on the screen; is that
21 correct?

22 A. Yes.

23 Q. Aside from the fact that the number of
24 receptors that were affected are varied because of the

1 parameters that you included were based upon the
2 Livingston County Ordinance; is that right?

3 A. Correct.

4 Q. Okay. So then that is the results of
5 the report but sometimes -- not sometimes, those
6 results as we were discussing earlier can be affected
7 by other methods of mitigation, for example,
8 curtailments; is that right?

9 A. Correct.

10 Q. So does that take us to your last slide
11 then?

12 A. It does. There are numerous ways if
13 there was a necessity to mitigate the amount of shadow
14 flicker, those range from blinds, curtains, awnings
15 planting trees and vegetation or considering existing
16 vegetation or other obstacles that are already there,
17 or what is also very common is turbine operation can
18 be regulated to prevent additional flicker from
19 occurring, and what I mean by that is again recall
20 back to the conditions that are necessary for flicker
21 to occur, a turbine must be operating. We can prevent
22 the turbine from operating during so much time period
23 so flicker would be expected to occur and result
24 in bringing those results down ahead of time.

1 Q. Okay.

2 MR. UPHOFF: Those are all the questions
3 I have for this witness.

4 MR. KAINS: All right. Very good.
5 Thank you, Mr. Anderson, for your testimony.

6 All right. Questions related to shadow
7 flicker for this witness's testimony, first, questions
8 come from members of the Livingston County Zoning
9 Board of Appeals.

10 MS. HUISMAN: I've got a couple question
11 for you. The two models that you've listed and I'm
12 looking at this slide, is one taller than the other?

13 THE WITNESS: One is taller than the
14 other. So if you move back to the slide, it's slide
15 7, it shows a picture with the wind turbines and a red
16 arrow. So one turbine where the blades and the three
17 blades on it, where that starts on one of them is 113
18 meters, that's the tallest one and then it has a tip
19 to tip distance of 163, so half of that would be 81
20 and a half. So the typical height would be around
21 maybe 200 meters at the very top of the tip.

22 MS. HUISMAN: Okay. So 640 feet?

23 THE WITNESS: Roughly, yes.

24 MS. HUISMAN: I'm trying to determine

1 what was presented last night as potential 5 -- 5 foot
2 75 feet or 640 were the two heights that stick in my
3 mind. So does that apply here?

4 THE WITNESS: Should be consistent, yes.

5 MS. HUISMAN: Okay. All right. And
6 what impacts flicker more, sun or wind speed?

7 THE WITNESS: Depending on how -- if
8 it's modeled under the condition where every day is a
9 sunny day, without question it would be sunshine
10 because of the amount of time that would add for the
11 turbine being in operation. The wind turbine just on
12 average operates roughly 80 percent of the time in any
13 given year, so give or take, it changes in how you
14 calculate the -- roughly the 80 percent the turbine
15 works in a year. So we'll see minor differences in
16 that from project to project, but the turbines will
17 generally operate short of there being some probably
18 maintenance that has to be done or wind just isn't
19 blowing.

20 MS. HUISMAN: How much wind speed does
21 it take actually to turn the blades? We have a lot of
22 days that are not windy. We have a day like today
23 that we're getting blown away, but we're not limiting
24 or looking at that so much. So in my eyes we had a

1 sunny day but it's quiet, those turbines aren't going
2 to be turning and they're not going to have any shadow
3 flicker?

4 THE WITNESS: Correct. So in a wind
5 turbine every model is a little bit different, but in
6 most they're in the range of 3 and a half to 4 meters
7 per second. So let's call that 10 to 12 miles per
8 hour. It is the wind speed up high that has to have
9 the -- at hub height that has to be occurring where
10 the center of blades are at. And when we talk about
11 how long they're producing or not producing, that 80
12 percent accounts would be approximate on the time that
13 would be below that threshold or above. There's also
14 the maximum speed they spin to safely operate that
15 also accounts for that maximum but that occurs far
16 less often.

17 MS. HUISMAN: Okay. So would you --
18 would it be your testimony that when the operating
19 conditions for this project would you consider 80
20 percent of the time the turbines are spinning?

21 THE WITNESS: We took the actual wind
22 data for this area and modeled throughout the entire
23 course of a year exactly how we would expect them to
24 operate, it may not be exactly 80, that's just an

1 annual generic number but it would be awfully close to
2 that, but we used specific data for this location.

3 MS. HUISMAN: Because our ordinance
4 defines planned operating conditions.

5 THE WITNESS: Correct.

6 MS. HUISMAN: It doesn't define industry
7 standard computer model and what needs to be used. So
8 I listened to what you said the inputs are for the
9 assumptions for this project. Does WindPRO then have
10 its own assumptions on amount of days that are sunny
11 and the wind speed, because you didn't say how you
12 estimate what you input for that?

13 THE WITNESS: So we input the result,
14 the wind speed and the amount of sunny days. So for
15 wind speeds, that was on slide 7 also with the picture
16 of the turbine, so we take the model mentioned data at
17 the height and we incorporate that in to actually
18 limit the data operation of each turbine and they'll
19 both be slightly different because they operate a
20 little bit differently. And then for sunshine data we
21 pull that from a source called city-data.com which is
22 very industry standard for where that comes from,
23 that's where we've got decades of information. We
24 pull that from I think we pulled that city within the

1 project footprint, but we pulled it from the city
2 within the footprint and put the specific percentages
3 in there over the entire course of the year.

4 MS. HUISMAN: What was the name of that,
5 city --

6 THE WITNESS: City-data.com.

7 MS. HUISMAN: City-data.com. All right.
8 Now, as Mr. Uphoff indicated on that table where you
9 have the green section, a blue section do those
10 sections represent different turbines?

11 THE WITNESS: Every color on that
12 graphic was a different turbine. So in that case
13 there were three different turbines causing flicker at
14 that receptor. That could be because if you had a
15 turbine to the southeast of the home as the sun comes
16 up in the morning that Turbine A let's say would cause
17 flicker at a home. If you've got another let's say
18 the southwest in the evening Turbine B may cause
19 flicker in that home.

20 MS. HUISMAN: So once the project would
21 be up and operational what system do you use to
22 monitor that so you could say, oh, we're at June and
23 we've got 15 hours already on shadow flicker on this
24 receptor?

1 THE WITNESS: So there are automatically
2 things you could do, I don't want to speak for how
3 they would do it, but the most common would be if
4 based on those calendars that we put into every
5 receptor we would know and we could provide that in
6 our graphic or more definitively know what the exact
7 times would be we'd would be able to say, okay, we
8 know flicker is possible within this window and if
9 it's sunny and the turbine's operating during that
10 time then you could accumulate that as flicker
11 occurring at it.

12 MS. HUISMAN: So it would still be a
13 model, it wouldn't be like an actual receptor on a
14 residence or non-participating residence?

15 THE WITNESS: You can place them on
16 homes, generally they're proven inaccurate. That's
17 the most accurate way to track that and would tend to
18 be most accurate and most conservative way.

19 MS. HUISMAN: Okay. All right. And the
20 hardest question for me is how do we define the
21 industry standard, cause the State didn't define it
22 for us. So what are we to accept and I guess adopt as
23 industry standard?

24 THE WITNESS: That's a great question.

1 The best I can leave you with is just my experience of
2 almost two decades of doing this and what I've seen
3 across the country very much consistently over and
4 over again along what the State the citing guidelines
5 say of 30 hours per year. I've done hundreds of these
6 and I truthfully cannot recall a time ever seeing a
7 situation where an ordinance regulated us to do the
8 model 100 percent sunshine.

9 MS. HUISMAN: Okay. And so you're from
10 Burns & McDonnell?

11 THE WITNESS: Uh-huh.

12 MS. HUISMAN: So the Clayburn that's
13 included in the application for the special use apply
14 to the results used -- does this the same results in
15 that same disclaimer apply to this that we're really
16 not to suppose to rely on?

17 THE WITNESS: So that Clayburn that I
18 think you're referring to, I believe there's one in
19 there for a client and that if you as a reader come
20 across it consider it confidential, obviously that
21 wouldn't apply here because they've given you that,
22 but the rest of those results are everything that
23 we've explained here matches exactly what that report
24 lays out in terms of methodology outcome results.

1 MR. KAINS: Methodology and what?

2 THE WITNESS: Outcome results.

3 MR. KAINS: Okay. Just wanted to make
4 sure it's on the record.

5 THE WITNESS: Sure. Thank you, sir.

6 MS. HUISMAN: Okay. So also full
7 project results is why I'm asking this question. So
8 you still got a turbine that would potentially create
9 shadow flicker for more than 30 hours per year?

10 THE WITNESS: Correct.

11 MS. HUISMAN: Even without assuming 100
12 percent sunny days?

13 THE WITNESS: Correct.

14 MS. HUISMAN: Okay. Okay. That's all
15 I've got for right now.

16 MR. KAINS: All right. Very good.
17 Thank you, Madam Chairman. And any other questions
18 from members of the Zoning Board of Appeals?

19 All right. Very good. All right. Questions
20 for this witness from members of units of local
21 government, including school districts? Questions?
22 Yes, sir.

23 MR. FANNIN: I am curious --

24 MR. KAINS: Oh, first of all your name.

1 MR. FANNIN: Oh, I'm sorry. Marty
2 Fannin.

3 MR. KAINS: What's your last name?

4 MR. FANNIN: Marty Fannin, F-A-N-N-I-N,
5 Marty, M-A-R-T-Y.

6 MR. KAINS: Thank you, Mr. Fannin.

7 MR. FANNIN: Livingston County Board.
8 In doing your modeling you use worse case scenarios,
9 i.e., greenhouse effect, no vegetation and yet we're
10 kind of being made light of for saying 365 sunshine.
11 I'm kind of curious as to why there's a difference
12 between saying, okay, we're going to say that it's
13 greenhouse and every is window open is that -- and
14 there's no vegetation, even worse case scenario and I
15 think that's all you were saying this is the worse
16 case scenario.

17 THE WITNESS: Yeah, that's a great
18 question. So we -- the distinguishment or the --
19 however distinguishable we did is the way you're
20 describing it is that we want it to be realistic while
21 it's still conservative. While things can be knocked
22 down, trees can die, houses can have windows added, so
23 we wanted to account for all those things that are
24 realistically like within the realm of reason it

1 happened and that's what our model represents. There
2 is no scenario where the sun shines every single day
3 of a year. So while I appreciate your point, I guess
4 I would be tested, it just -- it won't and it cannot
5 happen.

6 MR. FANNIN: Okay.

7 MR. KAINS: Any other questions for
8 Mr. Anderson from members of units of local
9 government?

10 Questions from interested parties represented
11 by licensed attorneys?

12 Questions from interested parties from
13 members of the public? Yes, sir. Could you please
14 come forward to the podium opposite side of the room,
15 please. Sir, could you please state your name for the
16 record.

17 MR. CHRISTOPHER: My name is William
18 Christopher.

19 MR. KAINS: All right. And your
20 address?

21 MR. CHRISTOPHER: My address is 29382
22 East 3200 North Road, Dwight.

23 MR. KAINS: Very good. Go right ahead,
24 sir.

1 MR. CHRISTOPHER: So I have a house and
2 I just want to know, they're measuring 14 to 19 sites
3 I believe that are receptor sites, could we get a list
4 of those?

5 THE WITNESS: Yes. So a list of every
6 one of those receptors is in the appendix of the
7 report that we wrote.

8 MR. CHRISTOPHER: Okay. I don't have
9 the report so...

10 MR. UPHOFF: It would be available in
11 the application that's online on the County Zoning
12 website.

13 MR. CHRISTOPHER: Okay.

14 MR. UPHOFF: And it should be in the --
15 the most recent version would be in the addendum to
16 the application that's on the County Zoning site.

17 MR. CHRISTOPHER: Okay. If I could ask
18 a couple questions, if I could.

19 MR. KAINS: Yes, sir. Absolutely.

20 MR. CHRISTOPHER: And I think you
21 mentioned a couple situations where our home might be
22 blocked by a building or something. So those may not
23 be considered receptor sites; is that right?

24 THE WITNESS: They were considered

1 receptor sites. We did not consider whether the
2 obstruction would have been. So if someone had a barn
3 directly next to their home, in practice that barn
4 would prevent shadow from making it through to the
5 home. We assumed that barn was not there.

6 MR. CHRISTOPHER: Okay. Gotcha. And
7 you showed a map earlier where the shadow flicker
8 might occur.

9 THE WITNESS: Yes, sir.

10 MR. CHRISTOPHER: Is it possible to get
11 a map of that?

12 THE WITNESS: Also included in Appendix
13 E.

14 MR. CHRISTOPHER: Okay. Perfect. Thank
15 you.

16 THE WITNESS: You're welcome.

17 MR. KAINS: All right. Thank you for
18 your questions, Mr. Christopher.

19 Any other members from the public with
20 questions for Mr. Anderson regarding his shadow
21 flicker testimony? Okay. Yeah, Ms. Bober.

22 MS. BOBER: Do you need my name and
23 address again. Linda Bober.

24 MR. KAINS: Yes, please.

1 MS. BOBER: Okay. Linda Bober, and it's
2 32433 North 3300 East Road.

3 MR. RANDOLPH: Ma'am, please speak into
4 the mic.

5 MS. BOBER: In the occurrence --

6 MR. KAINS: Ms. Bober.

7 MS. BOBER: Yes.

8 MR. KAINS: Could you -- okay. There
9 you. Thank you, very much.

10 MS. BOBER: In the occurrence of shadow
11 flicker on whatever homes might be affected by it what
12 were your mitigations? Mitigations I guess.

13 THE WITNESS: Sure. So the results that
14 we presented there are no mitigations, those are the
15 unmitigated results.

16 MS. BOBER: Okay.

17 THE WITNESS: In terms of options that
18 we presented, those could be anything from awnings to
19 planting new vegetation like trees or tree rows to
20 modifying how the turbine actually operates, meaning
21 it spins and operates less often.

22 MS. BOBER: Okay. So any of those
23 mitigations would be on the homeowner to do?

24 THE WITNESS: No. That's not the

1 expectations that are --

2 MS. BOBER: Okay.

3 THE WITNESS: -- the Applicant would
4 take care of those. We're giving you what options a
5 potential mitigation model will make.

6 MS. BOBER: Okay. That was my question.
7 Thank you, very much.

8 MR. KAINS: Thank you, Ms. Bober. Any
9 other questions from the audience for Mr. Anderson?
10 Yes, Mr. Kulasik?

11 Jamie, do you need his last name?

12 COURT REPORTER: No.

13 MR. KAINS: Okay. You got that. Go
14 right ahead.

15 MR. KULASIK: Okay. Is the standard
16 that you mentioned, when was this first adopted?

17 THE WITNESS: Great question. So there
18 is no book, there is no publication, no authorship
19 that I can point you to that says this is the industry
20 standard which I think is part of the reason that
21 we're just saying we need to rely on experience here.
22 So there is no year that it was established, but based
23 on 20 years of doing this I can tell you what I've
24 seen as industry standard and what I've seen my from

1 colleagues.

2 MR. KULASIK: Okay. Cause my
3 understanding it isn't a standard, an industry
4 standard. There's nothing in writing to back that up.
5 Generally a publish date, an update and those people
6 within the industry are companies that have provided
7 input for that standard. So in a sense, if I
8 understand this correctly, the standard is not written
9 or published for someone to say, okay, this is it so I
10 can compare something to it.

11 THE WITNESS: So there have been
12 industry organizations, for example, that have
13 activated that input from folks like yourselves and
14 others and we've pointed to publications where they
15 mentioned the 30 hour per year standard that we're
16 talking about, but beyond that there is no document
17 that you can Google what is the industry standard and
18 it will say it's this other than the fact if you
19 review ordinances across the U.S. I think you would
20 agree that would consistently find 30 hours per year
21 without any reference to 100 percent sunshine in any
22 of those.

23 MR. KULASIK: Okay. Another question
24 and I'm going to use 19. You had 14 for GE and 19 for

1 the Vestas on non-participating, have those
2 non-participants been notified that they may or will
3 be affected by the flicker?

4 THE WITNESS: I would have to defer to
5 the private company on that, we haven't coordinated
6 with anyone on this.

7 MR. KULASIK: Okay. One question on the
8 sun. You said you used the City of Gavin.

9 THE WITNESS: Un-huh.

10 MR. KULASIK: Was input into your
11 computer model in the number of sunny days. How does
12 this city-data collect that data? In other words,
13 where is the sensor in Dwight or Pontiac that says
14 it's sunny today and how long has it been there?
15 Cause it's been referenced by the company's attorney
16 there that this has been going on for decades. So
17 where does this data really come from? I understand
18 the city has more than likely a clearing house towards
19 the data, how is this data collected and by what
20 means, the methodology?

21 THE WITNESS: So there are a number of
22 agencies, NOAA, N-O-A-A, the National Oceanic
23 Atmospheric Administration, I believe is one among
24 others that may be in weather stations across the U.S.

1 throughout coast to coast, every airport being in a
2 small has one that measure everything from winds
3 speeds to rainfall to sunshine. Our understanding is
4 that city-data is aggregating all of that information
5 based on different parts of the country. We did for
6 whatever it's worth compare multiple cities within our
7 footprint and made sure that those results were
8 sunshine probability consistent and they were.

9 MR. KULASIK: Okay. So, in other words,
10 you did not go to Kankakee Airport or Dwight Airport
11 or Pontiac Airport to review those records
12 specifically? Your Dwight city-data provided that by
13 whatever means they collected?

14 THE WITNESS: Yes, we did.

15 MR. KULASIK: Okay. Thank you.

16 MR. KAINS: All right. Thank you,
17 Mr. Kulasik.

18 Any other questions from members of the
19 public for this witness? Yes, sir. Please come
20 forward.

21 And, sir, could you please state your name.

22 MR. GRAEFEN: Louis Graefen.

23 MR. KAINS: And how do you spell your
24 first name and last name.

1 MR. GRAEFEN: L-O-U-I-S, G-R-A-E-F-E-N.
2 33583 East North Road, Dwight, Illinois.

3 MR. KAINS: All right. Mr. Graefen, go
4 right ahead with your questions for Mr. Anderson.

5 MR. GRAEFEN: Don't mean to sound
6 stupid, I know you got all this data and all this
7 stuff. Have you ever gone back to the people and
8 said, hey, what have you experienced on this? You
9 know, I mean, because you could have all the data in
10 the world. But, you know, I have friends that live
11 near windmills, I know exactly what they experience
12 and it has nothing to do with the data. Have you ever
13 gone back, what's the main complaint. What is their
14 main problem they have. If that would be said
15 correctly.

16 THE WITNESS: Sure. So we've gone back
17 and verified these results dozens of times across the
18 U.S. in terms of both what turbines were causing
19 flicker on a specific residence and whether or not
20 that matched our model and whether those times of day,
21 times of year matched and unequivocally they're always
22 incredibly accurate. Again, because while it's a
23 sophisticated model where the sun's at is just a known
24 commodity so a shadow can only go in so many

1 directions. So the answer to your question, yes,
2 dozen of times we've -- we back verified.

3 MR. KAINS: All right. Thank you for
4 your question, Mr. Graefen.

5 Anybody else?

6 MR. FLOTT: I've come up with a question
7 since.

8 MR. KAINS: All right. Mr. Flott, you
9 can just jump in since you're a member of the Zoning
10 Board.

11 MR. FLOTT: I am. Did you think that
12 the Livingston County's language in the ordinance was
13 unique?

14 THE WITNESS: Yes.

15 MR. FLOTT: Why did you think that?

16 THE WITNESS: I should clarify. I
17 thought the language was largely typical with the
18 exception of the last statement around the definition
19 of planned operating conditions being that the sun
20 shines 100 percent of the time.

21 MR. FLOTT: I may be incorrect but I
22 think that that was what language came from the State
23 of Illinois, it was originally written.

24 THE WITNESS: I believe the State citing

1 guidelines say exactly the same up until the very end
2 where it talks about 30 hours per year under planned
3 operating conditions. The distinction would be that
4 Livingston County defines their interpretation of a
5 planned operating condition being that sunshine
6 parameter.

7 MR. KAINS: All right. Thank you,
8 Mr. Flott.

9 Yes, Madam Chairperson.

10 MS. HUISMAN: One more question for you,
11 well, I'll make it two. Could you emphasize again
12 what was assumption included in the model then for
13 sunny days? If it's not always sunny what is the
14 assumption?

15 THE WITNESS: Correct. So that data
16 source that we mentioned aggregates over the years
17 that it has of how often it's sunny. We take those
18 percentages of how often those sunny days occur and we
19 round up. You'll find that in Appendix B, bravo, of
20 the report that we put together, specifically Table 1
21 and it will show those so you could see the exact
22 percentages.

23 MS. HUISMAN: And you said that was in
24 Appendix B?

1 THE WITNESS: Correct, B, as in bravo.

2 MS. HUISMAN: Okay. All right. So you
3 don't know what the amount of sunny days actually were
4 that were programmed into the model?

5 THE WITNESS: I do. I can pull it up
6 and I can tell you specifically if you want me to.

7 MS. HUISMAN: Okay. I don't want to dig
8 through it but -- at the moment. One other question
9 this might not be something you can answer and that's
10 okay, I can ask it later. Can turbines be programed?
11 You mentioned in one answer to a question that the
12 turbines can be shut down, but could they be
13 specifically programed so that they could shut down
14 for those windows where the flicker could potentially
15 occur? And then I don't know if they can be shut down
16 at a certain time and then start up again or if
17 they're more manual than that?

18 THE WITNESS: No. They can be
19 programmed to shut down. I would refer you to my
20 previous statement that would be a conservative
21 approach. Again, if you recall that calendar that we
22 put up with the green blobs, that's the maximum amount
23 of time under all the conditions of the models that we
24 would anticipate flicker might happen. It's just as

1 possible for one of those windows that it's not going
2 to be -- or if not sunny that day and we shut down a
3 turbine unnecessarily because flicker would not have
4 otherwise occurred.

5 MS. HUISMAN: So really your assumption
6 is that your turbine's going to operate 100 percent of
7 the time if it can?

8 THE WITNESS: If it can, yes. If it can
9 absolutely.

10 MS. HUISMAN: Why would we get to that
11 point would be a follow-up question.

12 THE WITNESS: Sure. So the main reason
13 that the turbine would not operate would be
14 maintenance. So oil changes are a great example or if
15 the wind speed is not sufficient, it doesn't get to at
16 least that 10 mile hour ballpark we talked about with
17 not enough wind to start it spinning. If wind speed
18 gets too high, around 25 meters per second or about 50
19 miles per hour it shuts down as a safety precaution.
20 So there other reasons where it may not operate under
21 very normal scenarios. We model no maintenance
22 happening. We assume that if the wind is blowing that
23 turbine is operating. In reality maintenance will
24 happen. It's a machine so it will operate a bit less

1 than what's actually modeled within the WindPRO.

2 MS. HUISMAN: When you talk about a
3 cloudy day is that assuming that it's so cloudy that
4 there is no sunlight coming through? Cause I think we
5 can have cloudy days where there will be shadow casts.

6 THE WITNESS: So we normally say if you
7 can see blue in the sky then model it as sunny.

8 MS. HUISMAN: Okay. Okay. That's all I
9 have for now.

10 MR. KAINS: All right. Very good.
11 Thank you, Madam Chair.

12 All right. Back to the audience, was there
13 anybody else that had questions for Mr. Anderson? I
14 can't see a portion of the room.

15 Thank you, Mr. Anderson. We don't want you
16 to cast a shadow. Sorry. Just can't resist dad
17 jokes. My kids just cringe.

18 All right. Are there questions from
19 Livingston County Staff and Consultants, Ms. Miller?

20 MS. MILLER: No.

21 MR. KAINS: No questions. Questions on
22 behalf of the Zoning Board of Appeals, Mr. Dluski?

23 MR. DLUSKI: Yes, I have some questions.

24

1 **CROSS-EXAMINATION,**

2 **QUESTIONS BY MR. TOM DLUSKI:**

3 Q. You indicate that Appendix B will show
4 the weather data. Can you bring that up.

5 A. I don't have the report in here. Would
6 you reference where that is.

7 MR. UPHOFF: It's at page 203 in the
8 addendum.

9 MR. DLUSKI: Oh, it's in the addendum?

10 MR. UPHOFF: Yes, it's in the addendum.

11 A. It's taken directly from city-data for
12 Herscher, Illinois, because Herscher is the most
13 conservative of the cities within the project
14 footprint on here. So the dark green line that says
15 city on that graphic shows that percentages of the
16 time in each month over the course of the year. So
17 January would be approximately 45, February would be
18 approximately 50 percent of the time it's sunny, etc.

19 Q. Okay. And what about the other, the
20 lighter part, what does that show?

21 A. Those are from city-data and they
22 represent some various U.S. averages for all the
23 cities of Livingston County.

24 Q. Okay. And you indicated you testified

1 on numerous occasions that it's based on decades worth
2 of weather data, correct?

3 A. Correct.

4 Q. So it's based on decades worth of
5 sunshine, decades worth of wind, decades worth of all
6 the weather, right?

7 A. Of this one station of this modeling,
8 yes.

9 Q. I'm assuming there's extreme weather,
10 correct?

11 A. I'm not sure.

12 Q. But there's lows of sunshine and highs
13 of sun?

14 A. Of course.

15 Q. So assuming that your actual model takes
16 the average case?

17 A. Yes.

18 Q. So in your model do you use any of the
19 information where it's the extremes, the high
20 percentage of sunshine in a year?

21 A. We do not. So the city-data does not
22 give the decades of information. We rely on the
23 average and assume that those averages will work
24 themselves out.

1 Q. So the flicker duration, that's the
2 average flicker duration based on the days worth of
3 data, correct?

4 A. It's the aggregate flicker duration
5 based on the average sunshine probability.

6 Q. So there could be some years worth when
7 it could be higher, correct?

8 A. It could.

9 Q. There could be some years when it could
10 be lower?

11 A. It could.

12 Q. So on some levels -- areas where it, for
13 instance, gets up to let's just say number 10, I think
14 that's the receptor you used, where it gets up to
15 26.65, that's an average, correct?

16 A. It's an --

17 Q. Aggregate?

18 A. It's an aggregate based on this
19 information.

20 Q. So when it's that close it's within the
21 3 and half hours in some years when it may be over
22 that 30 threshold, correct?

23 A. It's possible within the amount of
24 sunshine on average could increase in that given month

1 or months when it occurs, but it's equally possible
2 that maintenance may occur or wind speeds may be lower
3 or the turbine may not be operating.

4 Q. Sure. Everything is possible, correct?

5 A. Of course.

6 Q. With the model did you take global
7 warming into consideration?

8 A. I -- no. I can't -- we're not sure how
9 I would take it into consideration.

10 Q. And the different weather issues, was
11 that taken into consideration? So if the weather is
12 not being -- it's not as predictable as it was in the
13 past?

14 A. No, not in the sense that you're
15 referring, but the only thing that that would
16 ostensibly have an impact on would be the wind data
17 for how the turbine is being modeled and that is very
18 recent information.

19 Q. You would agree with me -- you
20 mentioned -- one of the terms that you mentioned -- or
21 two terms was conservative mechanisms, right?

22 A. Realistic conservative that was
23 described.

24 Q. And applying the city ordinance that

1 would be another even more conservative mechanism to
2 apply in the case, correct?

3 A. I would call that unrealistically
4 conservative, yes.

5 Q. With regards to the receptors, is there
6 any location -- is there any place in the application
7 where it identifies the aggregates for any of these
8 receptors?

9 A. The aggregates?

10 Q. Correct.

11 A. It does not.

12 Q. With regards to the monitoring of the
13 turbines is there any kind of -- is it possible to
14 have any kind of sensors on the actual towers to
15 determine the amount of flicker?

16 A. The -- if -- a sensor can be installed
17 on the turbine to monitor sunshine where that's then
18 conveyed into if it's sunny and if a shadow can occur
19 that it then aggregates a shadow flicker would be
20 occurring at the end of the receptor. That would be
21 installed on the turbine though.

22 Q. Okay. And would that be more accurate
23 to reflect the amount of flicker that would present on
24 the receptor as opposed to that sensor?

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A. Yeah, we've seen mixed results with those receptors. They can be pretty easily manipulated by things going by, just batteries dying, more of things like that. So whether it's more accurate or not would be difficult to say. We found more the conservative approach is just, like we mentioned, keeping track of wind flicker is even possible and if it's sunny assuming that flicker is keeping very accurate rather than trying to decapsulate the sensor.

Q. And how is that important just for a person observing that it's sunny outside and determining from 8:00 till 11:00 we're going to have to keep track of the sun and the flicker?

A. There are couple of many ways to do it. One potential way would be that we would know that on the Turbine X has the potential to cast a shadow on a certain receptor between a certain period of time. One way that I've seen that that is implemented in the past is if during that window let's say it's 8:00 until 8:32 in the morning, if it's sunny for any period during that morning and the turbine is spinning because the wind is blowing it would keep track and say okay that's 32 minutes today and that today 34

1 minutes, etc.

2 Q. So it would be subjective?

3 A. It would be subjective in a sense that
4 someone is determining the sun is shining.

5 MR. DLUSKI: Thank you. That's all the
6 questions I have.

7 MR. KAINS: Thank you, Mr. Dluski.

8 Questions on behalf of the County Board from
9 Mr. Keyt, Ms. Rives.

10 MR. KEYT: I have a few. I just want to
11 clarify a couple things from your testimony.

12 **CROSS-EXAMINATION,**

13 **QUESTIONS BY MR. ANDREW J. KEYT:**

14 Q. So tell me if this is correct, are you
15 asking -- well, are you asking for a variance to go
16 over the 30 hours of shadow flicker to any
17 non-participating residence or community building in a
18 given year, yes or no?

19 MR. UPHOFF: No, we are not.

20 MR. KEYT: Okay. Is that your
21 testimony?

22 THE WITNESS: It is.

23 **QUESTIONS BY MR. KEYT:**

24 Q. Okay. In terms of the definitions that

1 we've talked about what you're asking for a variance
2 on is the matter of degree; is that correct?

3 A. If by a matter of degree you mean the
4 amount of time that the sun is shining the model then
5 yes.

6 Q. No. Okay. In terms of the modeling
7 that is -- that you have proposed, in other words,
8 utilizing the historical averages of weather, is that
9 correct?

10 A. Yes.

11 Q. All right. The State statute reads the
12 county may site a wind tower or commercial wind energy
13 facility to be sited that the industry standard in
14 computer modeling indicates that any occupied
15 community building of or non-participating residence
16 will not experience more than 30 hours per year of
17 shadow flicker under planned operating conditions,
18 okay. Your then interpretation that you're asking the
19 county to utilize is that the industry standard
20 utilizes the historical average of weather and
21 sunshine, correct?

22 A. Yes, because that would reflect planned
23 operating conditions.

24 Q. Understood. Utilizing the GE turbines,

1 how many turbines are over that limit?

2 A. We measured by receptor, but with the GE
3 layout there are 17 in total of 30 hours per year.

4 Q. Okay. If you take what the -- okay.
5 And if you utilize the Vestas turbines how many
6 receptors are over that number?

7 A. 24.

8 Q. Okay. If you utilize the County's
9 definition and consider it to be always sunny how many
10 receptors are over the limit utilizing the GE model?

11 A. 46.

12 Q. How many are over the limit on the
13 Vestas?

14 A. 69.

15 Q. Okay. Regardless of whether you're
16 using the County's model or what you have defined as
17 the State's definition you're over the limit
18 regardless; is that true or false?

19 A. We have receptors exceeding 30, yes.

20 Q. Regardless of which definition you're
21 using; is that correct?

22 A. Correct.

23 Q. Okay. The point being is that you're
24 over the limit regardless of which definition you're

1 using; is that correct?

2 A. Correct.

3 Q. Okay. In terms of the locations of the
4 receptors, the locations of the receptors you have
5 listed lists what I believe are the I guess GPS
6 coordinates?

7 A. Correct.

8 Q. Okay. Can the Applicant provide the
9 addresses for those locations so that the county and
10 the public would know which receptors are over?

11 MR. UPHOFF: For the ones that are being
12 denoted as exceeding 30 hours?

13 MR. KEYT: Correct.

14 MR. UPHOFF: I believe it would be
15 possible for us to acquire addresses for all of those
16 receptor locations.

17 MR. KEYT: Okay.

18 Q. So then in terms of whether or not
19 you're compliant with either the assumption you have
20 provided or the County's planned operating conditions
21 then it becomes a matter how the County's going to
22 monitor the issue; is that correct?

23 A. Can you restate that.

24 Q. So, in other words, there are receptor

1 sites that are over regardless of which definition
2 you're proposing, true?

3 A. Yes.

4 Q. Okay. Then it becomes an issue you've
5 stated that the Applicant is not requesting a variance
6 to go over 30 hours of shadow flicker; is that true?

7 A. Yes.

8 Q. Okay. Then it becomes a matter of how
9 the County is going to monitor the issue; is that
10 correct? Let me ask it a different way, okay.

11 A. Okay.

12 Q. How is -- how would the County ensure
13 that the company is not going to exceed the 30 hours
14 of shadow flicker with any non-participating residence
15 or occupied community building? How would that occur?

16 A. Sure. I understand. There are varying
17 methods from pen to paper to software to determine how
18 often shadows are being cast on specific receptors and
19 those could be aggravated in any of those methods to
20 the exact same way that we've done here and determine
21 what the total hours per year would equal.

22 Q. So in terms of the software, what
23 software are you suggesting?

24 A. Well, we use the software called WindPRO

1 to do this, something similar to what we use here,
2 frankly, something as simple as Excel would accomplish
3 the same thing for that.

4 Q. Okay. Is there other monitoring systems
5 on the turbines themselves that can measure the shadow
6 flicker?

7 A. Not as they exist now, no.

8 Q. My understanding is that there are.
9 There are certain software systems or computer systems
10 that can monitor from the turbine itself in realtime.

11 A. Okay.

12 Q. So in realtime the data can be provided
13 to the County so that the County knows whether or not
14 any particular receptor would be over?

15 A. The certain source that you're referring
16 to would not provide that realtime in. So in a sense
17 that you're talking about as giving the County the
18 data, the exceeding of that would be more or less same
19 in either scenario.

20 Q. Okay. Understood. But the data could
21 be provided to the County?

22 A. In any of those situations, yes.

23 Q. So that the County would know in
24 actuality, not with your model but in actuality

1 whether there is some -- a receptor that is near the
2 limit and needs to have curtailment done or if a
3 receptor exceeds the limit?

4 A. Yes.

5 Q. All right. And I presume then the
6 Applicant is willing to provide that information to
7 the County so the County is aware and knows how --
8 what turbine might be or if a turbine went over; is
9 that correct?

10 MR. UPHOFF: We will provide any
11 required average flicker data for a particular
12 receptor, is that what you're asking?

13 MR. KEYT: Well, the actual number so
14 that the County would know -- in terms of shadow
15 flicker the actual number so the County would know
16 there are turbines being curtailed.

17 MR. UPHOFF: Certainly.

18 MR. KEYT: Okay. Understood.

19 Q. Let me ask one more. To be clear and
20 you've kind of said industry standard and 30 hours of
21 shadow flicker and other times you've said industry
22 standard is the considering realtime weather data.
23 But what you've asked for in terms of variance is just
24 a variance of the methodology of how it's being

1 measured, correct?

2 A. The methodology of how it's being
3 accumulated.

4 Q. Or modeled?

5 A. Modeled, yes.

6 Q. For the purposes of the application?

7 A. Correct.

8 Q. Are you asking for a variance as to the
9 operation once it's constructed?

10 A. There would be no way to manipulate
11 that. It's either sunny or it's not. So what is --
12 on a sunshine day would it be matters no more.

13 Q. Okay. Understood. But for clarity,
14 fair to say you're not asking for a variance to exceed
15 30 hours on any particular community building or
16 non-participating residence?

17 MR. UPHOFF: Since he's not an official
18 company representative that's why I'm answering for
19 him and that is correct. We are not seeking to exceed
20 30 hours for any particular receptor.

21 MR. KEYT: Okay. Understood. Thank
22 you.

23 MR. KAINS: All right. Thank you,
24 Mr. Keyt. Mr. Keyt, I recognize that you're an

1 attorney and not a witness, but we would like some
2 clarification, the Chair has a question for you.

3 MS. HUISMAN: Just taking into
4 consideration that we just wrote this ordinance and
5 we looked at this pretty thoroughly, I would say, is
6 there any way you could give us some guidance on what
7 industry standard computer modeling would be so that
8 we have something to use and reference and not just
9 the testimony of the Applicant?

10 MR. KEYT: It's hard to say, cause the
11 hard part -- the hard part is issue which is I don't
12 want to blame the State, but there is no definition in
13 the State statute as to planned operating conditions.
14 There is no definition in the State statute as to
15 industry standard as to what the computer modeling
16 would be. We could try to gather some information and
17 congregate it together in terms of what industry
18 standard might be but I'm not sure I'm going to have a
19 definitive answer as to what the State's intention was
20 in relation to industry standard. Whether there's a
21 person that can talk to, that I don't know. As I
22 think we would have the same answer. A person would
23 only be able to say my experience is this. I don't
24 think there's a person that could say the State's

1 definition is that because the State didn't define it.

2 MS. HUISMAN: Yeah, I -- still in our
3 consideration in all of that, if as they've testified
4 that this data is out there and, I mean, I would
5 assume the National Weather Service might be a source
6 of that, we haven't heard anything, but I would think
7 that Illinois would have some central method of what
8 our weather is and if they wanted to I guess limit
9 what counties could do they would have maybe been a
10 little more clear on what we could do. So as
11 Mr. Fannin, mentioned when we took this into
12 consideration we were just trying to make sure that we
13 were being as fair to participating and
14 non-participating residents in the footprint of any
15 project just like -- and so that might be an extreme.
16 We didn't define what wind speed would need to be
17 assumed, but then we're hearing that we're assuming
18 that it's a greenhouse and that, you know, windows on
19 all sides of the -- or all windows and no blocking at
20 all, which I don't think that exists in our county, I
21 don't think anyone lives in a greenhouse, but if they
22 do. So I just want something to that helps the Zoning
23 Board decide this ordinance that we just rewrote. Why
24 did we go this route and why would we change from it

1 right now.

2 MR. KEYT: Well, that's up to the Zoning
3 Board whether you grant that variance or not, but I
4 don't think we'll have much success in finding what
5 industry standard might mean in terms of the
6 definition because the State didn't do that, or
7 planned operating condition. But also keep in mind
8 their variance request ultimately is just a matter of
9 their read, using their definition or the County's
10 definition. So they're not asking for the variance to
11 be compliant with anything, they're asking for a
12 variance of a lesser degree of a violation. Now,
13 ultimately what impact does that have on the design or
14 operation operationally, it functionally doesn't have
15 an impact necessarily. So it just is -- then becomes
16 how the County would monitor information requires of
17 the County. But in terms of finding some definition
18 somewhere as to what industry standard might be, I'm
19 not sure we'll find that. Whether we can collect or
20 it, we can ask the Applicant to give us National
21 Weather Service data, the Zoning Board could easily do
22 that.

23 MS. HUISMAN: Okay. Okay. Thank you.

24 MR. KAINS: All right. Thank you, Madam

1 Chair.

2 All right. Questions for Mr. Anderson still
3 redirect, Mr. Uphoff?

4 MR. UPHOFF: Just briefly.

5 **REDIRECT EXAMINATION,**

6 **QUESTIONS BY MR. SETH UPHOFF:**

7 Q. So, Mr. Anderson, again, just to
8 clarify, you've got degrees in physics, mechanical
9 engineering and engineering management; is that
10 correct?

11 A. Correct.

12 Q. And you are a Licensed Professional
13 Engineer in the State of Illinois in addition to other
14 States; is that right?

15 A. Correct.

16 Q. And there are certain licensing criteria
17 that is required and so you have to either pass a test
18 or meet certain qualifications; is that correct?

19 A. Correct.

20 Q. And in order to keep up with that
21 licensure I'm assuming that there has to be either
22 some reoccurring education or reoccurring
23 certification; is that accurate?

24 A. Correct.

1 Q. And you've kept up with all of that
2 education and all the certification; is that correct?

3 A. That's correct.

4 Q. And you've got over 17 years of
5 experience in this particular industry; is that right?

6 A. Correct.

7 Q. And you've been -- and you've testified
8 before in hearings before in either zoning boards or
9 commissions on multiple occasions; is that correct?

10 A. Many times.

11 Q. And so --

12 MR. UPHOFF: I don't know that it's
13 required that I certify him as an expert, but,
14 Mr. Facilitator, based on his credentials I would ask
15 that Mr. Anderson be certified as an expert in his
16 field. He certainly has an understanding and
17 knowledge that exceeds that of a layperson. So given
18 that standard I would ask that he be certified as an
19 expert.

20 MR. KAINS: Mr. Dluski, do you have any
21 objection as to this witness being tendered as an
22 expert?

23 MR. DLUSKI: No.

24 MR. KAINS: Mr. Keyt, Ms. Rives?

1 MR. KEYT: No, as to what he's saying as
2 industry standard.

3 MR. KAINS: All right. He -- he will be
4 allowed to testify as an expert. His testimony shall
5 be considered that of an expert witness and he may
6 give opinions as an expert witness.

7 Mr. Uphoff.

8 MR. UPHOFF: Thank you.

9 **QUESTIONS BY MR. UPHOFF:**

10 Q. So, Mr. Anderson, in relation to the
11 studies that you conducted in this particular project
12 and the findings that you made, were those findings
13 and conclusions to a reasonable degree of certainty in
14 your field of study?

15 A. Yes.

16 Q. So based on the industry standards that
17 are applied for your industry, the reports and the
18 findings that you put together are in compliance with
19 those standards?

20 A. Yes.

21 Q. When you were asked before about relying
22 upon city-data, again city-data is the type of source
23 that's replied upon by experts in your field?

24 A. Yes.

1 Q. And when you were talking about some of
2 your conservative inputs and approaches to this you
3 were talking before about the fact that you take the
4 percentages from city-data in terms of the potential
5 percentage for sunshine and then you round all of
6 those up; is that correct?

7 A. Correct.

8 Q. So when Mr. Dluski was asking you some
9 of those questions about variation. First of all,
10 when you take a large amount of data and you aggregate
11 it over decades of time you're going to have highs and
12 lows, right?

13 A. Yes.

14 Q. But that's why you take a large amount
15 of data because it averages out or you end up with,
16 you know, means that you can use in order to make your
17 calculations; is that right?

18 A. Yes.

19 Q. You then took those and you rounded
20 those up; is that right?

21 A. Yes.

22 Q. So you were taking an even more
23 conservative approach so those highs were already
24 incorporated in there and then you went a little bit

1 higher?

2 A. Yes.

3 Q. All right. And then in terms of the
4 other conservative approaches you took when there were
5 some questions about what you called greenhouse mode
6 that's where you're considering that a house is
7 essentially made out of glass with no obstructions; is
8 that correct?

9 A. Yes.

10 Q. And you say that because if you have an
11 obstruction, for example, a barn which I think you
12 referenced before, at some point in time that barn
13 could be taken down, right?

14 A. Correct.

15 Q. So you don't want to have your model
16 rely just upon the fact that the barn is going to
17 always be there to block the shadow flicker, right?

18 A. Correct.

19 Q. And you can always add windows to a
20 home, right, you can add on a sun room or add on a
21 porch or something like that; is that right?

22 A. Yes.

23 Q. So those are what you're referring to as
24 realistic conservative adjustments that you were

1 making because you wanted to level the playing field
2 and you wanted to take out all the obstructions and
3 assume that there was potential that could be extra
4 windows on the house?

5 A. Correct.

6 Q. And you even talked about how you in
7 terms of the terrain you elevate the turbine height;
8 is that correct?

9 A. We did a turbine specifically at the --
10 on the terrain where we expect it to be in practice,
11 the turbine adjustment made for that. So those are
12 turbines are placed at a higher elevation meaning
13 their shadow can cast further and so we make sure to
14 account for that.

15 Q. Okay. So you account for that as well.
16 And you then also, like you said, I think you said 10
17 X, that shadow like which you said would also not
18 realistic but was conservative to allow for a greater
19 shadow reach; is that right?

20 A. Correct.

21 Q. Did you input all those conservative
22 models you modeled already you talked at the maximum
23 potential for what shadow flicker could be experienced
24 at that particular receptor site?

1 A. Yes.

2 Q. But when it comes to the 100 percent
3 sunshine you indicated that the non-realistic
4 expectation because under any of the scenarios is
5 that's not going to occur; is that right?

6 A. Correct, rain, full cover, etc.

7 Q. Okay. So as an experienced expert in
8 your field when using computer modeling is the
9 industry standard to use realtime aggravated weather
10 data?

11 A. Yes.

12 Q. That's the industry standard as you
13 understand it as an expert in your field?

14 A. Yes.

15 Q. Okay.

16 MR. UPHOFF: Those are my questions.

17 MR. KAINS: All right. Thank you,
18 Mr. Uphoff.

19 Final questions for this witness come from
20 members of the Livingston County Zoning Board of
21 Appeals? All right. Very good.

22 Mr. Anderson, thank you.

23 Ma'am, your time has come and gone, I'm
24 sorry. We're going to need to move on.

1 Mr. Anderson, thank you. You may step down.

2 (Witness excused.)

3 MR. KAINS: All right. Mr. Uphoff, do
4 you have any other witnesses that you wish to call
5 with respect to the issue of computer modeling of
6 shadow flicker?

7 MR. UPHOFF: No additional witnesses,
8 but because of the way in which we proceeded last
9 night, Mr. Graeme Agate testified and his testimony
10 referenced the planned operating conditions put in
11 place by an operating company and so I would ask to
12 adopt his testimony for purposes of the variance
13 hearing.

14 MR. KAINS: Mr. Dluski, do you have any
15 objection to the adoption of Mr. Agate's testimony
16 from last night with respect to the issue of shadow
17 flicker?

18 MR. DLUSKI: I have no objection.

19 MR. KAINS: Mr. Keyt, Ms. Rives, any
20 objection?

21 MR. KEYT: No objection.

22 MR. KAINS: Okay. The testimony given
23 last night of Mr. Agate with respect to his overview
24 of shadow flicker and that testimony will be adopted

1 in this particular case, the variance case number
2 V-3-24.

3 All right. Then, Mr. Uphoff, do you have any
4 other witnesses with respect to computer modeling
5 shadow flicker?

6 MR. UPHOFF: No, not in relation to that
7 issue in the variance.

8 MR. KAINS: All right. Now, folks, in
9 the audience. This is a specific, do you have anyone,
10 I just want to see a show of hands, does anyone have
11 any testimony they wish to offer with respect to the
12 very limited issue of computer modeling of shadow
13 flicker? I don't see any hands, so thank you. I
14 didn't think so, but the rules say you've got to give
15 everybody a chance to offer testimony on a particular
16 issue.

17 All right. Then, Mr. Dluski, Mr. Keyt,
18 Ms. Rives, any witnesses that you wish to call with
19 respect to this very limited issue on the variance of
20 computer modeling or shadow? Mr. Dluski?

21 MR. DLUSKI: No.

22 MR. KAINS: No.

23 MR. KEYT: No, sir.

24 MR. KAINS: No. All right. Very good.

1 All right. Then I think it would be
2 appropriate now to close the evidence with respect to
3 the variance petition, case number V-3-24.

4 All right. Then, Mr. Uphoff, I think it
5 might be appropriate for you to reserve argument on
6 this until such time as we have a final closing
7 statement, if that would be all right with you.

8 MR. UPHOFF: That's fine.

9 MR. KAINS: Okay. Very good. All
10 right. So now this is all procedural, folks, because
11 we have two cases, a variance and the special use
12 permit for the citing and establishment of the wind
13 project.

14 We will now go back to the special use case,
15 case number SU-5-24 the siting and establishment of
16 the wind farm itself, the 71 turbines located on
17 12,000 plus acres of private land located within the
18 confines of Livingston County, Illinois.

19 So now we're back on the record on that case.

20 Mr. Uphoff, do you have a motion with respect
21 to the testimony of Mr. Anderson as it relates to this
22 case?

23 MR. UPHOFF: Yes. As it relates to the
24 application for special use I would ask to adopt the

1 testimony that was just given by Mr. Anderson.

2 MR. KAINS: All right. Very good. Any
3 objection, Mr. Dluski?

4 MR. DLUSKI: No objection.

5 MR. KAINS: Any objection, Mr. Keyt,
6 Ms. Rives?

7 MR. KEYT: No.

8 MR. KAINS: All right. Very good. The
9 testimony of Mr. Anderson that was just given in case
10 number V-3-24, the variance case is adopted and will
11 be part of the case SU-5-24, the special use permit.

12 Boy, lawyers can take something simple and
13 make it complicated, but we have to make sure that
14 it's clear and -- cause you never know what's going to
15 happen at the next level.

16 All right. Then I think it would be
17 appropriate now to take a 15 minute recess. It is
18 7:42 p.m. We will come back and start again with the
19 testimony continuing from the Applicant at 7:57 p.m.,
20 in this room.

21 The Zoning Board of Appeals is in recess.
22 Thank you.

23 (A recess was taken at 7:42 p.m.)

24 (Resume at 7:59 p.m.)

1 MR. KAINS: All right. We'll go back on
2 the record now. All right. We are continuing with
3 case number SU-5-24, the actual wind energy project
4 siting case.

5 Mr. Uphoff, procedural matter first.

6 MR. UPHOFF: Yes. I apologize. I
7 didn't lay this out at the outset, but we provided to
8 each of you an update packet for your binder tonight.
9 So there is a white binder that you were provided last
10 night that has a table contents and has tabs, we
11 provided you with a new table of contents that updates
12 with the additional information we're hoping to
13 present tonight with those additional pieces of
14 information, put them in a stack separated by green
15 divider sheets. So as we go through those you can put
16 them into corresponding tabs. If you look at the
17 table of contents it should be pretty clear which item
18 it's referencing and what tab it goes with. My
19 apologies for not laying that out before but that's
20 the order that we're hoping to go through tonight.
21 However, we did go a little out of order because Tab
22 Number 4 and -- 3 and 4 we didn't get to last night,
23 we're going to come back around on those at a later
24 hearing, we had to go out of order with our witnesses

1 due to scheduling conflicts. Additionally, we're
2 going to go a little bit out of order right now
3 because we have a local witness who has limited
4 availability. So we're going to have her testify now
5 and once she's done testifying then we'll move on to
6 testimony from Erin Bowen from Cohn Reznick who's
7 going to testify in relation to the property value
8 impact study. Again, you'll see her denoted on the
9 table of contents and the information she's going to
10 be providing is both PowerPoint and then study that
11 will go in two of the tabs that you have there.

12 So with that I'd ask to call Marla Kinkade of
13 the Village of Dwight.

14 MR. KAINS: All right. Thank you,
15 Mr. Uphoff.

16 Ms. Kinkade, if you can come up to the podium
17 up front. Good evening.

18 THE WITNESS: Good evening.

19 M A R L A K I N K A D E,
20 was called as a witness on behalf of the Applicant
21 and, having been first duly sworn, testified as
22 follows:

23 MR. KAINS: Very good. Thank you.
24 Would you please state your name spelling first and

1 last names for the record.

2 THE WITNESS: Marla Kinkade, M-A-R-L-A,
3 K-I-N-K-A-D-E.

4 MR. KAINS: K-A-D-E. All right. Very
5 good.

6 All right. Mr. Uphoff, you may question your
7 witness.

8 MR. UPHOFF: Thank you. First of all,
9 Ms. Kinkade, I know it's hard, you're not used to
10 doing this, could you get right up on that microphone.

11 **DIRECT EXAMINATION,**

12 **QUESTIONS BY MR. SETH UPHOFF:**

13 Q. If you could, please, introduce -- I
14 know you've given your name, but please introduce
15 yourself and tell us a little bit about you and your
16 role in the Village in the Dwight.

17 A. My name is Marla Kinkade. I've been a
18 resident of Dwight pretty much my entire life and in
19 the last 14 years I've been a trustee.

20 Q. And in your role as the village trustee
21 have you had an opportunity to have some interactions
22 with the Applicant here which would be Illinois
23 Generation, LLC which has components from both Pattern
24 Energy and ConnectGen now known as Repsol?

1 A. I have. We have had some meetings with
2 some -- maybe three kinds of meetings and then one
3 just a meeting with the Village Board and we have just
4 talked with them, met with them over different things
5 with them.

6 Q. And the Village of Dwight actually after
7 those hearings entered into an agreement with the
8 project; is that right?

9 A. We did, we did enter into agreement.

10 Q. And just if you could tell us the basics
11 of that and why you believe the Village entered into
12 that agreement.

13 A. Well, we believe that will help out the
14 Village out in the long run and provide inversely to
15 our schools, our libraries and fire our districts.
16 It's not a very rich town so I think that money will
17 help programs within those, it will help bring more
18 machinery to the fire department, ladders, you know,
19 fires hoses and things like that we can't necessarily
20 afford by the Village of Dwight. And then they also
21 have been a good community partner. Even though they
22 haven't started any construction they've already
23 donated a score board to one of our baseball teams and
24 then we are getting some upgrades in the park because

1 of their donations for the community.

2 Q. And that would be also interactive in
3 terms of sponsoring some events there around Dwight?

4 A. Oh, extremely interactive. They did
5 sponsor our Christmas, our downtown Christmas last
6 year so they've been very helpful with that. Anything
7 we ask. We had a resident that had asked they move a
8 tower, that they would be more happy if that were
9 directed just a little bit further away from where
10 their home was. Anything asked they've been very
11 helpful, always on the ball with getting their stuff
12 done.

13 Q. And were you sent here on behalf of the
14 Village Board to speak on behalf in your official
15 capacity?

16 A. I was.

17 Q. Okay.

18 MR. UPHOFF: Those are my questions.

19 MR. KAINS: All right. Very good.

20 Thank you. And thank you, Ms. Kinkade.

21 All right. Questions for Ms. Kinkade about
22 her testimony first from members of the Livingston
23 County Zoning Board of Appeals. All right. Very
24 good.

1 Questions from members of a units of local
2 government, including school districts, and County
3 Board members? All right. Very good.

4 Questions from interested parties represented
5 by licensed attorneys?

6 Questions from interested parties, members of
7 the public about Ms. Kinkade's testimony? Yes,
8 Mr. Kulasik.

9 MR. KULASIK: Did you say you were a 14
10 year trustee with the Board?

11 THE WITNESS: Correct.

12 MR. KULASIK: And you're here in your
13 official capacity?

14 THE WITNESS: Correct.

15 MR. KULASIK: What date was the first
16 date you met with this company concerning the wind
17 farm?

18 THE WITNESS: Oh, I don't remember the
19 exact specific date. I would have to look through my
20 board notes to actually give you that date. It's been
21 over a year that we've met. It's been at least a year
22 that we met with them.

23 MR. KULASIK: So prior to 2023 you knew
24 this project was going to happen?

1 THE WITNESS: I believe it was in 2023.

2 MR. KULASIK: That's the first you heard
3 of them?

4 THE WITNESS: Again, I can't speak to
5 the date because I do not remember. I've had a lot of
6 board meetings and I can't give you an exact date on
7 that.

8 MR. KULASIK: Okay. Now, you made
9 reference that this company had two public hearings
10 with the Village of Dwight?

11 THE WITNESS: We did have two public
12 hearings, correct.

13 MR. KULASIK: And then you also
14 mentioned you had a meeting with the Board and the
15 company?

16 THE WITNESS: Well, they were but it was
17 a Village Board meeting and they were there presenting
18 them and after that we had our public hearing.

19 MR. KULASIK: I just wanted to be clear
20 cause it also sounded like it was an exclusive
21 meeting?

22 THE WITNESS: No, not exclusive.

23 MR. KULASIK: Okay. This company has
24 already given gifts to the Village?

1 THE WITNESS: Correct, they have.

2 MR. KULASIK: Was that in exchange for
3 your support?

4 THE WITNESS: No, it was not in exchange
5 for our support.

6 MR. KULASIK: Do you feel it was in
7 exchange for your support?

8 THE WITNESS: I do not feel it was in
9 exchange for our support.

10 MR. KULASIK: So no quid pro quo was
11 done?

12 THE WITNESS: No.

13 MR. KULASIK: Okay. I'm sorry, but my
14 mind just went blank. So I'm trying to reset.

15 MR. KAINS: That's all right,
16 Mr. Kulasik, take your time.

17 MR. KULASIK: As far as you said it's
18 going to bring the taxes to the schools, library, fire
19 districts, is that a reason for the support of this?

20 THE WITNESS: It is a reason to support
21 it because as our town ages, we need the fire
22 district, we need those sort of things, and then we
23 have the younger generation that we lack an area in a
24 small town. So having a library and then having some

1 funds to actually put on little community events or
2 some craft nights not only for children but also for
3 adults is something that is beneficial to the town.

4 MR. KULASIK: Also a clarification,
5 there I believe is a 1.5 mile limit that these wind
6 turbines are supposed to be located from a village
7 boundary?

8 THE WITNESS: Correct.

9 MR. KULASIK: And Dwight decided to
10 waive that?

11 THE WITNESS: We did.

12 MR. KULASIK: Okay. Was there any other
13 input on that?

14 THE WITNESS: We did have a public
15 hearing, we did have input on it. I couldn't speak to
16 exactly what was said because I do not remember at
17 this time. The reason being I could not tell you why
18 we did that.

19 MR. KULASIK: No type of a lawsuit by
20 property owners?

21 THE WITNESS: No, I have not heard of
22 any lawsuits by property owners.

23 MR. KULASIK: Okay. And you said this
24 is going to bring jobs to the Village of Dwight.

1 THE WITNESS: Oh, I don't know if it
2 will bring jobs. They might have a location there. I
3 do know that it could bring money to the Village of
4 Dwight of people staying when building them, it could
5 help the tourist revenue, the restaurant revenue. I
6 can speak, for example, when the original owners came
7 in a year ago, a different company my father owned a
8 welding company, it did benefit his company.

9 MR. KULASIK: Did the Village make any
10 deals or what not with the wind farm company as to not
11 locate any wind turbines along Illinois 47 on the east
12 side of 47 north of 3100?

13 THE WITNESS: I can't speak of any deals
14 that were made. I do know that we asked them to move
15 a little further off of 47, but not as far as where we
16 made a deal if you do this we do that sort of thing.

17 MR. KULASIK: Okay. Okay. Thank you.

18 MR. KAINS: All right. Thank you.
19 Thank you, Mr. Kulasik.

20 Any other questions from members of the
21 audience? Yes, sir. Sir, could you please -- could
22 you please state your name.

23 MR. BOBER: My name is Austin Bober and
24 I reside in Dwight at 2016 West Delaware Street.

1 MR. KAINS: Okay, Austin, how do you
2 spell your last name?

3 MR. BOBER: B-O-B-E-R.

4 MR. KAINS: Oh, okay. Very good. All
5 right. Go right ahead with questions for Ms. Kinkade.

6 MR. BOBER: When was the public hearing
7 for this held in Dwight?

8 THE WITNESS: Again, I couldn't give an
9 exact date just because I've got a lot of meetings and
10 I don't know the exact date it was. I don't want to
11 speak to a mistruth so I'm not going to give a date,
12 but we did have two public hearings for it.

13 MR. BOBER: Was there any mailings for
14 any of it?

15 THE WITNESS: They're always on our
16 website, always posted on our website. There's always
17 an agenda always and it's all posted always on the
18 record what will be on there and we do have to post in
19 the paper that it is a public hearing so it would have
20 been in on the online paper and probably the Daily
21 Leader, but, again, I cannot speak to that because I
22 do not know.

23 MR. BOBER: Okay. And I will say I
24 never saw anything about it in the paper, completely

1 in the dark about it, didn't know nothing about it.
2 And we're talking about money for fire department,
3 we're not talking about a whole lot of money. We're
4 talking about -- what is that, 6 million dollars over
5 the course of the project which is at least 30 years,
6 so it would be ten grand a year.

7 MR. UPHOFF: Objection. Is he asking a
8 question?

9 MR. BOBER: I'm just putting that out
10 there.

11 MR. KAINS: Hang on, Mr. Bober. There's
12 an objection to your question. It's not a question.
13 I would sustain the objection. And, Mr. Bober, if you
14 could just ask her questions. You'll have time to
15 testify about anything with respect to the fire
16 protection district and any money that may be coming
17 in, you'll have that opportunity.

18 MR. BOBER: Okay. That's all for now.

19 MR. KAINS: All right. Very good. All
20 right. Thank you, sir.

21 Any other questions for Ms. Kinkade from
22 members of the public?

23 All right. Questions for Ms. Kinkade from
24 Livingston County Staff and Consultants, Ms. Miller?

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MS. MILLER: No.

MR. KAINS: No questions. All right.
On behalf of the Livingston County Zoning Board of Appeals, counsel, Mr. Dluski?

MR. DLUSKI: No questions.

MR. KAINS: All right. And on behalf of the County Board. No questions. All right. Very good.

Any redirect examination from you, Mr. Uphoff?

MR. UPHOFF: No, sir.

MR. KAINS: No. All right. Then final questions for the witness come from members of the Zoning Board of Appeals. Very good.

Ms. Kinkade, thank you for your testimony. You may step down.

(Witness excused.)

MR. KAINS: All right. Mr. Uphoff, call your next witness.

MR. UPHOFF: Thank you. At this time we'd could Erin Bowen.

ERIN BOWEN,

was called as a witness on behalf of the Applicant and, having been first duly sworn, testified as

1 follows:

2 MR. KAINS: All right. Could you please
3 state your name spelling first and last names for the
4 record.

5 THE WITNESS: Erin Bowen, E-R-I-N,
6 B-O-W-E-N.

7 MR. KAINS: All right. Very good.
8 Mr. Uphoff, you may proceed.

9 MR. UPHOFF: Thank you. Again, the
10 materials that Ms. Bowen will be covering were put in
11 the -- that were presented at the beginning of the
12 evening, there should be a PowerPoint presentation
13 followed by some studies that were -- or a study that
14 was created for the specific site. Additionally, in
15 the application that was presented to the County there
16 was a more comprehensive study that was conducted by
17 CohnReznick and that was submitted along with the
18 application and it's located at Appendix V, as in
19 victory. And so there may be some occasions during
20 Ms. Bowen's testimony where she'll be referencing that
21 property value in that report located in Appendix V.

22 **DIRECT EXAMINATION,**

23 **QUESTIONS BY MR. SETH UPHOFF:**

24 Q. So with that, Ms. Bowen, would you

1 please -- I know you stated your name, but please
2 introduce yourself and credentials to the ZBA.

3 A. Of course. Good evening. My name is
4 Erin Bowen. I work at CohnReznick. We are a part of
5 a valuation advisory services. I am a certified
6 residential appraiser. I'm an MAI designated
7 appraiser and a property value expert. At CohnReznick
8 we specialize in property value impact analysis.
9 Personally I have studied the effects of external
10 influences including landfills, behavioral health
11 facilities, concert venues, cell towers, as well as a
12 variety of other potential impacts on adjacent
13 property values. Specifically over the last five or
14 six years at CohnReznick we have studied the potential
15 impacts that wind farms may have on adjacent property
16 values.

17 MR. KAINS: Ms. Bowen, if you could,
18 please, just raise the microphone just a little bit.
19 Okay. Thank you.

20 THE WITNESS: I also work alongside
21 Andrew Lines, he is coauthor of this report and
22 together our research covers the proximity to wind
23 farms and whether or not they impact property values.

24 We approached this question three-fold.

1 First which is to research public for -- excuse me,
2 research academic published literature. The second of
3 which is to perform our own compared sales analyses,
4 and finally, third approach is to conduct market
5 specific interviews with County and Township
6 inspectors to have wind farms in their districts.

7 I mentioned academic literature that exists
8 out there but this represents regression analysis
9 using hundreds of thousands of data points and -- of
10 which there are at least 14 studies in the North
11 America that have covered wind farms and have effects
12 on property values, 5 of which are in the State of
13 Illinois itself. These studies have been published
14 initially since 2003 going up to 2016. The
15 overwhelming rules of these studies finds that there
16 is no statistical evidence that wind farms decrease
17 properties values.

18 I also mentioned that CohnReznick performs
19 their own case studies. We are property appraisers
20 and we use the methodology outlined in the Appraisal
21 Institute Tax Book, Real Estate Damages wrote by
22 author Randy Bell. In this text Dr. Randy Bell writes
23 that if a legitimate detrimental condition exists,
24 there will likely be a measurable and consistent

1 difference between the two sets of market date; if
2 not, there will likely be no significant difference
3 between the two sets data. Simply put, if there is an
4 affect you'll be able to measure it and be able to
5 measure it more than once.

6 To conduct the study you need to identify a
7 test area and that is a group of sales that are
8 located adjacent to an existing wind farm and compare
9 that to a group of control sales. So as a group of
10 otherwise similar properties not located adjacent to
11 an existing wind farm. To conduct our studies we
12 identified existing wind farm and surveyed the
13 entirety of the wind project to identify any
14 transactions that have occurred after the construction
15 of the wind farm that sold to non-participating
16 parties that were not distressed, there was no
17 foreclosures or short sales and that were not sold by
18 participating landowners, and then the effort was made
19 to identify potential participating landowners and
20 were excluded from this analysis. So we're looking at
21 homes generally speaking greater than 1,000 feet from
22 turbines up to about 2 miles but generally within that
23 one mile distance from the home to turbine. We
24 compare this to controlled sales that are similar in a

1 variety of aspects, including size, year built, land
2 size, year of construction and an area did not contain
3 wind turbines generally speaking greater than 3 miles
4 from a turbine. We also are looking at similar market
5 conditions within 18 months of the test property sale
6 and we're also looking at any foreclosure, short
7 sales. Our analysis has indicated there's been no
8 quantifiable consistent detrimental impact measured on
9 the test area property with regard to such market
10 elements, including range of sale places, unit sale
11 prices or price per square feet, the time on market or
12 days on market, overall marketability or the rate of
13 depreciation.

14 I'd like to highlight one study that we
15 conducted in Kankakee County the Pilot Mill Wind Farm
16 over 15,000 acres that were completed in 2015. We
17 surveyed the entire 15,000 acres and identified any
18 transaction that occurred within approximately 1 mile
19 of any turbine. We identified multiple transactions
20 that occurred and grouped them together with similar
21 characteristics. So if there were homes that had
22 similar sizes and year of construction we grouped them
23 together. The first group we had 3 test sales that
24 were considered similar, they had an average price per

1 square of \$133 a square foot and we were able to
2 compare that to 7 controlled sales that had an average
3 price per square foot of \$132.76 per square foot. The
4 table below the picture shows the property
5 characteristics including living space, the lot size,
6 year built.

7 The next group that we surveyed had one test
8 sale and was compared in 10 controlled sales. The
9 difference between the price per square foot of the
10 test sales -- control sales was less than one percent.
11 The home was within visibility of multiple wind
12 turbines and I'm not quite sure of the closest
13 distance on this one but I believe it's about 1,900
14 square -- or 1,900 feet.

15 And then finally the third group identified
16 in this Pilot Hill Wind Farm, we had the one test sale
17 and compared it and in this particular case the test
18 sale sold approximately 7 percent higher than the
19 identified controlled sale. And then we conduct this
20 on multiple existing wind farms so we're demonstrating
21 that there's no consistent trend across not just one
22 wind farm but multiple.

23 We have studied Pilot Hill Wind Farms, Kelly
24 Creek, Camp Grove, etc., etc., most of these are

1 located in Illinois, but a couple of these are
2 actually located in Iowa, I believe that's the Adair
3 Wind Farm and Eclipse Wind Farm, but the rest of these
4 are all located in Illinois.

5 Some difference between the test data and the
6 control data is 1.85 percent indicating there is no
7 consistent negative trend from the test sales to the
8 control sales.

9 Finally, I mentioned that we conduct market
10 participant interviews. We call and interview County
11 Assessors who have wind farms in their jurisdiction,
12 we ask them if they have tracked any trends of homes
13 that have sold, they notice any trends at all. We
14 also ask if they have changed their methodology in
15 which they assess properties that are adjacent to wind
16 farms and we also ask if they have been requested by
17 homeowners to reduce their assessed values and have
18 granted to them as such. And by and large the
19 resounding response to these questions have been no.

20 We have spoken with Shelly Renken in
21 Livingston County in which there is the wind farm in
22 Cayuga, Ridge South Wind Farm and she reported that
23 the potential impact has always been concern but
24 there's no documentation that shows that that's

1 happening, the values have gone up or down as a result
2 of being a wind farm, that that has not occurred. We
3 have conducted these interviews with a number of
4 assessors in Illinois as well as other States as well.

5 In conclusion, our results are based off of
6 our extensive research of our own compared analyses
7 and they've been corroborated by the active literature
8 that exists as well as our interviews with assessors
9 and we have found that there's no consistent negative
10 impact that has occurred on the adjacent property
11 values that could be attributed to proximity to the
12 adjacent wind farm and the bulk of our research is
13 within Illinois itself, including the published
14 academic literature and the assessors that we have
15 spoken with.

16 MR. UPHOFF: Thank you, very much. No
17 further questions.

18 MR. KAINS: Oh, okay. Very good. All
19 right.

20 Questions for Ms. Bowen from members of the
21 Zoning Board of Appeals?

22 MS. HUISMAN: I've got just a couple. I
23 notice that the results show no difference in value,
24 but what about time on the market?

1 THE WITNESS: Are you asking on how long
2 a property's been listed for sale?

3 MS. HUISMAN: Yeah. If there's a way to
4 measure that, would you consider that impact on market
5 value?

6 THE WITNESS: Yes. We do measure that
7 and it's contained in our larger general report which
8 I believe is Exhibit V, as in Victor, so every time
9 we're referencing one of those groupings of test sales
10 we also talk about the overall time on market. For
11 both the properties that have sold in the test area as
12 well as the control sales, and I want to see if I can
13 find the example of that date on the market
14 information in my report, I'm not sure I can do that
15 as we speak, but, yes, we do track that and generally
16 speaking the dates on market is within the range of
17 the control sales. So there is not an increased time
18 on market to bind the buyer.

19 MS. HUISMAN: So this is just a
20 procedural question here too, what's in Tab V, is that
21 replaced with what you gave us tonight?

22 MR. UPHOFF: No. There's supplements.
23 They're both provided in the application. There was a
24 main report and then an addendum report. So the main

1 report is at Appendix V and then I think the addendum.
2 Well, the addendum we provided to you in your binder
3 book is also included in the application addendum or
4 if it's one of the adds in your original application,
5 I would have to check.

6 THE WITNESS: The main report is I
7 believe nearly 120 pages long and includes all of the
8 data of those ten studies that I referenced.

9 MR. UPHOFF: They're actually in both
10 Appendix V. So in Appendix V first will be the more
11 property value impact report and then immediately
12 following that still within Appendix V is the site
13 specific addendum.

14 MS. HUISMAN: Okay. What you gave us
15 tonight?

16 MR. UPHOFF: The site specific addendum,
17 it's just a copy of what's already in the ladder half
18 of Appendix V.

19 MS. HUISMAN: Okay. Okay. And then I
20 just noted in the test sale area we've got one
21 property, one property, but our controlled sale area
22 has a lot more properties.

23 THE WITNESS: Correct. And our
24 methodology is to identify the characteristics of the

1 test property, and so if it's a 1970's tract home we
2 are comparing it to all 1970's tract homes that are in
3 the control area or greater than 3 miles away, we're
4 not excluding any control sales, we're including all
5 that information, or if there -- you know, this is a
6 farmstead that was built in the 1900's on 5 acres
7 we're comparing it to all similarly constructed
8 farmsteads on similar acreage. We're not excluding
9 any controlled sales from our grouping.

10 MS. HUISMAN: Okay. And this also just
11 measures homes that actually sold?

12 THE WITNESS: Correct.

13 MS. HUISMAN: So it could be others were
14 for sale in those areas but they were not -- but they
15 didn't sell in your window, they're not included?

16 THE WITNESS: So what we do is identify
17 a study, for example, the Pilot Hill was completed in
18 2015 and depending on when we first did the study, I
19 believe it was last year, maybe the year before, so
20 the number of years after completion and we identified
21 over that timeframe after the completion, 2015 to when
22 we do the study any and all property that sold since
23 then.

24 MS. HUISMAN: Okay. All right. Thank

1 you.

2 MR. KAINS: All right. Any other
3 questions from members of the Zoning Board of Appeals?
4 All right. Very good.

5 Members of units of local government,
6 questions for Ms. Bowen?

7 Questions from interested parties represented
8 by licensed attorneys?

9 Questions from the general public regarding
10 Ms. Bowen's testimony? Yes, Mr. Christopher.

11 MR. CHRISTOFF: Can you hear me okay.
12 So it -- like your studies look at primarily housing;
13 is that right? Housing; is that right?

14 THE WITNESS: Yes. We look at
15 residential transactions as well as I believe accurate
16 controlled land transactions. I don't think there
17 were any added land transactions in any of these
18 farms, but we do look for that. We don't study any
19 commercial properties though.

20 MR. CHRISTOPHER: That was kind of my
21 question. Did you study and did you look at any
22 studies that farmland values might be impacted?

23 THE WITNESS: Yes. We have found
24 similar results that farmland is not likewise

1 impacted.

2 MR. CHRISTOFF: All right. Do you have
3 the results of those somewhere?

4 THE WITNESS: I might.

5 MR. CHRISTOPHER: Are these slides
6 available to the public, cause there's a lot of data
7 there. And I wonder if they could be downloaded
8 somewhere. Are they on the website that you mentioned
9 earlier?

10 MR. UPHOFF: Yes. These reports that
11 she's referencing are on the website. They would be
12 listed under Appendix V, as in Victor.

13 MR. CHRISTOFF: Okay. That's it. Thank
14 you.

15 MR. KAINS: All right. Thank you
16 Mr. Christopher. Okay. Ma'am. Bring the microphone
17 down just a little bit. There you go. Thank you.

18 Could you please state your name and address.

19 MS. RUSSOW: Julie, J-U-L-I-E, Russow,
20 R-U-S-S-O-W. My question is a few years ago there
21 were -- on the home market there were more buyers than
22 property available for sale. I believe this is still
23 ongoing, and if so, would you agree that this would
24 have an effect on the results that you're reporting?

1 THE WITNESS: That's a good question.
2 We have considered -- excuse me, considered market
3 trends and that, you know, currently we're in a, you
4 know, situation where there are more buyers than there
5 are homes available. A lot of our transactions are
6 occurring in this current climate but also in times
7 where it was at more than equilibrium in 2015, 2016,
8 2017, and as we are looking at the market conditions
9 that those homes sold in so we are looking at every
10 point of a market life cycle and we haven't found an
11 impact regards the timing of the market circle.

12 MS. RUSSOW: Okay. So your findings
13 aren't -- since '21, '22, '23?

14 THE WITNESS: Correct. We have results
15 from 2015, 2016, 2017.

16 MS. RUSSOW: I would think those would
17 considered be outdated, but that's just a testimonial
18 comment. Thank you.

19 MR. KAINS: All right. Thank you,
20 Ms. Russow.

21 Any other questions for Ms. Bowen from the
22 public? Mr. Kulasik.

23 THE WITNESS: I also want to point out
24 the academic literature has been published starting

1 since 2003 so they attract sale prices over the last
2 20 years. So longer than the studies that we have
3 done directly at CohnReznick.

4 MR. KAINS: All right. Very good.
5 Thank you.

6 All right. Mr. Kulasik, questions for
7 Ms. Bowen.

8 MR. KULASIK: In your studies, in your
9 tests have you ever found any of them to have gone for
10 less than market value?

11 THE WITNESS: We have found that there
12 has been a lower than zero percent, and I believe --

13 MR. KULASIK: In that one case where
14 it's --

15 THE WITNESS: If you look at the third
16 from right column we do indicate there are some
17 transactions in which the test sale price per square
18 foot is slightly lower than the control data and, you
19 know, that's simply never quite controlled for
20 everything, you know, it's not a perfect market in
21 which every -- you know, you've got a, you know,
22 farmstead property on such and such acres that was
23 built at such and such time which you have enough
24 control data that perfectly calculates that compared

1 for looking for specific -- a specific trend that
2 would demonstrate a negative trend in which we have
3 not identified that, and so, yes, we have seen cases
4 in which there is a slight negative, but overall we're
5 not seeing a trend in that direction.

6 MR. KULASIK: Okay. How many cases have
7 you studied in Livingston County since Livingston
8 County has had wind turbines?

9 THE WITNESS: I believe that the Top
10 Crop Wind Farm we have studied in which a portion of
11 the turbines are located in Livingston County. So
12 that would be one that we identified and we have
13 included other studies that are adjacent.

14 MR. KULASIK: I'm just saying in
15 Livingston County, how many specific cases have you --

16 THE WITNESS: One.

17 MR. KULASIK: Just one?

18 THE WITNESS: Yes.

19 MR. KULASIK: And I just want to --
20 confused. Doesn't take much. You said there is no
21 documentation provided by the Assessor's Office of
22 Livingston County whether this is trending up or down;
23 is that correct?

24 THE WITNESS: I want to make sure that I

1 have that quote.

2 MR. KULASIK: I just want to -- when you
3 say no documentation, in other words, there's
4 nothing -- there's no documentation shows -- so, in
5 other words, there's no record of this happening or
6 you're not seeing it or --

7 THE WITNESS: So the quote from the
8 Livingston County Assessor says there's no
9 documentation that shows that's happening, that values
10 have gone down or up as being near a wind farm. So
11 based off of the Livingston County Assessor's
12 information to the data she does not have any
13 documentation personally. And based off of my
14 research of other documents besides myself of all the
15 academic literature there's no accepted documentation
16 that suggests there's a negative impact.

17 MR. KULASIK: Okay. So would it be a
18 fair thing to say that the Livingston County
19 Supervisor of Assessments has no documentation showing
20 us one way or other, so there's no way to gauge it
21 going one way or the other?

22 THE WITNESS: I would say that's a fair
23 assessment of the quote, yeah.

24 MR. KULASIK: Okay. Thank you.

1 MR. KAINS: Thank you, Mr. Kulasik. Any
2 other questions from the public for Ms. Bowen? Yes,
3 ma'am.

4 MS. GRAEFEN: Barb Graefen.

5 MR. KAINS: That's right, Ms. Graefen.

6 MS. GRAEFEN: So, Ms. Bowen, do you work
7 for the wind company?

8 THE WITNESS: I do not. I work for
9 CohnReznick.

10 MS. GRAEFEN: Do you -- is the survey
11 for the company or for the County?

12 THE WITNESS: The company did higher me
13 to prepare a report. This report is a result of over
14 6 years of work that was performed well in advance of
15 the Applicant reaching out to me.

16 MS. GRAEFEN: So did you do any study
17 for littler farms, because the five acres or more the
18 turbines are a little further away. I'm going to have
19 them kind of on top of me. I'm a little farm. So did
20 you do surveys for those?

21 THE WITNESS: You're not talking about a
22 wind farm you're talking about residential or an
23 agriculture farm?

24 MS. GRAEFEN: Well, I have a little two

1 acre and it's residential but it's still a little farm
2 to us, yes. So did you do any studies for the little
3 farms that -- where they had problems selling or not
4 selling?

5 THE WITNESS: Yes. The -- generally the
6 wind farms that we are studying are located in rural
7 area in which the properties are located on, you know,
8 land sizes ranging from 1 to 20, sometimes 40 acres.
9 So, yes, we are submitting transactions of homes that
10 are on lot sizes similar to yours, 2 acres, 5 acres
11 and we are not seeing any effect on homeowners that
12 wish to sell, being able to sell them in a similar
13 time frame as if there were no wind farm or having any
14 or getting full market price for the home that they
15 are trying to sell.

16 MS. GRAEFEN: Is there signs that -- for
17 a little area of homes or residence that had any
18 problems? Did you help them sell at all if they were
19 on the market for any length of time and show that
20 people didn't want to buy because of the windmills?

21 THE WITNESS: Are you -- are you asking
22 if I personally have sold a home?

23 MS. GRAEFEN: Sold a home.

24 THE WITNESS: I am not a real estate

1 broker or agent. I'm a real estate appraiser and I'm
2 looking at data that has occurred after the fact. I
3 am not personally involved in any transactions of
4 property directly, no.

5 MS. GRAEFEN: Okay. Then I guess that
6 question's for a later date. Thank you.

7 MR. KAINS: Thank you, Ms. Graefen. Any
8 other questions for the public for Ms. Bowen regarding
9 her testimony. Yes, Ms. Bober.

10 MS. BOBER: Okay. So according to that
11 what he just mentioned -- I'm sorry, what she just
12 mentioned -- somebody just mentioned about the
13 documentation in Livingston County, either way
14 wouldn't that negate everything else you just said?

15 THE WITNESS: I think the comment is
16 meaning that there's no -- there's no negative trend
17 and there's no positive trend. That there is no trend
18 whatsoever. Meaning that if there is negative trend
19 you, know, you would be able to document, but there's
20 a positive trend, if homes are selling for 5, 10
21 percent above the controlled sales Livingston County
22 does not have any documentation of that. So the fact
23 that there's no documentation of positive or negative
24 means that there is no impact whatsoever.

1 MS. BOBER: How many houses within
2 Livingston County did you use in your assessment?

3 THE WITNESS: I mentioned earlier that
4 we did include one study that was the Top Crop Wind
5 Farm and that is located on over 20,000 acres, 300
6 megawatts and we look at -- we look at literally every
7 home that is within a mile of a turbine and that has
8 sold, that after completion of the wind farms so we
9 would look at 20,000 acres and all the homes there and
10 if there have been any transactions that included the
11 study or haven't been any transaction then we would
12 exclude homes from our analysis.

13 MS. BOBER: So how many homes?

14 THE WITNESS: I can't tell you the
15 number of homes, but our property we looked at is that
16 20,00 acres. I can't tell you, I don't know.

17 MS. BOBER: So that's not within your
18 assessment?

19 THE WITNESS: We considered all homes
20 that were within the Top Crop footprint, over 28,000
21 acres.

22 MS. BOBER: But you don't know how many
23 that is? So comparing what sold, what's on the market
24 or what's sitting on the market?

1 THE WITNESS: I could not tell you how
2 many homes fit within that footprint, but I do know
3 that a lot we undertake hundreds of hours of research
4 and work to make sure that we identify all these homes
5 and are very exhaustive in our research analysis.

6 MS. BOBER: Have you spoken to area
7 realtors?

8 THE WITNESS: Have we spoken to local
9 real estate agents and realtors?

10 MS. BOBER: Yes.

11 THE WITNESS: Yes, we have.

12 MS. BOBER: And what has your finding
13 been with them?

14 THE WITNESS: I'm sorry?

15 MS. BOBER: What has your finding been
16 with them?

17 THE WITNESS: We have found that they
18 have stated there had not been an impact to the number
19 of offers received. We have asked if the -- they felt
20 the existence of the wind farm poses a challenge to
21 selling the property or if the real estate agent found
22 that the property did not sell for market value, and
23 by and large the real estate agents have indicated in
24 these interviews that they did not find any evidence

1 that the presence of the wind farm impacted the sales
2 price at all.

3 MS. BOBER: Do you have a list of those
4 realtors?

5 THE WITNESS: Not off the top of my
6 head, but I can provide names for you.

7 MS. BOBER: I would love that because I
8 spoke to three dozen and got a completely different
9 story from them. So I would love any information you
10 had contrary to that.

11 THE WITNESS: And speaking with agents
12 who have listed and sold homes directly within that
13 mile boundary of wind farms.

14 MS. BOBER: Do you yourself live
15 anywhere near a wind or solar farm?

16 THE WITNESS: I do not.

17 MS. BOBER: Okay. Thank you.

18 MR. KAINS: Thank you, Ms. Bober. Any
19 other questions from the public for Ms. Bowen
20 regarding her testimony? All right. I don't see any
21 more hands.

22 All right. Then questions from Livingston
23 County Staff and Consultants, Zoning Administrator,
24 Ms. Miller?

1 MS. MILLER: No questions.

2 MR. KAINS: Okay. On behalf of the ZBA,
3 counsel, Mr. Dluski?

4 MR. DLUSKI: No questions.

5 MR. KAINS: Counsel for the County
6 Board, Mr. Keyt, Ms. Rives?

7 MR. KEYT: No, sir.

8 MR. KAINS: All right. Then redirect,
9 Mr. Uphoff?

10 MR. UPHOFF: No further questions.

11 MR. KAINS: All right. Then final
12 questions come from members of the ZBA? All right.
13 Very good.

14 Ms. Bowen, thank you for your testimony. You
15 may step down.

16 (Witness excused.)

17 MR. KAINS: It's 8:46 p.m., Mr. Uphoff.

18 MR. UPHOFF: If I could have one moment
19 and I'll be able to provide you the answer to that
20 thing you're going to ask me.

21 MR. KAINS: Yeah, let's just take a
22 moment. I don't want to start direct examination of a
23 longer witness and then have to take a break until
24 July.

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(Brief pause.)

MR. UPHOFF: With the amount of time we have left I do not believe we would be able to complete a witness's testimony.

MR. KAINS: All right. Thank you. All right. Then we are done with witnesses for tonight. It's my understanding that the Board will go into a recess and that the next night for a session of this public hearing will be conducted on July 10, 2024, at 6:00 p.m., 6:00 until approximately 9:00 p.m., in this room, the County Board Room of the Livingston County Historic Courthouse and then will go that night. And who do you anticipate calling that night, Mr. Uphoff? I'm putting you on the spot.

MR. UPHOFF: The witnesses that I have not yet called.

MR. KAINS: Okay. So you have a sound guy?

MR. UPHOFF: We have a witness who will be testifying as to sound, we have a witness who will be testifying as to construction, we have a witness who will be testifying as to financial ability and also touching on road use agreements. We will have a witness that will be testifying as to economic

1 impacts. We may have an additional witness that will
2 be testifying in relation to airspace setbacks. So
3 that's the tentative witnesses I can think of off the
4 top of my head.

5 MR. KAINS: All right. I just wanted to
6 let the public know what to anticipate on July 10th.
7 And I think we should probably wait to see how far we
8 get on July 10th before we decide what other dates --
9 unless -- are we -- Mr. Keyt, are you ready to take
10 that up now?

11 MR. KEYT: I have no problem taking that
12 up.

13 MR. UPHOFF: If I could, I would
14 request -- I don't know that we have to do it on the
15 record. I think we could do it after we recess. I
16 would likely request that we discuss a potential 4th
17 day given the way the testimony has gone. I do not
18 believe the witnesses I have remaining we'll be able
19 to complete it by the end of night three. So I think
20 we most certainly need a night four, and then given
21 the fact that we have expert witnesses, some of them
22 are traveling out of state, if there would be any
23 possibility of the Board considering some additional
24 dates tonight that would give us ample time to make

1 those arrangements.

2 MR. KAINS: Madam Chair, I like to do
3 things on the record and if people want to hear when
4 we might be meeting, but that's just me. What is your
5 pleasure?

6 MS. HUISMAN: I think we need to stay on
7 the record. If we're going to set a future date then
8 we need to stay on the record.

9 MR. UPHOFF: Since we're just going to
10 be talking calendars I don't know that it makes any
11 sense to have all that taken down into the transcript.
12 So if we could recess briefly, have a discussion about
13 our availability and then select a date, we could go
14 on the record and announce it for everybody.

15 MR. KAINS: Yeah, I think that --

16 MS. HUISMAN: That's reasonable.

17 MR. KAINS: I think that what we'll do
18 is we've got to get calendars together up here, I
19 don't think any of you all care where I am in July and
20 what Mr. Keyt and Mr. Uphoff and the Zoning Board is
21 doing in July. So I think we will go off the record
22 and put our heads together and try to come up with a
23 date or dates later on in July.

24 So the Board is going to go into recess, but

1 we're going to come back on the record hopefully in 10
2 or 15 minutes and be able to tell in addition to the
3 July 10th session of this hearing what other date or
4 dates we can come up with.

5 So the Board's in recess for approximately 10
6 to 15 minutes. Thank you.

7 (A recess was taken at 8:50 p.m.)

8 (Resume at 9:00 p.m.)

9 MR. KAINS: Okay. Folks, after a great
10 deal of negotiations and consultation and checking our
11 schedules and even Mr. Keyt writing it down on a piece
12 of paper we have come up with additional evenings for
13 sessions of this particular public hearing.

14 In addition to our session, the next session
15 which is July 10 from 6:00 to 9:00 p.m., approximately
16 in this room, that's already on the schedule July 10,
17 we also will convene, this Zoning Board of Appeals on
18 July 17, 6:00 until approximately 9:00 in this room
19 and also the following night July 18.

20 Now, with that said, I see Mr. Smothers
21 shaking his head left to right.

22 MR. SMOTHERS: Vacation that week.

23 MR. KAINS: Will you be able to be here?

24 No.

1 MR. SMOTHERS: I go up to Wisconsin that
2 week.

3 MR. KAINS: Okay. Well, then maybe we
4 can have Mr. Smothers out of order. You wouldn't be
5 out of order. We'll take your testimony if you wish
6 to testify and you don't have to by any stretch. By
7 the way, and I'll state this next time to be very
8 clear, but, you know, if you can't testify or don't
9 wish to testify you can always provide written comment
10 by emailing it to the Zoning Administrator Ms. Miller.
11 Go to the County website and you can send a written
12 statement by email.

13 Mr. Smothers, you had something to say.

14 MR. SMOTHERS: When are they going to
15 talk about my issue?

16 MR. KAINS: When are they going to talk
17 about what?

18 MR. SMOTHERS: The airport issue?

19 MR. KAINS: The airport issue.

20 Mr. Uphoff, is anybody going to address
21 the -- I know you had the witness on setbacks. Is
22 there any additional witness?

23 MR. UPHOFF: We do anticipate having
24 some additional testimony but I can't tell you which

1 next dates it will be because we still have to
2 coordinate all of our witnesses in terms of their
3 schedules.

4 MR. KAINS: Okay. He said that he can't
5 state with specificity which night it will be because
6 he's got to coordinate with his other five, six
7 remaining witnesses, and believe you me, it is an
8 undertaking. And so I appreciate everybody in trying
9 to get witnesses scheduled and in order.

10 Mr. Christopher.

11 MR. CHRISTOPHER: Any idea what night
12 financials might be discussed?

13 MR. KAINS: Do you have any idea which
14 night the financial -- are you talking about the
15 financial ability of the corporation or are you
16 talking economic impact on the community? I just
17 can't hear you.

18 MR. CHRISTOPHER: I thought there was
19 going to be a session on the financial liability of
20 the company.

21 MR. KAINS: Okay. There would be
22 somebody to talk about financial viability of the
23 company. Any idea, Mr. Uphoff?

24 MR. UPHOFF: Probably the 20th, but I

1 can't guarantee it. We've got travelling witnesses to
2 accommodate on certain nights.

3 MR. KAINS: Okay. Thank you. That's as
4 good as it's going to get. Quite honestly, you know,
5 if we're planning on three or four witnesses a night
6 and we only get through two then obviously they'll get
7 pushed back, that's beyond our control. It's all
8 dependent upon the number of questions that come from
9 the Board and come from the public and come from the
10 lawyers.

11 So, Mr. Smothers, did you have anything else?

12 MR. SMOTHERS: I did. I thought you
13 asked him yesterday about the measurements --

14 MR. KAINS: About the what?

15 MR. SMOTHERS: Our measurements from the
16 runway to the thing.

17 MR. KAINS: Okay.

18 MR. SMOTHERS: Did he get back to you?

19 MR. KAINS: Yeah. And I'm sure that
20 they will have a witness to testify as to that,
21 measurements from runway as far as setbacks at the
22 airport that Mr. Smothers is concerned about.

23 MR. UPHOFF: Potentially last night the
24 Hearing Facilitator indicated that the company provide

1 him with any information that we have on that.
2 Obviously that was just last night and we didn't get
3 that done yet today, but we will provide the
4 information that we have available.

5 MR. KAINS: Sure. Do you think you
6 would be able to have it to Mr. Smothers by the 10th
7 of July?

8 MR. UPHOFF: I don't know but I'll talk
9 to my client and make every effort to do so.

10 MR. KAINS: Okay. Very good. Thank
11 you, Mr. Uphoff. That's the best we can do. You
12 know, there's lots of moving parts to all of this.
13 And thank you, folks, for being so understanding and
14 patient with the process.

15 All right. So we will reconvene on July
16 10th, 2024, at 6:00 p.m., in this room at the
17 Livingston County Historic Courthouse, 112 West
18 Madison Street in Pontiac, Illinois, and for now the
19 Board is in recess.

20 Thank you.

21 (Cause recessed.)
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