PUBLIC COMMENTS

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In the Matter of the enXco Development Corporation Application for a Large Wind Energy Conversion System Site Permit for the Nobles Wind Project in Nobles County

PUC Docket Number IP-6646/WS-09-584

Reading Community Center
McCall Avenue and 200th Street
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MR. HAFT: Hi. My name is Michael Haft, Larry, and I am with the Nobles County planning and zoning. And my question was why the -- why a project like this is taken out of the hands of local jurisdiction and moved to the state?

MR. HARTMAN: Okay. Good question. I don't get that one too often. If you go back to the last century, about 1995, Minnesota had its first commercial wind farm, which is the Kenetech facility located southeast of Lake Benton in Lincoln County, Minnesota.

That was a 25 megawatt project. And at that point in time, our regulatory function resided at what was called the Minnesota Environmental Quality Board. Kind of, I guess, looking forward to the future, the board, I guess, posed a question: If we're going to have more wind energy development, one, should it be regulated; if it's going to regulated, how should it be -- how should it be regulated?

And so what the state did, then, they created a statewide task force, which is comprised of county commissioners, maybe seven or eight county commissioners, a number of interest groups, concerned citizens, et cetera, et cetera.

And we met for, I want to say, the better part of eight or nine months to go over that issue. And we were not looking -- well, I guess we were just looking at it. Basically, at that point in time, the county said we don't have the staff, the time, the expertise. We don't want to do it, why don't -- why doesn't the state do it? The state wasn't looking to do it. At that point in time, none of the counties wanted to touch it.

And, again, I think -- I think in support of that, there might be some other underlying issues. You get some of the other larger projects that we've done where they might cover more than one county. Well, if you're gonna -- if you're a developer, you would probably like to have the same set of standards to build to in both counties, rather than in Nobles County having one set of standards and Jackson County having a different set of standards.

So at that point in time, local units of government didn't want to bother with that, and I can understand why and it's a fairly steep learning curve. And, again, now, I think the law was changed a few years ago whereby counties could permit facilities with up to 25 megawatts.

Now, maybe another component I'll try to explain, the first large wind project we did -- and Rick Halet would have been involved with that because Rick was with NSP then -- that we did this permitting, the first one, under our conventional Power Plant Siting Act. And basically all this is -- they said the process was too long, too cumbersome, and they wanted to see something more streamlined, transparent, efficient, fair, quick, whatever you want.

So that's what they, the statewide task force, agreed to, that's what they made recommendations to the board on, and the legislation drafted reflected those concerns. So basically, if you look at the statute, and I believe it's 216F, and I forget which part, it's about a one-page piece of statute. It talks about us adopting rules.

The rules are fairly general, and I think we argued for a fairly general set of rules that provide guidance. But the key is kind of in the permit conditions, rather than establishing rules where you've got to set back from this by rule, because every time you change it, then you have to go back and do a new rulemaking. And that's like a year-long kidney stone process, very painful. And

having both had a kidney stone and done rulemaking, I know of which I speak. But, you know, that's just how it's unfolded over the years.

Now, again, a few years ago, the legislation was modified to allow counties to do projects up to 25 megawatts, if they chose to do that.

Now, the state adopted some general standards which the counties had to adhere to those as minimal standards. If they wanted to do something greater than that, they also have that authority, also.

So that's about the best answer I have.

MR. HAFT: Thank you.

MR. HARTMAN: Any other questions on the permitting process?

Ian, do you want to --

MR. KRYGOWSKI: Sure. My name is Ian Krygowski, and that's I-A-N, K-R-Y-G-O-W-S-K-I. I'm the regional project development manager for enXco and the project manager for the Nobles wind project.

I'll start out and just give you a quick overview, for those of you that might not be familiar with our company. EnXco is a developer,

owner, and operator of renewable energy projects. We own renewable -- we develop, own, and operate renewable energy projects across of the country.

I work for enXco's midwest development department. We're located up in the Twin Cities, up in Minneapolis, and we've got about 22 people in our office that are working primarily on wind projects. But we also do a little bit work on solar and have been looking at some other opportunities in biomass, et cetera.

EnXco's been around for a while. We've been in business for a little more than 20 years now. We started out as a -- mainly as an operator and maintainer of wind projects. And so we've got a real strong background in keeping these things up and running, and that helps us a lot when it comes to the development side of things.

EnXco has been active here in Minnesota and, more broadly, across the Upper Midwest since about 1997. And we've been here in -- on the Buffalo Ridge working since about that time, also.

I think the first time we were in Nobles County looking at opportunities with this project it was about 1999, and we have sort of maintained relationships in the community and have been working

on developing this project for about ten years now.

A variety of challenges have come up, and a lot those have to do with transmission and a number of other things. But we are finally to the point here where we have a good block of interested landowners signed up, we have gone most of the way down the road with our siting of turbines. And now, we're kind of in the thick of the permitting process here.

In the -- there's maps at the end of these three tables (indicating), and I'll be happy to answer project-specific questions. But there are -- this will be a 201 megawatt project. There will be 134 General Electric 1.5 megawatt turbines that will be installed.

For those of you who are interested, those turbines reach a maximum height when the blade is in the upright position of 389 feet. And the -- each turbine will be serviced by underground electrical cable and by an access road.

In addition, we will also install a switching and metering station, and an operations and maintenance facility. There will be somewhere between about eight and 14 people employed at the operations and maintenance facility that will keep

1 the turbines up and running and, basically, maintain
2 the roads and the other infrastructure associated
3 with the project.
4 And our goal is to get through the end of
5 the development process and begin construction on
6 this come spring of next year.
7 The -- I think that that's a good
8 overview. And if any folks have questions, please
9 let me know.
10 MR. HARTMAN: Okay. Thank you.
11 Coming back to your question a little bit
12 earlier, you know, the state's been doing this for
13 quite a while now. A lot of other states are having
14 permitting issues on the wind farms. For example,
15 Wisconsin just recently enacted legislation that
16 takes the permitting authority away from the
17 counties and gives it to the state now, so there's
18 kind of a uniform standard. I think Ohio has done
19 one of the same things, also.
20 I guess we've just been doing it longer
21 than a lot of the others now. A lot of your states
22 west of the Mississippi, where it's federal land,
23 that might be permitted by the feds.
24 One thing that Ian mentioned and I wanted
25 to mention, this project is kind of a mirror image

of the Fenton project, which is just up the road here a ways. So if you have -- if you've been up there, it would be a similar layout, same turbines, same sorts of facilities, so it's no different than that.

EnXco also has two other projects over in Mower County, one owned by Xcel, now, which is called the Grand Meadow project, the other one is called Wapsipinicon, and we have Moraine.

MR. KRYGOWSKI: EnXco has a handful of projects that we've developed and completed in Minnesota. The first one was the Chanarambie wind project, which is north of here in Murray County, kind of near to Lake Wilson. That was completed in 2003.

In 2007, we completed the Fenton wind project, which Larry just mentioned. That is near the town of Chandler in Murray County and it extends just a little bit, I think -- I don't remember exactly now, but I believe it's ten or 14 turbines --

UNIDENTIFIED: Leota.

MR. KRYGOWSKI: Or yeah, into Leota Township, about ten or 14 turbines or so come down into Leota Township of Nobles County from that.

1 Then last year we did two projects that
2 are adjacent to each other, each 100 megawatts. The
3 Grand Meadow project, which we sold to Xcel, and the
4 Wapsipinicon project, which we kept an ownership
5 interest in.
6 MR. HARTMAN: One other thing I wanted to
7 mention with regard to permitting. When we did this
8 back in the '90s, one of the other things was
9 that this was kind of a tax base for this. And
10 originally wind turbines were treated, you know, as
11 a property tax type thing. And because of the --
12 well, I guess I'd refer to it as accelerated
13 depreciation on those, the community might have
14 gotten a lot of benefits up front, but maybe they've
15 dissipated after several years.
16 The wind developers now pay a production
17 tax. So it's based on a mill rate per kilowatt hour
18 produced. And I guess, rule of thumb, I don't know
19 what your expectations are, but typically a 100
20 megawatt project, maybe assuming a 38, 39 percent
21 capacity factor, might pay taxes of about $300,000
22 per year, plus or minus a little bit. And that
23 money is generally paid to the state and it comes
24 back to the county, and is disbursed 80 percent to
25 county and 20 percent to the townships in which the

turbines are located.

So if you're a landowner and you've got turbines on your land, you're probably getting a payment for that, wind easements, roads, et cetera, et cetera. If you're kind of high and dry and you have none of those, just because of what they would be paying in taxes, assuming the unit of government doesn't raise your taxes -- raise -- in essence, it lowers your mill rate.

So they've tried to kind of make the benefits go beyond those that are just kind of physically dealing with those. And that seems to have worked out, I think, reasonably well over the years.

The legislation was changed a couple years ago. Rather than townships getting 20 percent, I forget what the percentage was, 13, the school districts got seven percent. And for some reason the law was changed, I don't know why, but I expect that might change again. So there is also some tax benefit, also, to the area close to the facility. So I just kind of wanted to touch on that a little bit.

I guess I've gone -- are there any questions about the permitting process, per se?

Now, once we issue -- if the Commission issues a permit, they still need to obtain a number of other what I refer to as downstream permits. They'll need permits from DNR if they cross any public lands or waters. They might need permits -- well, an EPS permit, a storm water runoff permit from the PCA. They'll also need permits from the Department of Transportation for all of the turbines. They'll also need permits from the local road authorities for driveway cuts. They'll be required to join the local 911 system. So there are a number of other permitting requirements.

So while everything is not cast in concrete -- for example, some counties are starting to limit -- maybe starting to limit perhaps the number of driveway cuts in a given mile. So depending on what's there now versus what might be coming, there might be some coordination issues on where road cuts are for the turbine access roads with regard to county roads and township roads, some other things like that.

Also, I know a lot of the counties in southwestern Minnesota have been working together because there is a lot of impact in the infrastructure, primarily to the roads. And I think

a lot of the road engineers have been trying to work on standardizing a document that developers would be expected to sign or to adhere to for use of roads.

So we're trying to move, I guess, forward with the standardization for that. I've been to a couple of those meetings and that seems to be moving along. And, again, sometimes, you know, the roads do take a pretty heavy beating. So when they get their permits, a lot of it will be transportation related regarding local authorities as to what bridges can handle what weights, you know, what the roads can handle. So there are a lot of infrastructure issues that go with these, also.

What I'd like to do now is I'd like to take a few minutes and go through the permit. You should have received a copy of the permit in the mail. They're also over there on the table (indicating), does anybody need a copy of the permit?

UNIDENTIFIED: Yes.

MR. HARTMAN: We'll be delivering them.

Okay. The draft permit issued for this one -- our permit conditions have been fairly standard from project to project and fairly consistent. We do make adjustments on a

1 project-by-project basis, where warranted. But just
2 to give you an example, after the title page,
3 there's a two-page table of contents for all the
4 items that are covered by the permit itself, and
5 I'll just maybe try to go through some of these.
6 For example, under general construction
7 conditions, we require that we have a site plan
8 prior to construction. And later on in the permit,
9 you'll find that we have a preconstruction meeting.
10 So once the permit is issued and prior to the start
11 of construction, we'll sit down with the applicant
12 and go through the terms and conditions of the
13 permit.
14 They also have a number of deliverable
15 documents they need to submit or eFile. And that
16 list is contained in the last attachment to the
17 permit, it's attachment 4, two pages long, as to
18 what -- some of these things are after construction,
19 some are before. But they're all identified and
20 those will all be filed by the applicant online and
21 are available to everybody, should you want to
22 download a copy.
23 So generally, you know, we ask that
24 during the field construction they have a field
25 representative. That person's on call 24 hours a

1 day, if necessary. We have a preconstruction
2 meeting, so we generally sit down with the
3 contractor and the company and go through the ground
4 rules on that.
5 Now, we have a category that addresses
6 mitigation measures, of which there are 17. Again,
7 site clearance is typically limited to cropland. We
8 have measures for topsoil protection, soil
9 compaction, livestock protection, fences, drain
10 tiles, equipment storage, roads, soil and sediment
11 control, and that comes through the PCA permit.
12 Clean up conditions, restoration. Hazardous waste,
13 they generally get a license from PCA, some
14 small-quantity generators. We have prohibition and
15 application of herbicides. Not for you, the
16 landowners, but for the company, basically.
17 We have public safety requirements. They
18 have to have the fire protection plan. Again, we
19 expect each tower to have a discrete identification
20 number in case an emergency response is needed.
21 Again, they're also obligated to join the local 911
22 system.
23 Under setbacks, we have what we call wind
24 access buffer, and there are two types of buffers.
25 From the -- if you looked at the site map, we don't

allow any turbines within five rotor diameters on the prevailing wind access, with the idea that there's an adjacent wind farm maybe five rotor diameters back. So there's ten rotor diameters between competing wind projects, which minimizes wake loss, which has economic consequences.

Typically, we have a setback at residences, of where the permit reads, it's 500 feet plus the distance necessary to meet the MPCA noise standard, which is an L-50 standard. We have setbacks of 250 feet from the roads.

Setbacks from wildlife management areas. Coming to the setback issue, too, and you'll notice on the map, there are a number of blank spots in there. We might, I guess in turn, refer to those as doughnut holes. What that means, if you are a nonparticipating landowner, in other words, you haven't given your wind rights, you're going keep your wind rights, they'd have to also be five RD back from the -- your property line on the prevailing wind access and three RD on the prevailing wind access (sic).

So you'll notice one of the biggest doughnut holes on that map, I think, Community Wind South plans on building a wind project. And I

1 believe enXco and Community Wind have had some
2 discussions about turbine location. This will
3 minimize interference between the two projects.
4 They might be crossing some of their wind rights
5 with transmission facilities. But I don't think
6 anything above and beyond that, is that accurate or
7 fair?
8 MR. KRYGOWSKI: (Nods head.)
9 MR. HARTMAN: Ian's nodding his head yes.
10 We have setbacks from, you know,
11 wetlands, native prairies, sand and gravel
12 operations. We have a number preconstruction survey
13 requirements, biological preservation survey,
14 archeological resources.
15 We have, I guess, interference
16 requirements, which goes to FAA requirements.
17 Microwave interference. Microwave, being they have
18 setbacks. A number of other things along that line
19 that also goes with interference, either with
20 communication facilities, whether it be radio or TV.
21 So those things are typically covered by the site
22 permit.
23 We also have restrictions on wind turbine
24 towers, met towers, a number of that. Obligation to
25 meet the noise standard compliance of the FAA

1 requirements. Turbines facing -- if they say we're
2 going to have a -- three-by-five turbines facing
3 internal, we generally try to hold them, with the
4 exception of typically I think up to 20 percent, and
5 that's based on either topographical features or
6 other things.
7 We try to recommend they minimize the
8 footprint of the project. In other words, it means
9 not building more roads than you need to, not
10 picking up more wind rights than you need to, et
11 cetera, et cetera.
12 Electrical cables, as Ian mentioned
13 earlier, there are going to be a number of
14 underground cables. Primarily your SCADA cable,
15 which stands for supervisory control and data
16 acquisition. That's basically fiber optic for
17 communication purposes. So the turbines, as they
18 generate a lot of the information that conveys it to
19 a terminal center.
20 Also, there will be underground
21 electrical cables. Those cables are typically
22 located in the turbine access road -- or we prefer
23 that, they don't have to be. Sometimes the road
24 might be the long way to get to a point, so they are
25 allowed to negotiate with the landowner regarding

1 the turbine placement.
2 Again, that's where drain tile would
3 become a factor. And, again, I don't know what the
4 trend is here for tiling -- or for increasing or
5 going to pattern tiling.
6 We have a requirement of placement of
7 feeder lines. I think in this case everything's
8 underground, typically either at the edge of the
9 road right-of-way or at the interface of private
10 land versus road right-of-way.
11 We require wake loss studies be provided
12 as performed. We can require a noise study. We
13 require a decommissioning plan. Site restoration
14 requires that if turbines are abandoned, they be
15 removed. We have a number of recording
16 requirements.
17 We get to have those plans and
18 specifications, and those all go into a database
19 we're trying to establish and maintain, which, when
20 complete, will be online. So if you want to find
21 out how many Vestas 660 turbines there are, you can
22 do that by county or by township, or how many GE
23 turbines, of which there are a lot. So it will be a
24 fairly user-friendly thing and I hope it will be up
25 and available next year sometime.

We ask them to provide -- demonstrate the control of the wind rights. Our permit preempts other, I guess, location issues, although there is a fair amount of discretion granted the county as well as the townships on roads and other limits.

Typically, we require power purchase agreements, and then we have a number of various miscellaneous things, periodic. Oh, one of the other things I think we now add is that once the project is built, we'll also have a preconstruction meeting prior to commercial operation. So we know what the ground rules are for reporting or compliance requirements, also.

A lot of times -- I guess I've been doing this long enough, a lot of these wind farms get sold and some of them are on their third and fourth owners right now. Although, if Xcel is buying it, I guess we'll know that they're going to be around for a while.

We have certain requirements, but when they get sold, a lot of times the third and fourth owner may not know what the first owner said they were going to do or that they're obligated to do. So we're just trying to kind of tighten up the loop on a lot of these things to bring a little more

closure and accountability into it, also.

Are there any questions about what's in the permit at all, or anything you think is missing or should be added or reworded, modified? It's fair game, so I'd like you to offer your comments.

MR. HAFT: I have a few questions.

MR. HARTMAN: Okay. Do you want to try the mic, again, there?

MR. HAFT: This is Mike Haft, again. How do you adjust this (indicating)?

This might be a question more for Ian. In the construction process, Ian, how deep typically are the foundations on these?

MR. KRYGOWSKI: If I could take the mic back from you.

The foundations are typically about eight feet deep, give or take the -- there's a -- what we're planning to use here is what's called a spread foot foundation. So it's a 50-foot-wide by 50-foot-wide box with the corners chopped off, basically.

It goes down about eight feet, a total of eight feet. And at the very edges, down towards the edge, at 50 feet, it's -- the thickness of the foundation is about two to three feet thick and then

1 it slopes upward the center to a maximum depth of
2 probably about five feet deep. And then there's a
3 pedestal that protrudes up from the ground. So all
4 that you see when it's all said and done is
5 approximately a 16 foot in diameter pedestal with
6 the bolt case that protrudes from that.
7 MR. HARTMAN: And typically, there are
8 about, what, 20, 30 tons of rebar in that. And the
9 foundation might take anyplace from 350 to 450 yards
10 of concrete.
11 So if you've got, you know, the local
12 cement manufacturers, assuming their trucks are ten
13 cubic yards of concrete, that's 45 trucks of
14 concrete per foundation, just as an illustrative
15 example.
16 MR. HAFT: Right. Are there -- one other
17 question I had was, are there any Faraday issues
18 with the wind generators, any Faraday radiation
19 issues? Or if there are, how are they mitigated?
20 MR. KRYGOWSKI: Yeah. To be honest, I
21 don't know what that is. When you're talking about
22 Faradays, are you referring to the potential of
23 problems with EMFs, or is that --
24 MR. HAFT: Yes.
25 MR. KRYGOWSKI: Well, let me address the

1 question this way. The power is generated in the
2 generators up-tower at -- I think it's approximately
3 590 volts. There are collector cables that go
4 down-tower and a step-up transformer that steps up
5 the internal voltage to 34,500 volts. Which, sort
6 of in the utility world, is considered a lower or
7 sort of a medium voltage, it's not like a high
8 voltage line.
9 That -- our plan is to have all of those
10 collector cables buried to a nominal depth of four
11 feet. And with that, we don't expect to see any
12 interference issues with electromagnetic fields or
13 other issues associated with that.
14 MR. HAFT: Are there any needs for like
15 adjacent structures, residential structures,
16 commercial structures for any mitigating protection
17 or --
18 MR. HARTMAN: No.
19 MR. HAFT: No, okay.
20 MR. HARTMAN: You'll find that the wind
21 farm infrastructure is generally separated from the
22 electrical system. Now, with regard to
23 interference, I know one of the questions that comes
24 up is stray voltage -- well, it's not really an
25 issue with wind farms. Stray voltage is generally

1 related to grounding of what's on the farm, and
2 generally it's some of the distrubution lines that
3 might service the farmstead.
4 Typically, the only place the wind
5 turbines are going to interconnect would be at the
6 project substation or the collectors for the various
7 turbines. But, again, at that level, it's not part
8 of the grid. It's only in the grid once it's
9 stepped up and delivered to Xcel inside the Nobles
10 substation.
11 MR. HAFT: Last question, I promise I'll
12 give somebody else an opportunity. But anyway, on
13 page 6, paragraph two, the offset of 500 feet to the
14 nearest residence is -- you know, actually that
15 would be in conflict of Nobles County ordinance.
16 And I think, Ian, last night we talked
17 about 1,000 to 1,200 feet. Is there a reason for
18 the big deviation in the state standards versus --
19 MR. HARTMAN: Well --
20 MR. HAFT: -- the practice versus what we
21 have?
22 MR. HARTMAN: Well --
23 MR. KRYGOWSKI: Larry, could I take a
24 crack at this one?
25 MR. HARTMAN: Could I go first and then

I'll let you take a crack?

MR. KRYGOWSKI: Okay.

MR. HARTMAN: Going back years ago, we had a minimum setback of 500 feet plus -- still the distance necessary. So if your turbine can meet the noise standard at, say, 300, it still has to be 500 feet away from your house.

A lot of the earlier turbines were much smaller. For example, the Suzlon 750 might have met the noise standard then at 450 feet, but you still have to be 500 feet away.

And going back to the early projects, I had landowners saying I'd like more turbines. I'm willing to sign a variance. Well, we don't operate that way. It had to be far enough away to meet the noise standard.

Here it says 500 feet plus the distance necessary to meet the noise standard. Now, maybe the GE turbines can meet it at 750, maybe it's 800 feet. It's based on cumulative noise. So if you have a string of turbines and let's say noise does propagate downwind, for example, you've got eight or nine turbines, maybe you're further away from homes.

Now, I just finished a project last week where the turbine is -- and theirs I think met the

state standard at, I want to say, 780 feet. Worst-case scenario, they still agreed to be 1,000 feet away and that's just what they told landowners.

So from the state's perspective, it's far enough away to meet the noise standard. Maybe the turbine can meet it at 1,200 feet, they have to be 1,200 feet away. And I don't mean just meet the standard, I think developers prefer to be comfortably under that standard.

Now, here, I don't know what enXco has told landowners in terms of distance, so I'll turn it back to Ian now.

Yes.

MS. HENDERSCHIEDT: Cathy Henderschiedt, it's H-E-N-D-E-R-S-C-H-I-E-D-T. And, Larry, just for clarification, you just stated it says 500 feet and the distance --

MR. HARTMAN: Well, or the distance --

MS. HENDERSCHIEDT: -- it does not say 500 feet or the distance. There's a difference between and and or.

MR. HARTMAN: Well, it probably should have --

MS. HENDERSCHIEDT: And I guess my -- and

1 referring along to this is, further back in your
2 ordinance -- or in your draft, it says that you will
3 be in compliance with -- I'm looking under
4 meteorological towers, it says that you would be in
5 compliance with the county ordinance regulating
6 meteorological towers in the county, towers built,
7 whichever is more restrictive. Why do you not have
8 the same language for residences, as far as being
9 whichever is more restrictive?
10 MR. HARTMAN: I don't know -- well,
11 one -- well, let me explain. We have a state --
12 this is what the state standard is. But it's
13 typically -- again, it's going to be whatever the
14 distance is to meet the PCA noise standard, whether
15 it's 800 feet, 900 feet, 1,500 feet, okay.
16 So, again, let's say somebody came out
17 with a direct drive turbine, you know, just operated
18 with magnets or something else, maybe noise is much
19 less of an issue. So if you could meet it at
20 300 feet, you're still going to be 500 away.
21 Here, if your turbine can meet it at 800
22 feet, you're going to be at least 500 feet plus the
23 300 feet to meet that state standard.
24 The counties that have adopted -- or
25 assumed jurisdiction so far, which there are only

four counties, and some counties seem to have some depth in kind of clarifying certain things. I know one county recently adopted a setback of a half a mile. Again, I don't know what it's based on.

And, again, we've got other developers say we're going to meet the standard, it's here, they can demonstrate it in their documents. If they can meet the state standard, that's all the state can enforce.

If they want to go above and beyond that, say the developers or if the counties want to do that, we'll look at it. It doesn't mean that we're going to ignore it. We'll certainly take a look at it.

And I don't know what standards you have in Nobles County.

MS. HENDERSCHIEDT: 750 feet as a minimum setback from a residence.

MR. HARTMAN: Okay. In this case, I'm assuming they're going to be further than 750 feet, also.

MS. HENDERSCHIEDT: What about the strobe effect?

MR. HARTMAN: From the night-lights, or the lights on it at night?

1 MS. HENDERSCHIEDT: From the sun setting
2 and the strobe effect it could --
3 MR. HARTMAN: Oh, you mean, the shadow
4 flicker?
5 MS. HENDERSCHIEDT: The shadow flicker,
6 the strobe effect that it can cast across
7 residences. Has that been considered as far as the
8 placements and setback of the turbines and how that
9 could affect the residents?
10 MR. HARTMAN: It doesn't manifest itself
11 in a permit condition, per se. I know that
12 sometimes companies will model that. If you take,
13 for example, WindPRO, they can calculate shadow
14 flicker.
15 The only place I'm aware of that there
16 are any standards regarding shadow flicker is
17 Germany, and there they tried to limit it to 30
18 hours per year. And that's based on the sun's
19 always shining, the turbine's always operational,
20 it's daylight, you're in your house, and you're
21 awake.
22 And, again, that's where they've drawn
23 the line, is 30 hours. Typically, your WindPRO
24 calculations, if you know the latitude and
25 longitude, it can generally tell you probably how

many hours or minutes or seconds per year you might have shadow flicker.

Now, again, the distance that -- or not the distance. To some people, it's an issue. To a lot of people, it's a so-what deal. It depends on what side of the fence you're on. So to say that there's a right answer or a wrong answer, I don't know.

I have yet to ever get a complaint from anybody in Minnesota regarding shadow flicker. It doesn't mean we're going to -- it doesn't mean we're not going to, it just hasn't happened yet. And generally your shadow flicker, it's going to be worse early, early in the morning, late at night, and generally it's going to be worse in the wintertime.

MS. HENDERSCHIEDT: We ran into an issue with that in Nobles County, that's why I wondered if it had been addressed as far as placement of the proposed turbines. Has that been taken into consideration?

MR. KRYGOWSKI: I can speak to our design process a little bit. And enXco, in order to make sure that we are well in compliance with the MPCA noise emission standards as well as to deal with

1 issues of potential shadows or maybe even just
2 irritation of the service trucks coming up the road
3 and things like that, we've chosen to maintain,
4 internal to our company, a minimum setback of
5 1,000 feet from any occupied residence.
6 Practically speaking, the turbine
7 locations you see on this map (indicating), I don't
8 believe we have any turbines sited closer than about
9 1,200 feet from a residence in this particular
10 project, and that's sort of how the siting shook
11 out.
12 So I would echo what Larry said, in that
13 in the projects that we've done in Minnesota and
14 other parts of the Upper Midwest, I can speak for
15 our office, and we've got about 12 projects
16 operating now since 2003, we have not received any
17 complaints related to shadow flicker. So I believe
18 that's -- you know, it's sort of our internal choice
19 to stay 1,000 feet away, it seems to be working.
20 MR. HARTMAN: Now, with -- perhaps to add
21 on to what Ian said, and I guess I -- in the last
22 couple of months, I reviewed, I guess, numerous
23 documents regarding shadow flicker. And there's
24 probably some consensus among -- I don't know, if
25 you specialize in shadow flicker, what you call that

in terms of a profession. But, you know, shadow flicker, they say, can extend out to maybe ten rotor diameters. It's probably limited to -- probably the most significant impact is probably 1,000 feet or less.

And, again, if you look at the models for shadow flicker, it's probably going to be worse within two to three rotor diameters, related more to the turbine with the inner part of the blade, there's going to be a darker shadow. If it's -- it's from the kind of outer edge of the blade, it's going to be much thinner, much narrower. It's going to be a lighter shadow.

So I guess probably within that, there are degrees of gradation or difference in terms of what the significance of that shadow flicker might be. So it's probably worst within the two to three rotor diameter area and it's going to dissipate to a point where it's not detectable at, let's say, ten rotor diameters, which is, you know, 2,600 and change feet. But generally it's going to be limited to the bulk of, you know, 1,000 feet or less and for a fairly short duration. And that's assuming the turbine's working, the sun is out, and any number of the other things.

So I don't know if that is helpful or not.

MS. HENDERSCHIEDT: Something else you have, under roads, you're saying that the wind turbine and met towers will not be located more than 250 feet from the edge of the nearest public road right-of-way.

MR. HARTMAN: Um-hmm.

MS. HENDERSCHIEDT: What is the total height from ground to top of the blade in the vertical position?

MR. HARTMAN: 389 feet, I think is what Ian had mentioned.

MS. HENDERSCHIEDT: Okay. Because I was reading your wind project sheet here and it says the tower is 264 feet tall and the blades are 127 feet long. That's kind of misleading. That would lead the average person to think it's 264 feet tall from ground to top, when in fact you're talking it's 312 feet.

MR. HARTMAN: Well, I think if you read down there it says three hundred and nine -- 389 when the blade's in a vertical position.

MS. HENDERSCHIEDT: I don't see that. I don't see that on here. However, that leads to my

1 question, it says you're sitting 250 feet from the
2 nearest road right-of-way, that's not even one full
3 height.
4 MR. HARTMAN: No, it's not.
5 MS. HENDERSCHIEDT: Under county
6 ordinance -- our ordinance says that it needs to be
7 1.1 times the height away from the road
8 right-of-way. Is there any reason why you're not
9 setting it back that far?
10 MR. HARTMAN: Well, our standard has been
11 250 feet, and I think there are several reasons for
12 that. I know some counties have adopted that and I
13 sit back and I scratch my head and I wonder, why?
14 Now, someone said, well, in case they fall over.
15 Well, I have yet to see a wind turbine
16 tower fall over. I mean, if you're anchored by a
17 million pounds of concrete, I find it highly
18 unlikely it's going to fall over. Secondly, if
19 you're using that guideline for a wind turbine, why
20 don't you use it for trees, light poles, electric
21 lines, and everything else. They're probably more
22 likely to fall over than a wind turbine.
23 And, you know, if you look at it -- you
24 know, part of our statutory language talks about
25 efficient use of the resource. Well, what does that

mean? It can mean any number of things. Now, if you have it further back, what are you getting with that? Are you getting a safety component? I don't know.

Now, if I looked at it from a different perspective -- and actually when I met with the road engineers a couple of months ago, a lot of the road engineers didn't think it was necessary to be that far back from the road. Now, maybe they have a different understanding. I don't know what the driver is for 1.1 times. I mean, I'm just -- I sit here and I scratch my head.

Now, if -- let's say it's 250 feet, let's say it's 800 feet away, what advantage are you gaining by being 800 feet away? I really don't know. And if you look at it from a development perspective, let's say if I'm going to install a class five road, let's say it's going to cost $35, $40 a foot. Well, if I'm 250 feet away, I know how much that road is going to cost. If I'm 500 feet away, that's an additional incremental cost.

My underground cabling -- say they're wiring underground cabling, maybe that's $100 a foot, $150 a foot. Well, it's another incremental expense. Well, it's a question of safety. I don't

know how a wind turbine is safer at 500 versus 250 feet based on what's out there in terms of knowledge.

MS. HENDERSCHIEDT: I guess I'm just thinking about the case in Murray County where they had a blade snap and it threw debris over a quarter of a mile. So I just -- you know, I know the county ordinance is 1.1 times and then -- I know the county ordinance is 1.1 times the height, and then just the safety and possibly a strobe -- again, back to the strobe factor, if it's that close to the road, is it going to create a strobe effect for the people driving down the roads? I'm looking at it from a safety standpoint.

MR. HARTMAN: I would be inclined to think that you're better off being closer to the road in that case if you're worried about the strobe effect or the shadow flicker. If you're that close, it's going to be on the other side of the road, perhaps. If you're that far back, you're probably going to get most of it on the road, then.

And in terms of setbacks, if you look at the sphere of influence for the shadow flicker, you know, if you're 250 feet away, for example, you know, if this is my turbine and this is my road

(indicating), if the bulk of the shadow flicker is within that two to three rotor diameter, if you're thinking that maybe 600 feet -- maybe that's going to be the bulk of it there.

If it's, you know, 250 feet and it's at -- most of it's going to be on the other side of the road. And that's my way of thinking. That's not to say I'm right or wrong, I'm just having to spend some time thinking about that.

And, again, safety. Well, if it throws a piece of blade 1,200 feet away, what difference does it make? Again, my -- and it depends on which direction the wind is going and where the road is in relation to the turbine, any number of factors.

Again, if it's going to throw it that far, whether I'm that close or that far, it's not going to make any difference. If you look at your township roads and let's say your traffic volume is ten to 20 vehicles per day, I don't know --

(Cell phone ringing.)

MR. HARTMAN: Does anybody want to answer the door? No, it's my cell phone.

Okay. Just, you know, looking at it that way and I just -- I understand maybe -- I see those numbers and I wonder, what's it based on. And I

guess I look at it perhaps a little bit differently and maybe I think about it a little bit differently. And I guess our concern is one of public safety, and I think the standards we have sufficiently address that.

Now, if for some reason there's some, I guess, documented reason in history or case that you know of other than the one in Murray County, I'd say it's something we should take a look at. Minnesota's got 1,400, 1,500 turbines or more. And that's happened on those two particular turbines, Suzlon turbines.

So I just -- again, counties can do that. To me, it just doesn't make a lot of -- I don't understand what the reasoning is for that. And maybe -- you know, I've seen it in other cases and sometimes if you see the counties do something, another one just might adopt it just because it's the easy thing to do. I don't know.

MS. HENDERSCHIEDT: Thank you.

MR. HARTMAN: Okay. Any other questions? Yes, sir.

MR. GRUYE: Jim Gruye, G-R-U-Y-E. I'm also on the zoning board.

A question about under-line feeds, are

there any -- have they got anything placed on public roads in the right-of-ways?

MR. HARTMAN: What roads?

MR. GRUYE: The underground feeds, or whatever, the underground cables, are any placed on township roads, right-of-ways, county roads?

MR. HARTMAN: I'll let Mr. Krygowski address that.

MR. KRYGOWSKI: We do not place any of our -- we don't run any of our feeder cables to actually parallel into the rights-of-way. We will have to cross some county and township rights-of-way with our electrical cables in several instances. But it will just be a crossing as opposed to, you know, utilizing the right-of-way for that.

MR. GRUYE: Do you then check with the county engineer when you do cross right-of-ways?

MR. KRYGOWSKI: Yes, we do. Typically there is a work-within-right-of-way permit issued at the county level, or something similar to that, some sort of a crossing permit that we have to apply for, we have to designate the area where we're going to locate those -- where that crossing's going to occur, and then the county has to review that and approve it.

In addition to that, I would like to mention that all of the underground cabling will be -- there will be -- that will all be surveyed and located and shown on the as-built drawing to be submitted, not only to the Public Utilities Commission, but will also be filed with the Gopher One Call.

So when somebody calls in -- if you're going to do some digging and somebody calls in for a locate, we'll be responsible to go out and locate those lines at that time.

MR. GRUYE: And those lines will be located with GPS?

MR. KRYGOWSKI: The way we've done that in the past is typically take GPS locations at the start -- at the start point and end point and then at any turns. So, you know, we can basically assume if you're in a straight line, you start at the start point and then you've got another one at any turns that happen and then at the end point of that.

MR. GRUYE: My second question, do you have the rights to oversee our permitting and null and void what we have done?

MR. HARTMAN: We have -- to my knowledge, and I've worked on most of the wind projects in

1 Minnesota, that's never been in an issue nor has it
2 ever come up. I have yet to see a conflict between
3 what a local unit of government has required versus
4 our -- what our permit conditions specify.
5 And typically with regard to some of the
6 infrastructure issues, in terms of roads, that's
7 strictly permitted by the county or MnDOT or the
8 township. You know, again, I like to be aware of
9 what's going on or have an understanding. But we
10 have yet to have a conflict or a difference or have
11 a different opinion on what's done by the local unit
12 of government regarding infrastructure, utility
13 infrastructure.
14 MR. HAFT: Larry, would it be okay -- or
15 is it acceptable, from the planning and zoning
16 board's standpoint, that we document it in writing
17 what some of the differences are --
18 MR. HARTMAN: Sure.
19 MR. HAFT: -- between us and Minnesota?
20 MR. HARTMAN: Sure.
21 MR. HAFT: I don't see any overwhelming
22 issues, but I think it is -- for our committee, I
23 think it's only diligent --
24 MR. HARTMAN: No, that's fine.
25 MR. HAFT: -- that we make note of the

exceptions just for the record.

MR. HARTMAN: Any other questions?

Yes, sir.

MR. HOFUIZER: Howard Hofuizer, H-O-F-U-I-Z-E-R. I've got five of these things on my land, are -- anything being done for -- somebody turned up for crop damages before we start harvesting? I've had -- everybody that comes up there takes a different path through the field.

MR. HARTMAN: You mean, presently?

MR. HOFUIZER: Yeah. Yeah.

MR. HARTMAN: You have five existing turbines?

MR. HOFUIZER: No. I'm getting five.

MR. HARTMAN: Okay.

MR. KRYGOWSKI: Yes. We -- you will be, in about the next month, receiving a -- basically a statement of what we think the crop damage is out there. And then you'll have a chance to comment on that if you think we're, you know, skinny and there was actually more crop damage.

And we'll lay out yield and price and all of that and we can have that discussion. So absolutely, you'll be compensated for everything that was damaged in this growing season. And then,

per the terms of the contract, for anything that gets damaged during the next growing season, during the construction process, that will be -- that will paid for as well.

MR. HARTMAN: Yes, sir.

MR. PONTO: Greg Ponto, P-O-N-T-O. That leads me into the next question, is -- Xcel Energy has, in the past, put two new lines across our property. They said they were going to come back after they got done and settle up with crop damage. They did on the first line. On the second line, nobody's ever showed up.

And I think other landowners in that same area have had the same issue, that nobody has come back and cleared up the matter as far as Xcel after the initial payment that they made before they ever started construction.

Now, I know that's a whole different subject other than enXco. That really has nothing to do with today. However, if this is going back to the Public Utilities Commission, someone should oversee how those utility companies handle those things. Because those guys come in and can do what they want and not have to go through the county whatsoever. They're not a voluntary issue like

enXco is, and it's a real problem.

MR. HALET: Oh, I'm just Rick Halet from Xcel Energy. If you want to give me your contact information, I'll get somebody to contact you.

MR. HARTMAN: For the record, just so we don't lose track, do you want to indicate what township and section number you're in?

MR. PONTO: Summit Lake Township, Sections 16 and 15. I think that's all you would need. But there's other landowners that haven't had anything done either.

MR. HARTMAN: I meant, if you happen to know their names, or if you want to give me a call or write them down and I'll make sure Xcel gets them.

Is Callahan still in your right-of-way department?

MR. HALET: Yes.

MR. HARTMAN: Okay.

MR. HALET: Dave Callahan (phonetic) or Dave Hughes (phonetic) would be good contacts to -- you know, to resolve that issue.

MR. HARTMAN: And if you want to give me your phone number afterwards, I'll try to follow up on that on your behalf, sir.

MR. PONTO: Okay.

MR. HARTMAN: Another thing I wanted to mention, you know, and what I try to do just because you're with the county, a lot of times I'll open up the preconstruction meeting to the county representatives, also, or the road engineer, also. So you're welcome to sit in on that. A lot times we hold them in St. Paul, sometimes I'll come out to the area if people would like to attend, so there's some transparency and you have an idea of what's going on.

And if we get feedback, that helps us, then, going forward in other counties also, and other project areas also.

Any other questions of me at this point in time? Any other questions?

If there aren't any other questions, I would like to thank you for coming. I'll be here afterwards, if there's any questions afterwards. If you didn't sign up, I'd encourage you to sign up. If you want copies of anything, please take it there (indicating).

One last thing, as I mentioned, comments are due November 4th. There's a sheet back here. You can put your comments on that, fold it over and

1 put a stamp on it and send it to me and that will
2 also go into the record and will be posted on
3 eDockets and our website, also.
4 No other questions? Thank you for
5 coming. If you want to come back tonight, we'll be
6 here, you're more than welcome. Send your friends
7 and family.
8 Thank you for coming. And, again, if you
9 signed up on our electronic mailing list, you'll get
10 an e-mail sent to you indicating what's going on
11 occasionally.
12 So, thank you.
13 (Public comment concluded.)
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