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PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of Highland Wind Farm, LLC, for a Certificate of Public Convenience and Necessity to Construct a 102.5 Megawatt Wind Electric Generation Facility and Associated Electric Facilities, to be Located in the Towns of Forest and Cylon, St. Croix County, Wisconsin

2535-CE-100

FINAL DECISION

This is the Final Decision regarding the application of Highland Wind Farm, LLC (Highland), to construct a new wind electric generation facility. Highland is seeking a Certificate of Public Convenience and Necessity (CPCN) from the Commission, as provided in Wis. Stat. § 196.491(3). Highland proposes to construct this facility in the towns of Forest and Cylon, St. Croix County, Wisconsin. The project includes construction of up to 44 wind electric generating turbines, depending on turbine model selected, and associated facilities to interconnect with the existing Northern States Power Company-Wisconsin electric transmission system in the area. The project would have a generating capacity of up to 102.5 megawatts (MW).

The CPCN application is DENIED. Highland's Emergency Request filed on February 22, 2013, is also DENIED.

Introduction

On December 19, 2011, pursuant to Wis. Stat. § 196.491 and Wis. Admin. Code chs. PSC 4 and 111, Highland filed with the Commission an application for a CPCN to construct its proposed project. The Commission found the application to be complete on March 29, 2012. A Notice of Proceeding was issued on April 20, 2012. Wisconsin Stat. § 196.491(3)(g) requires that the Commission take final action within 180 days after it finds a CPCN application complete unless the Commission receives an extension from the Dane County Circuit Court. On August 13,

2012, the Circuit Court granted the Commission an extension of 180 days. The Commission must now take final action on or before March 25, 2013, or the application is approved by operation of law.

A prehearing conference was held on May 30, 2012. Requests to intervene were granted to Clean Wisconsin (Clean WI), Forest Voice, Inc. (Forest Voice), RENEW Wisconsin (RENEW), and the town of Forest. The parties, for the purposes of review under Wis. Stat. §§ 227.47 and 227.53, are listed in Appendix A.

Subsequently, requests for intervenor compensation (IC) were filed by Forest Voice and Clean WI. By *Order* dated July 20, 2012, the Commission modified and approved Forest Voice's application for IC in the amount of \$20,000. By *Order* dated June 25, 2012, the Commission modified and approved an application for IC filed by Clean WI in the amount of \$43,000. By *Order* dated December 3, 2012, the Commission modified and approved a supplemental IC application of Clean WI and Forest Voice in the amount of \$21,929, for measurement of infrasound and low-frequency noise (ILFN)¹ at the Shirley Wind Farm (Shirley).

The Commission held technical hearing sessions in Madison on October 9, 10, and December 3, 2012. Additional technical hearing sessions regarding ILFN measurements at Shirley were held in Madison on January 17 and 18, 2013. Public hearings were held in the project area on October 11, 2012, in Forest, Wisconsin.

At the technical sessions, expert witnesses offered testimony and exhibits on behalf of Clean WI, Forest Voice, the town of Forest, and Highland. The Commission conducted its hearings as Class 1 contested case proceedings, pursuant to Wis. Stat. §§ 196.491(3)(b),

¹ Infrasound is generally defined as sounds below 20 hertz (Hz), and low frequency noise as sounds between 20 and 200 Hz.

227.01(3)(a), and 227.44. At the public hearings in Forest, the Commission accepted both oral and written testimony from members of the public. The Commission also requested and received comments from members of the public through its Internet web site.

The issue for hearing, as determined at the May 30, 2012, prehearing conference, was:

Does the project comply with the applicable standards under Wis. Stat. §§ 1.11, 1.12, 196.025, 196.49, and 196.491, and Wis. Admin. Code chs. PSC 4 and 111?

Initial and reply briefs were filed on December 17, 2012, and January 3, 2013, respectively.

Initial briefs opposing the project, or aspects of it, were filed by Forest Voice and the town of Forest. Clean WI and Highland filed initial briefs in support of the project. Reply briefs were filed by Clean WI, Forest Voice, the town of Forest, and Highland. Additional initial and reply briefs regarding the ILFN portion of the proceeding were filed by Clean WI, Forest Voice, the town of Forest, and Highland on January 29 and 31, 2013, respectively.

The Commission discussed the record in this matter at its open meeting of February 14, 2013. On February 22, 2013, Highland filed an “Emergency Request” requesting that the Commission reconsider its “preliminary determination” in this docket and for leave to present additional evidence. The Commission further discussed this matter at its open meeting of March 1, 2013.

Findings of Fact

1. Highland is proposing to construct a wholesale merchant plant, as defined in Wis. Stat. § 196.491(1)(w). Highland will not provide retail electric service, nor is it a public utility or an affiliate of a public utility.

2. The Highland project, based upon the design as presented and the accompanying modeling in this record, is not in the public interest and would create undue adverse impacts on

public health and welfare, and individual hardships because there are multiple nonparticipating residences where Highland has failed to demonstrate compliance with the Wis. Admin. Code § PSC 128.14(3) nighttime audible noise limit of 45 dBA (A-weighted decibels).

Conclusions of Law

1. The Commission has jurisdiction under Wis. Stat. §§ 1.11, 1.12, 44.40, 196.02, 196.025, 196.395, and 196.491 to issue this Final Decision.
2. The Commission must consider, under Wis. Stat. § 196.491(3)(dg) and Wis. Admin. Code § PSC 128.02(3), whether the Highland project is consistent with the standards set forth in Wis. Admin. Code ch. PSC 128 when reviewing an application filed on or after March 1, 2011.
3. Pursuant to Wis. Admin. Code § PSC 128.02(4), nothing in Wis. Admin. Code ch. PSC 128 precludes the Commission from giving individual consideration to exceptional or unusual situations and applying requirements to the Highland project that may be lesser, greater, or different from those provided in Wis. Admin. Code ch. PSC 128.
4. The Commission's Environmental Assessment (EA) complies with Wis. Stat. § 1.11.

Opinion

Project Description

Highland proposes to construct a new wind electric generation facility in the towns of Forest and Cylon, in northeast St. Croix County, Wisconsin. The project would include up to 44 wind turbines with an electric generating capacity of up to 102.5 MW, depending on the turbine model selected. The facility would consist of the wind turbines, access roads to the turbines, an

underground 34.5 kilovolt cable system to collect the power produced at each turbine, a new interconnection substation to connect the facility to the existing electric transmission system, an operations and maintenance building, and associated facilities. All of the wind turbines would be located in the town of Forest. A portion of the electric collector circuits and the interconnection substation would be located in the town of Cylon.

The project area consists of about 26,500 acres of predominantly agricultural land. Highland holds agreements with landowners for about 6,200 acres within the project area upon which project facilities could be located. The community of Forest lies in the southwestern corner of the project area.

Highland proposes to use one of three turbine models for the project. The overall height of the turbines would be between 491 and 497 feet, depending on the turbine selected. The turbine models, generating capacity, number required, and total facility nameplate generating capacity are included in Table 1, below.

Table 1 Wind turbine models under consideration

Turbine Model	Turbine Nameplate Capacity	Required Number of Turbines	Project Nameplate Capacity
Nordex N100	2.5 MW	41	102.5 MW
Nordex N117	2.4 MW	42	100.8 MW
Siemens SWT-2.3	2.3 MW	44	101.2 MW

Highland has identified 41 primary and 11 alternate sites in the project area capable of supporting wind turbine installations. Highland states that these sites have adequate wind resources and are acceptable considering environmental and other concerns.

In its CPCN application, Highland provided a proposed project layout consisting of the preferred 41 turbine sites for each of the wind turbine models under consideration. In response to

concerns expressed by residents of the project area at the public hearing, Highland provided revised project layouts, which use some alternate turbine sites rather than Highland's original preferred sites. These revised project layouts include 41, 42, and 44 turbines for the Nordex N100, Nordex N117, and Siemens SWT-2.3 turbines, respectively. Highland indicated at the conclusion of these proceedings that it would not object should the Commission wish to exclude the Nordex N100 model from consideration for this project.

Noise

Wisconsin Admin. Code § PSC 128.14(3) states:

PSC § 128.14(3) NOISE LIMITS. (a) Except as provided in par. (b), subs. (4)(c) and (5), an owner shall operate the wind energy system so that the noise attributable to the wind energy system does not exceed 50 dBA during daytime hours and 45 dBA during nighttime hours.

Of the two common types of wind noise limits, absolute and ambient-based, the Wis. Admin. Code § PSC 128.14 noise limits are considered to be absolute limits. Absolute limits are maximum sound levels from wind facilities at sensitive receptors, regardless of the ambient sound level. Ambient-based noise limits typically specify some increment above the ambient sound level that may not be exceeded.

The intent of the Wind Siting Council when considering the Wis. Admin. Code ch. PSC 128 noise limits is documented in the *Wind Siting Council Final Recommendations to the Public Service Commission*, which states:

For all system size categories, the noise attributable to the system should never be allowed to exceed 45 dBA at night or 50 dBA during the day, as measured at the outside wall of any nonparticipating residence or occupied community building. As required by the Commission's *Measurement Protocol for Sound and Vibration*

Assessment of Proposed and Existing Wind Electric Generation Plants (Noise Protocol), Highland

provided as part of its CPCN application noise modeling predicting the noise impact of the proposed project at nonparticipating residences in the project area. The sound contours were generated using the WindPRO computer modeling software, which implements International Organization for Standardization (ISO) Standard 9613-2. The sound contours provided in Highland's CPCN application use a ground absorption coefficient setting of 0.0 in the WindPRO software. Commission staff's noise analysis of the project as initially proposed was completed solely on the modeling included in Highland's CPCN application. Highland later provided WindPRO modeling using a ground absorption coefficient of 0.5, for revised project layouts intended to address concerns expressed by residents of the project area at the public hearing. Clean WI advocated for using a ground absorption coefficient of 0.5, contending that it was a more realistic predictor given the type of terrain at the Highland project site and that the use of 0.0 would overstate the expected sound levels from the project. The town of Forest and Forest Voice offered testimony in support of the more conservative 0.0 ground absorption coefficient. Modeling using a ground absorptivity coefficient of 0.0 was not provided for the revised project layouts.

In sound modeling, a ground absorption coefficient is used to characterize the ability of the ground to attenuate sounds. A ground absorption coefficient of 0.0 represents hard, acoustically reflective ground, while a value of 1.0 represents highly-absorptive conditions. A ground absorption coefficient of 0.5 represents semi-absorptive conditions. The lower the ground absorptivity value used, the higher the predicted sound level will be at residences represented in the model. Section 7.3 of ISO Standard 9613-2 specifies criteria for use of ground absorption coefficient values for various ground conditions. Wisconsin Admin. Code § PSC 128.14 does not

address ground absorption. Use of a 0.0 ground absorption coefficient would result in the highest, or worst-case, predicted sound levels from a proposed project.

The results of Highland's computer modeling show compliance with the Wis. Admin. Code § PSC 128.14(3) daytime noise limit of 50 dBA for the original project layout using the ground absorptivity coefficient of 0.0. However, the modeling shows that the Wis. Admin. Code § PSC 128.14(3) nighttime noise limit of 45 dBA would not be met for between 20 and 45 nonparticipating residences. These results are summarized in the following table by turbine model alternative:

	Total	45.1-46.0 dBA	46.1-47.0 dBA	47.1-48.0 dBA	48.1-49.0 dBA	49.1-50.0 dBA
Nordex N100/100	45	18	18	7	2	0
Nordex N117/91	27	18	7	2	0	0
Siemens SWT-2.3-113	20	16	4	0	0	0

The Noise Protocol also requires that the post-construction noise study demonstrate compliance with applicable noise limits. Mitigation options to achieve compliance after construction is complete are limited should an exceedance of the applicable noise limit be identified during any post-construction noise study. Wisconsin Admin. Code § PSC 128.14(4)(c) authorizes the use of operational curtailment as a method available to comply with the audible noise standards set forth in Wis. Admin. Code § PSC 128.14. However, at the present time, these mitigation options are limited to operating the turbines in noise reduction modes, or not operating certain turbines under certain conditions. Such operational curtailment strategies often result in reduced electrical output from the affected turbines. Further, use of operational curtailment to ensure compliance with the audible noise standard could often place the burden on the impacted

landowner to complain and demonstrate non-compliance before operations are curtailed. (*See Wis. Admin. Code §§ PSC 128.14(4)(b).*)

As such, the Commission finds that it is prudent to ensure compliance with applicable audible noise limits using conservative computer modeling prior to construction. These sound modeling assumptions may vary from case to case depending upon the specific facts and circumstances of any given case. The Commission recognizes that modeling is imperfect and merely a predictive tool. Given the inherent imperfections in the use of modeling, the Commission finds that it is reasonable to err on the side of conservative assumptions so as to reduce the risk of under-stating the potential impacts on nonparticipating landowners.

The Commission finds that the sound modeling in this case using a ground absorption coefficient of 0.0 for this project is reasonable, consistent with ISO Standard 9613-2, and supported by this record. The fact that Highland used this factor in its initial modeling is also a good indication that even the applicant, at least initially, concluded that 0.0 is reasonable.

The Commission further finds that it is reasonable to require Highland to show compliance with the Wis. Admin. Code § PSC 128.14(3) nighttime audible noise limit of 45 dBA under worst-case computer modeling assumptions using a ground absorption coefficient of 0.0. The Commission recognizes that operational curtailment may be used after the turbine is constructed to achieve compliance with this limit. Although the Commission does not make a definitive conclusion regarding whether curtailment should be considered in the design phase, or only as a mitigation method to comply with noise standards after the system is built, it does conclude that there is insufficient evidence in this record to demonstrate that this is a viable pre-construction design tool. There is limited information in this record regarding curtailment other than statements

by Highland that it will comply with the noise standards using curtailment as a mitigation strategy, if necessary. Included in the record, is also some limited information that the proposed turbines have a noise reduction mode that could be used. Highland concedes that it did not run any models that included operation of the turbines in noise reduction modes.

Wisconsin Admin. Code § PSC 128.14(2)(c) requires that an owner “design a wind energy system to comply with the noise standards in this section under planned operating conditions.” Highland has not provided modeling using the most conservative modeling assumptions that demonstrate that under planned operating conditions the project complies with the Wis. Admin. Code § PSC 128.14(3) nighttime audible noise limit of 45 dBA. The Commission concludes that it is appropriate to deny Highland’s application for a CPCN. Highland may either request reopening of this case under Wis. Stat. § 196.39, petition for rehearing under Wis. Stat. § 227.49, or file a new application under Wis. Stat. § 196.491 if and when it can demonstrate through sound modeling using a ground absorption coefficient of 0.0 that the project as designed and operated will not, based upon the model results, have any nonparticipating residences that exceed the Wis. Admin. Code § PSC 128.14(3) nighttime audible noise limit of 45 dBA.

Highland’s Emergency Request

Following the Commission’s discussion of the record in this proceeding, and prior to issuance of this Final Decision, Highland filed an “Emergency Request” asking that the Commission reconsider its “preliminary determination” in this docket and for leave to present additional evidence pursuant to Paragraph IV.A.5.f of the Prehearing Conference Memorandum.² Forest Voice filed a preliminary response in opposition to the request and requested an extension

² The Prehearing Conference Memorandum permits such filings consistent with Wis. Stat. § 227.45.

of time to more fully respond. Other parties to this proceeding also filed responses to this request, and Highland filed replies thereto.³ One non-party attempted to weigh in on the request.⁴

Highland's Emergency Request comes after almost one year of work on this docket by Commission staff and others,⁵ after more than 300 public comments have been received, and after six days of hearings. It also comes on the eve of the Commission's statutory deadline pursuant to Wis. Stat. § 196.491(3)(g) to take final action. Highland concedes its request is "extraordinary." (Request, at p. 16.)

Highland's stated basis for this extraordinary request is, in sum, to salvage its business investment:

If the Commission denies the Application rather than conditioning its approval, the value of Highland's \$2.0 million investment and six years of labor will evaporate. The investment will be lost because there is no time left for refiling a new application, seeking rehearing, or seeking reopening of a final order. If an order conditionally approving the Application is not issued before March 25, 2013, Applicants will miss the opportunity to participate in the recently announced Xcel Energy Wind RFP process and the chance to use production tax credits to help finance the Project, opportunities which are critical to the ultimate success of the Project.

(Request, at p. 2.) Clean Wisconsin and RENEW support Highland's request. Forest Voice and the town of Forest object to Highland's request.

Highland's request for this Commission to reconsider its "preliminary determination" has no statutory basis. Only final decisions or orders are subject to reconsideration or rehearing. *See* Wis. Stat. §§ 196.39 and 227.49. While the Commission discussed the record and made

³ *See* Renew Wisconsin's Comments on Highland Wind Farm's Emergency Request for Leave to Present Additional Evidence; Clean Wisconsin's Comments on Highland Wind Farm's Emergency Request for Reconsideration and Leave to Present Additional Evidence; Town of Forest's Response to Highland's Emergency Request; Response to Forest Voice's Preliminary Statement in Opposition to Highland Wind Farm LLC's Request to Reconsider and Present Additional Evidence; Highland Wind Farm LLC's Response to Town of Forest's Response to Highland's Emergency Request.

⁴ As Wis. Stat. § 227.45 provides the opportunity for parties to comment, the Commission rejected this response and did not consider it.

⁵ In its Emergency Request, Highland notes that it has been working on this project for six years. (Request, at p. 1.)

preliminary determinations based upon that discussion at its open meeting of February 14, 2013, there is no decision subject to reconsideration or appeal unless and until the written Final Decision is approved by the Commission and signed by the Secretary to the Commission. The fact that a private service may make available a purported written transcript of the open meeting discussion does not elevate that discussion to the status of a final order that can be reviewed or appealed. The Commission speaks through its written Final Decision. Permitting parties to preemptively request reconsideration based upon an open meeting discussion record runs contrary to the law and sound Commission practice.

Highland argues “[n]one of the procedural remedies typically available in the post-final decision phase, such as formal rehearing or reopening, can be completed in time for the investment to be rescued.” (Request, at p. 2.) The Commission finds that Highland has not offered sufficiently compelling reasons to deviate from past Commission practice and the statutorily prescribed review process. Highland began its work on this project and filed this application more than one year ago—long before the recently announced Xcel Energy Wind Request for Proposals (RFP). While changes in the energy market may make this RFP particularly appealing, Highland started this project long ago without a particular RFP opportunity in sight and ran the risk that changes in the marketplace could occur. The Commission finds that the fact that this business risk assumed by Highland has apparently come to fruition does not warrant side-stepping the statutory post-decision review process. Accordingly, the Commission denies Highland’s unprecedented request.

Even if the Commission were to conclude that an extraordinary circumstance was present to justify deviation from past Commission practice and the normal statutory process, the

Commission denies this request on due process grounds. Forest Voice argues that granting the request “would be an extraordinary denial of due process to Intervenor.” (Forest Voice Response, at p. 1.) The Commission agrees.

Highland requests that the Commission accept new evidence that Highland contends addresses the concerns with the project that the Commission expressed at its open meeting of February 14, 2013. Forest Voice notes that Wis. Stat. § 227.45(2) requires that “every party shall be afforded adequate opportunity to rebut or offer countervailing evidence.” Highland counters, contending that in the 21 business days between the date of filing of its Emergency Request and before the CPCN deadline, there is time for Forest Voice and the other parties to respond. The Commission disagrees.

Forest Voice notes that Highland “had notice for months that whether the proposed turbines would meet the PSC 128 noise standards is an issue in this docket, and there can be no excuse or exception for the failure to offer this evidence at an earlier stage in this proceeding when it would have been subject to thorough review and cross-examination.” (Forest Voice Response, at p. 5.) To the extent, as Highland claims, the new evidence it now presents is in response to concerns raised by the Commission, there is no reason why that new evidence should not be subject to the same scrutiny as all of the other evidence that has been entered into this record. To be fair to all of the parties and interested persons, more than 21 days is necessary. Unfortunately, the CPCN statutory deadline cannot, as a matter of law, be extended any further. Too much time and effort by all of the parties, the public, and Commission staff have gone into this proceeding to jeopardize it now at the eleventh hour with a potential procedural misstep that fails to provide an adequate opportunity for all of the parties to rebut or offer countervailing evidence. This is particularly true

where there are other avenues of review available to Highland to have any new or additional evidence considered after the issuance of this Final Decision. As a result, the Commission denies Highland's request to accept additional evidence at this late stage in the proceeding. As noted previously, Highland is free to offer this additional evidence in a subsequent reopener, a request for rehearing, or a new application.

Compliance with the Wisconsin Environmental Protection Statute

Although this application is denied for the reasons stated, the Commission concludes its environmental review in this docket has been appropriate. Wisconsin Stat. § 1.11 requires all state agencies to consider the environmental impacts of "major actions" that could significantly affect the quality of the human environment. In Wis. Admin. Code ch. PSC 4, the Commission has created three tables that categorize the types of actions it undertakes for purposes of complying with this statute. Table 1 identifies proposed projects that qualify as major actions, for which an environmental impact statement (EIS) is always needed; Table 2 lists proposals with the potential to significantly affect the quality of the human environment, for which the Commission will produce an environmental assessment (EA) in order to determine whether an EIS is needed; and Table 3 describes actions that normally require neither an EIS nor an EA. The Highland project fits within Table 2, item br., as a new wind-powered electric generating facility that is 10 MW or larger. To prepare either an EA or an EIS, Commission staff gathers available information from previously completed studies, published research literature, public comments, staff experience, site visits, and other agencies and experts. All of this information is then compiled in an EIS or EA to inform the public and the Commission about the expected and potential impacts of the project.

An EA dated July 18, 2012, was prepared by Commission staff in consultation with the Wisconsin Department of Natural Resources. Based on the detailed environmental review of this project, a determination was initially made that the potential impacts of the project would not have a significant effect on the human environment and, therefore, preparation of an EIS for the proposed project was not required.

The Commission received information in these proceedings regarding ILFN. A team of acoustic experts obtained ILFN measurements at three residences near Shirley during the period December 4 through 7, 2012. The results of the team's ILFN measurements, *A Cooperative Measurement Survey and Analysis of Low Frequency and Infrasound at the Shirley Wind Farm in Brown County, Wisconsin*, (Shirley Report) has been filed using the Commission's Electronic Regulatory Filing (ERF) system. ([PSC REF#: 178263](#).)

Subsequently, after the Shirley Report was filed, the Commission prepared a Supplemental EA focusing solely on the information provided in the report. A Preliminary Determination that no EIS was necessary was issued on January 24, 2013. Comments on the Preliminary Determination were collected through February 8, 2013. Based on the additional review presented in the Supplemental EA, the initial determination was affirmed that the potential impacts of the project would not have a significant effect on the human environment.

The Commission finds that this analysis and review meet the requirements of Wis. Stat. § 1.11 and Wis. Admin. Code ch. PSC 4. The EA and Supplemental EA compiled information regarding the potential environmental and health impacts of the project to inform the Commission's decision and concluded that an EIS was not necessary or required. The EA,

Supplemental EA, and the additional record evidence submitted by the parties thoroughly examine the potential health effects.

Future Applications

As Highland's application is the first such application received since the promulgation of Wis. Admin. Code ch. PSC 128, and given some of the unique issues presented in this proceeding, the Commission will address some of these issues to provide guidance to Highland and future applicants seeking Commission approval of wind energy systems in Wisconsin.

Land Use and Development Plans

Wisconsin Stat. § 196.491(3)(d)6. requires, in order to approve a CPCN application, that the Commission must find that the proposed facility "will not unreasonably interfere with the orderly land use and development plans for the area involved."

While it is not necessary for the Commission to make this finding in this case given the Commission's denial of Highland's application on other grounds, the Commission observes that the statute recognizes that a project may have some interference with the land use and development plans for the area, but that any such interference cannot be unreasonable. The Commission also notes that the statute provides that the land use and development plans must be "orderly." The statute does not define "orderly" and prior Commission decisions have not elaborated upon the meaning of this term. In prior cases, the Commission has found that development of wind generation facilities in rural, agricultural project areas did not unreasonably interfere with the land

use and development plans at issue in those proceedings.⁶ Any future wind development in Wisconsin will most likely be in rural areas. An issue that may require Commission decision in the future is whether a land use plan that prohibits the construction of wind energy systems in such areas would be considered “orderly” within the meaning of the statute or whether any such plan would be legal.⁷

Noise Modeling

As discussed in this Final Decision, the Commission concludes that use of a ground absorption coefficient of 0.0 is the appropriate factor to be used in the pre-construction sound modeling for this case. The Commission is not, however, prepared at this time to direct Commission staff to modify the Commission’s Noise Protocol to select a single ground absorption factor to be used in all cases. The Commission recognizes that neither a factor of 0.0 nor a factor of 0.5 is perfect as neither may be representative of the absorptive conditions of the ground year-round. The Commission found it helpful to have models using both 0.0 and 0.5 ground absorption coefficients. Future applicants should conduct their pre-construction sound modeling using both 0.0 and 0.5 ground absorption coefficients, and submit both models to the Commission with the application.

⁶ *See, e.g., Application of Wisconsin Electric Power Company for a Certificate of Public Convenience and Necessity to Construct Wind Electric Generation Facility and Associated Electric Facilities, to be located in the Towns of Randolph and Scott, Columbia County, Wisconsin, docket 6630-CE-302, Final Decision (January 22, 2010) (PSC REF#: 126124); Application of Forward Energy LLC for a Certificate of Public Convenience and Necessity to Construct a Wind Electric Generation Facility and Associated High Voltage Electric Transmission Facilities, to be Located in Dodge and Fond du Lac Counties, Wisconsin, docket 9300-CE-100, Final Decision (July 14, 2005) (PSC REF#: 37618).*

⁷ Wisconsin Admin. Code § PSC 128.13(2)(a) prohibits a political subdivision from establishing “long-term land use planning requirements or practices that preclude construction of a particular type, or any type, of wind turbine or wind energy system within the political subdivision’s jurisdiction, except as provided in s. 66.0401(4)(f)2., Stats.”

Audible Noise and Infrasound Low-Frequency Noise Testing

There was discussion in the record for this proceeding as to how compliance with an audible noise requirement is to be determined. As discussed previously in this Final Decision, Wis. Admin. Code § PSC 128.14(3) provides that “an owner shall operate the wind energy system so that the noise attributable to the wind energy system does not exceed 50 dBA during the daytime hours and 45 dBA during the nighttime hours.” The rule does not articulate the methodology that is to be used to measure compliance or what constitutes compliance with this absolute limit. Clean WI offered evidence in this case that in order to meet an absolute limit 100 percent of the time, the design goal of the project would need to be up to 10 dBA below the noise limit. This would be necessary to avoid temporary excursions above the noise limit which Clean WI witness David Hessler stated are unavoidable. Mr. Hessler also testified that if measured sound level is in compliance with the limit 95 percent of the time or more, he would consider the development to be in compliance.

The Commission’s decision in this proceeding and its direction to future parties to use conservative sound modeling assumptions such as a 0.0 ground absorption coefficient is intended to minimize the possibility of temporary excursions above the noise limit and may achieve the same objective as having a lower design goal for projects as offered by Mr. Hessler. However, the Commission recognizes that there may be unavoidable circumstances notwithstanding the use of the most conservative modeling where curtailment may be necessary to avoid or respond to temporary excursions above stated audible noise limits. In future cases, it may be helpful for the parties to develop the record on this issue further and submit for the Commission’s consideration

some sort of percentage-based standard that takes into account the possibility of infrequent and unavoidable exceedances of stated limits.

Another item that would be helpful in future cases is a better developed record on the proposals for the methodologies that will be used post-construction to demonstrate compliance with the established audible noise limits. The Commission's Noise Protocol requires applicants to take post-construction measurements. This demonstration of compliance is included in the post-construction noise studies for the Glacier Hills Wind Project, docket 6630-CE-302, ([PSC REF#: 169890](#)) and all other wind projects previously authorized by the Commission.

At typical setback distances, project-only and ambient sound levels are often of similar magnitudes, meaning that any total measured sound level is influenced by both sources. As such, it is not appropriate to assume that any measured sound level is entirely from the project or the ambient. Because Wis. Admin. Code § PSC 128.14 includes an absolute noise limit, the project-only sound level must be calculated by measuring the total sound level with the wind turbines operating, then subtracting the ambient sound level occurring under similar wind and atmospheric conditions. While there are difficulties involved in making these calculations, two methods have been used for previous post-construction noise studies filed with the Commission:

- Place continuously recording sound level monitors at points of interest within the project area to record the combined ambient and project sound levels. Place additional sound level monitors well away from the project, but in areas with similar ambient sound levels and use those measurements to estimate the likely ambient sound level within the project area. Measure the sound levels both in the project area

and away from the area over several days, correlate the measurements, and estimate the project-only sound level.

- Take ten-minute sound level measurements on a moderately windy day with all wind turbines within several miles of the measurement points operating, then take additional measurements immediately afterward with the turbines shut down and the blades parked.

Under the second method, the wind speed must be within a narrow range, such that the turbines are operating, yet the wind speed at the measurement point is not so high that the measurements are highly influenced by “pseudo-noise” associated with air passing over the sound level meter microphone.

While these two methodologies have been used in the past, there may be others that should be considered. Having a clearer understanding at the onset as to the methodologies that will be used to show compliance would be helpful for the Commission and the public. Future applicants are encouraged to work closely with Commission staff in developing the post-construction noise testing study parameters, methodologies, and testing locations.

The Commission received information in these proceedings regarding ILFN. A team of acoustic experts obtained ILFN measurements at three residences near Shirley during the period December 4 through 7, 2012. This team of experts consisted of Messrs. George F. and David M. Hessler of Hessler and Associates, Inc., Dr. Bruce Walker of Channel Islands Acoustics, Dr. Paul Schomer of Schomer and Associates, Inc., and Mr. Robert Rand of Rand Acoustics. Michael Hankard of Hankard Environmental, acoustical consultant for the Highland and Shirley projects, accompanied, assisted, and observed the investigators on behalf of Highland on Wednesday,

December 5, 2012. These experts documented the results of the team's ILFN measurements in the Shirley Report.

Subsequent to the filing of the Shirley Report, and in cooperation with Mr. Wade Bray of HEAD Acoustics, additional analysis of the data gathered during the testing was conducted by Mr. Richard James on behalf of Forest Voice. Mr. James was not present while the measurements were gathered.

The Commission was presented with alternatives in this proceeding as to whether it should: (1) direct Commission staff to modify the Commission's Noise Protocol to require collection of post-construction ILFN sound measurements similar to those collected by the experts at Shirley for future wind electric generating facilities constructed in Wisconsin; (2) include in any future Commission order authorizing a new wind electric generating facility a requirement that the ILFN measurements be collected with the full cooperation of the development operators; and (3) require Highland to, as part of its post-construction noise study, undertake one or more specific tasks to further study ILFN.

The Commission thanks the collaboration of acousticians who worked cooperatively to provide the Commission with information on ILFN. This is a developing issue. The testing report, as well as additional substantial testimony, was included in this record on the subject. The Shirley Report documented the measurable presence of ILFN, but was not intended to be an exhaustive study of the subject matter and was not peer reviewed. Based upon the Shirley Report and the additional information presented by the acousticians in this proceeding, the Commission is not convinced that a causal link between ILFN at wind generating facilities and human health risks has been established to a reasonable degree of scientific certainty. That is not to say, however, that the

topic is not worthy of further study, and all of the acousticians agree on this point. The Commission believes that no single applicant seeking approval for a wind generating facility should have to shoulder the burden and costs alone of this further study.

While the Commission finds that it is premature at this point to modify the Noise Protocol to address ILFN or to mandate post-construction ILFN testing or further study, the Commission encourages the developers and operators of all wind generating facilities in Wisconsin to lend their support to and cooperation in future studies relating to ILFN as this is an industry-wide issue that should be examined further. Applicants should also consider addressing ILFN in future wind energy development applications.

Consistency with Wis. Admin. Code ch. PSC 128

When reviewing applications under Wis. Stat. § 196.491(3)(dg), the Commission is required to consider whether the installation of a wind energy system is consistent with the standards specified in Wis. Admin. Code ch. PSC 128. Additionally, pursuant to Wis. Admin. Code § PSC 128.10(4), there are certain provisions of chapter PSC 128 that are mandatory for all wind energy projects.⁸ The Commission is not required to apply all aspects of Wis. Admin. Code ch. PSC 128 because “[n]othing in this chapter shall preclude the commission from giving individual consideration to exceptional or unusual circumstances and applying requirements to an

⁸ Wis. Admin. Code § PSC 128.10 (4) MANDATORY REQUIREMENTS.

(a) Section PSC 128.105 applies to every owner of a wind energy system, regardless of the political subdivision in which the wind energy system is located and regardless of the contents of a political subdivision's ordinance or the lack of an ordinance.

(b) Section PSC 128.13 (2) (a) applies to every political subdivision, regardless of the contents of its ordinance or the lack of an ordinance.

(c) Section PSC 128.19 applies to every owner of a wind energy system of at least one megawatt, regardless of the political subdivision in which the wind energy system is located and regardless of the contents of a political subdivision's ordinance or the lack of an ordinance.

individual wind energy system that may be lesser, greater, or different from those provided in this chapter.” (Wis. Admin. Code § PSC 128.02(4).)

At several places in this record, Highland states that its project will comply with Wis. Admin. Code ch. PSC 128. (*See, e.g.,* Direct-HWF-Mundinger-8.) The record was a bit muddled, however, as to which part or parts of Wis. Admin. Code ch. PSC 128 Highland was agreeing to comply with and which parts it deemed either inapplicable or was requesting something different from what the rules provide.⁹ It would be helpful in future CPCN applications if the applicant could explicitly state and cite with specificity which provisions from Wis. Admin. Code ch. PSC 128 with which it intends to comply. This will greatly assist the Commission in making its determination as to whether the project is consistent with the requirements of Wis. Admin. Code ch. PSC 128.

Some of the requirements of Wis. Admin. Code ch. PSC 128 from which Highland specifically requested deviation were the requirements relating to decommissioning, Wis. Admin. Code § PSC 128.19. The Commission notes that these requirements are among those mandatory requirements that are, absent an exceptional or unusual circumstance, to be applied to all wind energy systems. While the Commission is willing to consider deviation from some of the decommissioning requirements in this and future cases, future applicants are encouraged to more clearly articulate the provisions for which they seek modification and why. Further, for those provisions that are mandatory pursuant to Wis. Admin. Code § PSC 128.10(4), applicants should

⁹ Based upon Commission staff’s parsing of this record, it appears that Highland was agreeing to comply with the following provisions: Wis. Admin. Code §§ PSC 128.14, 128.15, 128.16, 128.18(1)(f) and (g), 128.18(4)(a) and (b), and 128.40 to 128.42.

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make a clear argument demonstrating the exceptional or unusual circumstance that supports a Commission waiver or modification of the provision under Wis. Admin. Code § PSC 128.02(4).

Order

1. Highland's application for a CPCN is denied.
2. Highland's request for Emergency Relief is denied.
3. Jurisdiction is retained.
4. This Final Decision shall take effect one day after the date of service.

Concurrence and Dissent

Commissioner Callisto concurs in part, dissents in part, and writes separately (attached).

Dated at Madison, Wisconsin, this 14th day of March, 2013.

By the Commission:



Sandra J. Paske
Secretary to the Commission

SJP:JAL:cmk:DL: 00646525

See attached Notice of Rights

PUBLIC SERVICE COMMISSION OF WISCONSIN
610 North Whitney Way
P.O. Box 7854
Madison, Wisconsin 53707-7854

**NOTICE OF RIGHTS FOR REHEARING OR JUDICIAL REVIEW, THE
TIMES ALLOWED FOR EACH, AND THE IDENTIFICATION OF THE
PARTY TO BE NAMED AS RESPONDENT**

The following notice is served on you as part of the Commission's written decision. This general notice is for the purpose of ensuring compliance with Wis. Stat. § 227.48(2), and does not constitute a conclusion or admission that any particular party or person is necessarily aggrieved or that any particular decision or order is final or judicially reviewable.

PETITION FOR REHEARING

If this decision is an order following a contested case proceeding as defined in Wis. Stat. § 227.01(3), a person aggrieved by the decision has a right to petition the Commission for rehearing within 20 days of mailing of this decision, as provided in Wis. Stat. § 227.49. The mailing date is shown on the first page. If there is no date on the first page, the date of mailing is shown immediately above the signature line. The petition for rehearing must be filed with the Public Service Commission of Wisconsin and served on the parties. An appeal of this decision may also be taken directly to circuit court through the filing of a petition for judicial review. It is not necessary to first petition for rehearing.

PETITION FOR JUDICIAL REVIEW

A person aggrieved by this decision has a right to petition for judicial review as provided in Wis. Stat. § 227.53. In a contested case, the petition must be filed in circuit court and served upon the Public Service Commission of Wisconsin within 30 days of mailing of this decision if there has been no petition for rehearing. If a timely petition for rehearing has been filed, the petition for judicial review must be filed within 30 days of mailing of the order finally disposing of the petition for rehearing, or within 30 days after the final disposition of the petition for rehearing by operation of law pursuant to Wis. Stat. § 227.49(5), whichever is sooner. If an *untimely* petition for rehearing is filed, the 30-day period to petition for judicial review commences the date the Commission mailed its original decision.¹⁰ The Public Service Commission of Wisconsin must be named as respondent in the petition for judicial review.

If this decision is an order denying rehearing, a person aggrieved who wishes to appeal must seek judicial review rather than rehearing. A second petition for rehearing is not permitted.

Revised: December 17, 2008

¹⁰ See *State v. Currier*, 2006 WI App 12, 288 Wis. 2d 693, 709 N.W.2d 520.

Appendix A
SERVICE LIST

In order to comply with Wis. Stat. § 227.47, the following parties who appeared before the agency are considered parties for purposes of review under Wis. Stat. § 227.53.

PUBLIC SERVICE COMMISSION OF WISCONSIN

(Not a party, but must be served)

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PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of Highland Wind Farm, LLC, for a Certificate of Public Convenience and Necessity to Construct a 102.5 Megawatt Wind Electric Generation Facility and Associated Electric Facilities, to be Located in the Towns of Forest and Cylon, St. Croix County, Wisconsin

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CONCURRENCE AND DISSENT OF COMMISSIONER ERIC CALLISTO

I concur in the Final Decision's conclusion as to compliance with the Wisconsin Environmental Policy Act, Wis. Stat. § 1.11, and its prospective guidance on land use development plans and how future applicants for a Certificate of Public Convenience and Necessity (CPCN) should be more specific in identifying which portions of Wis. Admin. Code ch. PSC 128 they plan to comply with and to what extent.¹ I respectfully dissent from all other conclusions in the Final Decision.

The Commission denies Highland Wind Farm, LLC's (Highland) CPCN application and its related Emergency Request for leave to present additional evidence. I dissent because the CPCN denial misapplies our wind siting rules, Wis. Admin. Code ch. PSC 128, and introduces substantial uncertainty into the regulation of wind siting in Wisconsin. The Final Decision also incorrectly concludes that allowing limited, additional evidence into the record — evidence that would be subject to public hearing, cross-examination and rebuttal — would violate the due process rights of intervening parties. We should have allowed Highland to present its very limited additional evidence into the record since the evidence offered is precisely what the Commission asked for during its open meeting discussion of February 14, 2013.

¹ See Final Decision in this docket, at pp. 14-17, 22-24.

The CPCN Denial

The Final Decision's stated reason for denying the CPCN application is because Highland failed to demonstrate that the proposed project would comply with the nighttime noise limit of 45 dBA found in Wis. Admin. Code § PSC 128.14(3)(a).² Our rules require that wind facilities be designed "to comply with the noise standards [in Wis. Admin. Code § PSC 128.14] under planned operating conditions." Wis. Admin. Code § PSC 128.14(2)(c). The noise standards include maximum noise limits of 50 dBA during the day and 45 dBA during the night. Wis. Admin. Code § PSC 128.14(3)(a). The crux of the Final Decision is that because the applicant's pre-construction noise modeling predicts levels above 45 dBA (but below 50 dBA) at several non-participating residences, the project is inconsistent with the noise criteria in Wis. Admin. Code § PSC 128.14, and thus not in the public interest under the CPCN law, Wis. Stat. § 196.491. The Commission's reasoning rests on a faulty interpretation of Wis. Admin. Code § PSC 128.14(3)(a).

Our rules on wind turbine noise cannot rationally be read to require that projects be designed and modeled to never exceed 45 dBA at all non-participating residences. The rules plainly allow the operation of turbines at 50 dBA during the day,³ as the Final Decision itself acknowledges.⁴ While the Commission may deviate from the standards in Wis. Admin. Code § PSC 128.14, it is not purporting to do so in this case. Indeed, nowhere in the Final Decision is there a finding that the Highland project, or any other wind facility, may not emit noise levels that exceed 45 dBA (up to 50 dBA) during the day. It makes no sense to simultaneously allow turbines to operate at 50 dBA during the day, while also requiring that those same turbines be

² See Final Decision in this docket, Finding of Fact #2, at p. 4.

³ See Wis. Admin. Code § 128.14(3)(a).

⁴ See Final Decision in this docket, at p. 6.

site-designed in advance to never, under any circumstances, operate at levels that exceed 45 dBA.⁵ But that is exactly the effect of the Final Decision, and it is the chief reason why it is incorrect.

The proper interpretation of our rules is that they require projects to be designed to emit no more than 50 dBA, but that they must operate at 45 dBA at night. Clear support of that reading is the plain text of the rule — which specifically allows operation at 50 dBA, but requires the lower limit of 45 dBA at night. Wis. Admin. Code § PSC 128.14(3)(a). The question then is how does a project that is designed to operate at up to 50 dBA during the day stay below 45 dBA at night? Our rules again provide the answer: “[m]ethods available for the owner to comply with [the noise limits of 50 dBA during the day and 45 dBA at night] shall include operational curtailment of one or more wind turbines.” Wis. Admin. Code § PSC 128.14(4)(c).⁶ The only reading of Wis. Admin. Code § 128.14 that gives meaning and effect to both of the rule’s audible noise limits (50 dBA and 45 dBA) is one that contemplates the use of curtailment or other noise reduction technologies on a permanent and ongoing basis.⁷

⁵ The Commission’s preferred ground absorption coefficient of 0.0 predicts a worst-case scenario with respect to expected noise level emissions from a proposed project. See Final Decision in this docket at p. 8 (“Use of a 0.0 ground absorption coefficient would result in the highest, or worst-case, predicted sound levels from a proposed project.”)

⁶ Cf. *Final Decision, Application of Wisconsin Electric Power Company for a Certificate of Public Convenience and Necessity to Construct [the Glacier Hills Wind Park]*, docket 6630-CE-302, dated January 22, 2010, at p. 50, Order Point #10 (PSC REF#: 126124) (“WEPCO shall operate the project in a manner that meets noise limits of 50 dBA during daytime hours, and, upon complaint . . . , shall be permanently reduced to 45 dBA during nighttime hours Methods available for WEPCO to comply with both the daytime and nighttime noise limits shall include, but are not limited to, operational curtailment of the turbine or turbines contributing to the exceedance of the noise limits.”).

⁷ Without operational curtailment or the use of noise reduction modes, the only way for a project design to meet 45 dBA at night, but be allowed to exceed 45 dBA during the day, is to imagine physically moving the turbines every night at 10:00 p.m. and then physically putting them back where they were every morning at 6:00 a.m. — an absurd requirement. Note too that Wis. Admin. Code § PSC 128.14(4)(c) distinguishes between compliance with the 50 dBA and 45 dBA standards in Wis. Admin. Code § PSC 128.14(3)(a) and the “steady pure tone” standards in Wis. Admin. Code § PSC 128.14(3)(b). Operational curtailment is available only on a temporary basis for resolving violations of the “steady pure tone” standards in Wis. Admin. Code § PSC 128.14(3)(b), while the rule includes no such restrictions governing the duration of operational curtailment as a means to comply with the 50 dBA and 45 dBA noise limits found in Wis. Admin. Code § PSC 128.14(3)(a).

The Emergency Request

Highland made an Emergency Request for leave to present additional evidence in response to the Commission's concerns voiced during the open meeting of February 14, 2013. Specifically, Highland sought to introduce evidence of pre-construction noise modeling runs using a 0.0 ground absorption coefficient, predicting noise levels at all non-participating residences within the 45 dBA nighttime noise limit. The additional modeling runs assume that the noise reduction (or "cut-out") technology available on the turbines under consideration would be employed under certain wind speed and directional conditions. The Commission refused to consider the new modeling evidence because, in the majority's view, to do so would be a "deviation from past Commission practice" and a violation of due process.⁸

While not perfect, there was ample opportunity for sufficient due process had the Commission been interested in considering the newly-offered evidence. The applicant filed its Emergency Request and limited additional evidence on February 22, 2013, and the Commission discussed the request at its open meeting on March 1, 2013. At that open meeting, the Commission could have set a hearing date, with at least 10 days of advance notice consistent with Wis. Stat. § 227.44(1), and allowed for cross-examination and the opportunity to present rebuttal evidence. *See* Wis. Stat. § 227.45(2) ("Every party shall be afforded adequate opportunity to rebut or offer countervailing evidence."). The new modeling runs offered by Highland total 21 pages. The question at issue — noise modeling and compliance methods — is a primary issue in the case and is not new or novel to any of the parties. A properly noticed full hearing, including the opportunity for cross-examination and rebuttal testimony, all focused on just 21 pages of evidence, is more than due process under well-accepted notions of

⁸ *See* Final Decision in this docket at pp. 12-13.

administrative procedure and would subject Highland's new evidence to at least "the same scrutiny as all of the other evidence that has been entered into this record."⁹

Regulatory Certainty

Perhaps most troubling about the Final Decision is its lack of clear and coherent regulatory direction for the wind energy industry and those affected by wind energy development. This is a step backward. Through legislation and administrative rule-making, Wisconsin has enacted a uniform system of statewide wind siting rules.¹⁰ A key purpose of the rules is to provide certainty to local governments that desire to regulate wind siting, to the wind development industry as it evaluates where to pursue projects, to potentially affected landowners, and to the industry's supply-chain manufacturers, including those doing business in Wisconsin. Prior to the uniform rules, Wisconsin's approach to non-utility wind siting was a confusing, inconsistent patchwork that varied from jurisdiction to jurisdiction, often functioning as *de facto* moratoria on any and all wind development, and frequently inviting protracted litigation. It wasn't working, and so the Legislature and Commission developed rules that would apply statewide. The rules weren't easy to write and they were controversial (as are nearly all energy infrastructure siting issues), but ultimately the Commission promulgated a comprehensive regulatory package that the Legislature, after much debate, allowed to take effect.

For a moment, it appeared that the industry was on notice of what the rules were and how to play by them. The Final Decision undoes that. In its wake, we will have a 50 dBA day time

⁹ See *id.* at p. 13. Not even Forest Voice argues that there would be a denial of due process if the parties had until March 13, 2013, to respond, the opportunity "to file full argument and countervailing evidence," and "the right to cross examination of witnesses." See generally *Forest Voice's Preliminary Statement in Opposition, and Request for Extension of Time to Fully Respond, to Highland Wind Farm's Emergency Request*, dated February 25, 2013, and at p. 9 (PSC REF#: 181283).

¹⁰ See 2009 Wisconsin Act 40; Wis. Admin. Code ch. PSC 128.

operational noise limit, but a pre-construction design requirement of 45 dBA for both day and night. We will have a rule that specifically provides for operational curtailment as a preferred method to comply with audible noise limits, but a Commission apparently unwilling to consider noise modeling evidence that shows how curtailment affects predicted noise levels. This is not a regulatory environment that is conducive to business development or one which provides clear direction for local governments seeking to enact wind siting ordinances.

While I share some of my colleagues' concerns about Highland's pre-construction noise modeling, I was initially prepared to approve the CPCN with a specific condition regarding further modeling. Following Highland's Emergency Request, I would have allowed the new modeling runs into the record, set a hearing date, allowed for input from the other parties, and been prepared to take up the full CPCN before the statutory deadline. We have uniform wind siting rules on the books. It is time to clearly and transparently apply them.