

January 18, 2018

Via Electronic Filing

Mr. Daniel Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 Seventh Place East, Suite 350
St. Paul, MN 55101-2147

Re: *In the Matter of Big Blue Wind Farm, LLC 36 Megawatt Large Wind Energy Conversion System in Faribault County, Minnesota, IP-66851/WS-10-1238*

Response of Big Blue Wind Farm, LLC

Dear Mr. Wolf:

Pursuant to the Minnesota Public Utilities Commission's ("Commission") January 10, 2018 *Request for Response to Alleged Site Permit Violations and to Show Cause* ("Request") Big Blue Wind Farm, LLC ("Big Blue") respectfully submits the following Response. As discussed below, Big Blue has been taking, and continues to take, steps to address the noise concerns summarized in the Commission's Request. Big Blue does not believe, however, that it violated its Site Permit or that there is any basis to suspend or revoke the Permit.

Nevertheless, Big Blue agrees with the Department of Commerce's ("Department") recommendation that Big Blue conduct "on/off" noise monitoring in accordance with a Commission- approved noise protocol. Big Blue believes that such a step will permit the Project to move beyond the noise related complaints made by Mr. Dan Moore. With respect to the issue raised regarding Big Blue's 2014 Avian and Bat Monitoring Annual Report, Big Blue submitted a revised Report in a timely manner with the Commission on July 15, 2015, and the revised Report is available on e-Dockets. As discussed below, Big Blue believes that no further action is warranted on this issue.

A. Noise Protocol

1. Big Blue Did Not Violate its Site Permit.

In its Request, the Commission states:

Staff has reviewed the record in relation to several of the previous allegations of site permit violations and the recent DOC EERA comments. Per a DOC EERA

August 1, 2013 Compliance Review letter, it appears that a draft noise protocol may have been submitted to the DOC EERA sometime in 2012; the letter indicated that a review would be filed on the record and the matter brought before the Commission. Staff has not located the referenced noise protocol in the record or the subsequent review.

The noise protocol referenced was submitted to the Commission on December 6, 2012, and has been designated as e-Dockets No. 201212-81485-02. The Protocol states that “this technical memorandum presents the proposed Noise Study Protocol for the Big Blue LWECs installation. The purpose of the proposed protocol is to satisfy the requirements of Section 6.6 (Noise) of the Site’s Public Utilities Commission permit.”

Subsequently, on August 6, 2013, the Department filed its Annual Compliance Review (e-Dockets No. 20138-89976-01) stating that “the e-filed noise study protocol for the project is under review. Comments on that protocol will be provided separately.” Big Blue never received comments from the Department on the filed protocol and could not identify any comments submitted to the Commission. More importantly, however, the Commission never approved the filed Protocol as is required under Section 6.6 of the Big Blue Site Permit; such approval is a condition precedent to conducting the proposed study. Specifically, Section 6.6 of Big Blue’s Site Permit specifically provides that a post-construction noise study is to be conducted “[u]pon approval of the Commission:”

6.6 NOISE

The Permittee shall submit a proposal to the Commission at least ten (10) working days prior to the pre-operation compliance meeting for the conduct of a post-construction noise study. ***Upon the approval of the Commission, the Permittee shall carry out the study.*** The study shall be designed to determine the operating LWECs noise levels at different frequencies and at various distances from the turbines at various wind directions and speeds. The Permittee shall submit the study within eighteen (18) months after commercial operation. [Emphasis added.]

Under the express language of the Site Permit, Big Blue was obligated to “submit a proposal . . . for the conduct of a post-construction noise study.” As noted, Big Blue submitted the required proposal on December 6, 2012. Under the plain language of the Permit, Big Blue’s obligation to carry out the study does not arise until the Commission approves the study protocol. Such approval was never received. Big Blue does not highlight this fact to cast blame or to hide behind a strict reading of the Site Permit.¹ Instead, Big Blue emphasizes that there were inadvertent breakdowns

¹ As the Commission is aware, Big Blue changed ownership during this time, which may have resulted in some confusion with respect to permitting compliance. In particular, on November 7, 2012, Big Blue submitted an informational filing to notify the Commission of a change in the upstream ownership of Big Blue Wind Farm, LLC. *See* e-Dockets No. 201211-80440-01. Big Blue stated that as a result of Exergy Development Group of Idaho, L.L.C.’s default related to the construction and debt-financing of the Big Blue Wind Farm, Big Blue is now 100% owned and controlled by the Fagen family of Granite Falls, Minnesota.

in the compliance process despite good faith efforts by all parties.² While unfortunate, such breakdowns do not provide a basis for (1) finding that Big Blue violated its Site Permit; or (2) revoking or suspending Big Blue's Site Permit.

Finally, Big Blue notes that it did conduct a noise study in February 2013 ("2013 Noise Study") to verify the manufacturer stated noise levels at the Project turbines. As Big Blue explained in its August 29, 2017 Response to the noise complaints filed in this docket, however, the 2013 Noise Study did not measure noise levels at receptor locations.³ The 2013 Noise Study was not intended to satisfy Section 6.6 of the Site Permit. Rather, it was conducted independently while Big Blue's proposed noise protocol was pending before the Commission. Big Blue ultimately filed the results of the 2013 Noise Study with the Commission on July 7, 2017 (*see* e-Dockets No. 20177-133620-01).

2. The Noise Study Conducted in June - July 2017 Does Not Provide a Basis for Concluding that Big Blue Violated its Site Permit or any Rules or Regulations.

With respect to the noise monitoring that Big Blue conducted in June-July 2017 ("2017 Noise Study"), the Commission's Request states:

In July 2017, Commission staff issued an information request to Big Blue to obtain any noise monitoring data collected onsite. On July 7, 2017, Big Blue filed noise monitoring results collected in late June to early July of 2017 (July 2017 Noise Monitoring Report). DOC EERA reviewed the report and concluded on October 31, 2017 that Big Blue is in potential violation of the terms and conditions of the permit. Per the DOC EERA's comments:

While the [July 2017 Noise Monitoring] report indicates it is meant to satisfy Section 6.6 requirements of the Big Blue Wind Farm, LLC Site Permit issued on August 17, 2011, EERA staff does not believe that the submittal is consistent with the requirements of the permit. . . .

Initially, Big Blue did not file "noise monitoring results collected in late June to early July of 2017" on July 7, 2017. As noted above, Big Blue filed the results of the 2013 Noise Study with the Commission. Big Blue provided the 2017 Noise Study by email to Department Staff seeking input. The Department included the 2017 Noise Study as an attachment to its October 31, 2017 Comments and Recommendations on Noise Complaint and Noise Compliance ("October 31 Comments").

Second, Contrary to the Commission's Request and the Department's October 31 Comments, the monitoring conducted in June and July 2017 was not intended to replace the 2013

² Indeed, as the Department noted in its August 6, 2013 Annual Compliance Review, it was "implementing a new compliance tracking system for these permits."

³ The noise standards set forth in Minnesota Rules Chapter 7030 specify the maximum allowable noise levels that may not be exceeded at the receptor for more than 10 percent of any hour ("L10") and 50 percent of any hour ("L50"), respectively. Therefore, while the noise levels at the turbines locations may exceed 60 db at times, Big Blue does not believe that the noise levels exceed the 50 db standard at the relevant receptors.

Noise Study or otherwise meet the requirements of Section 6.6 of the Site Permit.⁴ Big Blue communicated this fact to Commission Staff in email correspondence dated July 26, 2017.⁵ The 2017 Noise Study was conducted in response to Mr. Dan Moore's noise complaints. The results were not e-filed with the Commission because Big Blue concluded that the study was flawed due to mechanical breakdowns and the fact that Big Blue was continuing to work with Siemens-Gamesa on certain manufacturer-related remedial actions.⁶ These equipment deficiencies were noted in the 2017 Noise Study.⁷

Furthermore, even assuming that the 2017 Noise Study provided accurate results, it is inappropriate to conclude that the 2017 Noise Study shows that the Project has exceeded the noise standards set forth in Minnesota Rules Chapter 7030 and Section 4.3 of the Big Blue Site Permit. As acknowledged by the Department in its October 31 Comments, another step must be taken under its guidance documents to accurately make that assessment: "Based on the exceedances already documented by Big Blue, EERA recommends an 'on/off' monitoring approach consistent with Appendix A of the LWECs Noise Study Protocol and Report, which specifies that noise exceedances are recorded, it is necessary to determine the increment due to the turbine noise."⁸ This fact was confirmed in the 2017 Noise Study, which specifically stated that "environmental noise may have been a factor in sound levels" recorded.⁹

Finally, based on the perceived deficiencies of 2017 Noise Study, in its August 29, 2017 Response to Mr. Dan Moore's noise complaints, Big Blue indicated that it "intends to submit a proposal with the Commission for approval of a post-remediation noise study that Big Blue would conduct to demonstrate on-going compliance with applicable noise standards after Siemens completes the planned remediation efforts this fall. Big Blue believes that its proposal to conduct a post-remediation noise study will confirm the Project's compliance with applicable noise

⁴ Big Blue acknowledges that the 2017 Noise Study indicates that it was intended to comply with Section 6.6 of the Site Permit. That reference was in error. Big Blue apologizes for any confusion caused by this error.

⁵ Attached as Exhibit A is a July 26, 2017 email from Mr. Charlie Hoemberg to Mr. Kevin George stating in response to the question of whether the noise study was meant to replace the 2013 Noise Study: "No, this is not intended to replace the original noise study."

⁶ As outlined in Big Blue's August 31, 2017 and September 18, 2017 Responses to Mr. Moore's noise complaints, Big Blue specifically noted that it was undertaking several remedial measures that would not occur until September 2017. For instance, Big Blue stated that "as Big Blue committed in its August 29 Response, it is now in the field working to address Mr. Moore's noise concerns - whether Big Blue is required to or not. Big Blue has also committed to submitting a proposal with the Commission for approval of a post-remediation noise study that Big Blue would conduct to demonstrate on-going compliance with applicable noise standards after Siemens-Gamesa completes the planned remediation efforts this fall. Big Blue believes that its proposal to conduct a post-remediation noise study will confirm the Project's compliance with applicable noise requirements." See Big Blue's September 18, 2017 Response at p. 3 (e-Dockets No. [20179-135622-01](#)).

⁷ See 2017 Noise Study, which is appended to the Department's October 31 Comments, at p. 5.

⁸ See Department's October 31 Comments at p. 6.

⁹ See 2017 Noise Study, which is appended to the Department's October 31 Comments, at p. 6.

requirements.”¹⁰ As noted below, Big Blue continues to believe conducting a new study is the best path forward.

3. Big Blue Agrees with the Department’s Recommendation that it Conduct an “on/off” Noise Study.

In its October 31 Comments, the Department commented on the various noise complaints filed by Mr. Moore, stating:

Staff have reviewed the complaint history, corrective actions taken to-date, and a recent noise monitoring study conducted by the Permittee. EERA recommends that corrective action taken to-date has been effective in addressing specific noises that were the subject of complaint. However, EERA recommends that the Permittee should be required to conduct “on/off” noise monitoring to address requirements in the site permit and to elucidate noise limit exceedances that were brought to light during the course of the complaint investigation.

In November 2017, Big Blue informed Department Staff that it agrees with the Department recommendation that the Commission require it to conduct “on/off” noise monitoring. Big Blue informed the Department of its proposal to have WSB develop a Noise Protocol and ultimately conduct the noise study. Big Blue also provided a statement of qualifications from WSB for the Department’s review.

In late November, however, the Department reasonably indicated that it would hold off on future communications on the noise study until the Commission acted on its recommendation.¹¹ Since that time, Big Blue has finalized its proposed Noise Study Protocol and submits the Protocol and WSB’s statement of qualifications for the Department and the Commission’s review and approval.¹²

As discussed above, Big Blue does not believe that it has violated its Site Permit and certainly disagrees that any violation provides ground for revocation or suspension of the Site Permit under Site Permit Condition 11.3 and Minn. R. 7854.1300.¹³ Instead, any action taken by the Commission should be limited to adopting the Department’s recommendation that:

¹⁰ Big Blue’s August 29 Comments have been assigned e-Docket No. 20178-135077-01.

¹¹ See November 20, 2017, email and related correspondence between Ms. Louise Miltich and Bug Blue representatives Mr. Michael Rutledge and Mr. Charlie Hoernberg, which is attached as Exhibit C.

¹² The proposed Protocol and WSB’s statement of qualifications are attached as Exhibit B.

¹³ Under Section 11.3 of the Big Blue Site Permit, the Commission may take action to suspend or revoke the Permit upon the grounds that: “(a) A false statement was knowingly made in the application or in accompanying statements or studies required of the Permittee, and a true statement would have warranted a change in the Commission’s findings; (b) There has been a failure to comply with material conditions of this permit, or there has been a failure to maintain health and safety standards; or (c) there has been a material violation of a provision of an applicable statute, rule, or an order of the Commission.” As discussed herein, there have been no material violations of the Site Permit or any applicable

- The Permittee should select a contractor to perform the noise study and submit the selected contractor's qualifications for review and approval by EERA and Commission staff.
- The Permittee's contractor should prepare and the Permittee should submit a protocol for noise monitoring consistent with Appendix A of the LWECs Noise Study Protocol and Report for EERA and commission staff review and approval.
- The protocol should include a monitoring site on Mr. Moore's property. To the extent that exceedances of noise limits could have been a factor in Mr. Moore's complaints, including a monitor on Mr. Moore's property would provide a better understanding of whether the corrective action to-date has appropriately addressed issues at this property.
- Monitoring should be conducted following approval of the protocol.
- If noise exceedances are identified that are attributable to Big Blue turbines, corrective action should be tailored to specific turbines or time periods that are found to be problematic based on the results of the monitoring.

Big Blue believes that adoption of this recommendation and the resulting noise analysis will confirm the Project's compliance with applicable noise requirements.

B. Revised 2014 Annual Report

In addition to the noise concerns that have been the subject of Mr. Moore's complaints, the Commission's Request raises one additional area of permit compliance. In particular, the Commission's Request states:

Upon review of the record, staff became aware that the DOC EERA requested in a letter dated April 15, 2015, revisions to the 2014 Avian and Bat Monitoring Annual Report. DOC EERA noted that it expected a revised Report to be filed by June 15, 2015. Staff has not located a revised Report on file. Staff requests that Big Blue document any actions taken to date on this issue. If a revised Report has been filed the Doc. ID number, and what agreements (if any) have been made with the DOC EERA staff.

Big Blue filed the revised 2014 Report on July 15, 2015, as reflected in e-Dockets.¹⁴ As the Commission's Request noted, in its April 15, 2015 comments, the Department only "anticipated" that a revised Report would be filed by June 15, 2015. June 15 was not a deadline imposed by either the Department or the Commission. Indeed, between the filing of the Department's comments on April 15 and the July 15 filing, the Department and Big Blue coordinated on revisions

statutes, regulations or orders of the Commission and no party alleges, much less demonstrates, that "a false statement was knowingly made."

¹⁴ The Revised 2014 Report, including Appendices A-J, has been assigned the following e-Docket numbers: [20157-112433-01](#), [20157-112434-01](#), [20157-112435-01](#), [20157-112436-01](#), [20157-112437-01](#), [20157-112438-01](#), [20157-112439-01](#), [20157-112440-01](#), [20157-112441-01](#), [20157-112442-01](#), [20157-112443-01](#), [20157-112444-01](#), [20157-112446-01](#), and [20157-112447-01](#).

to the Report on numerous occasions leading to the July 15 submission. Accordingly, Big Blue submits that a violation of the Site Permit has not occurred and that no corrective or remedial action is warranted with respect to this issue.

C. Conclusion

Big Blue appreciates the amount of time Commission and Department Staff have taken to address concerns raised with respect to Big Blue's compliance with the noise-related provisions of its Site Permit. As discussed above, however, the record shows that Big Blue has not violated its Site Permit in any material manner. Nevertheless, Big Blue believes that the best way to move forward is for the Commission to accept the Department's recommendation that Big Blue be required to conduct a new noise study approved by the Commission. Big Blue believes that this step will permit the Project to resolve noise related concerns going-forward.

Thank you for your attention to this filing. Please do not hesitate to contact me with any questions or concerns.

Sincerely,

/s/ Brian M. Meloy

Brian Meloy

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of Big Blue Wind, LLC)	
36 Megawatt Large Wind Energy Conversion)	MPUC Docket No. IP-66851/WS-10-1238
System in Faribault County, Minnesota)	
)	
)	

Exhibit A

From: Charles Hoemberg <choemberg@bigbluwindfarm.com>
Sent: Wednesday, July 26, 2017 5:01 PM
To: George, Kevin (PUC)
Cc: MRutledge@fageneng.com
Subject: RE: Noise study feedback

Kevin,

No, this is not intended to replace the original noise study.

Thanks

Charlie Hoemberg
Site Manager
Big Blue Wind Farm
8261 320th Ave.
Blue Earth, MN 56013
choemberg@bigbluwindfarm.com
C: 507.829.6620
O: 507.464.3316

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From: George, Kevin (PUC) [<mailto:kevin.george@state.mn.us>]
Sent: Wednesday, July 26, 2017 4:13 PM
To: Charles Hoemberg <choemberg@bigbluwindfarm.com>
Cc: MRutledge@fageneng.com
Subject: Noise study feedback

Hi Charlie, Mike,

After talking with Rich and my boss, we've decided that it would not be appropriate at this time for Commission staff to offer feedback on your noise study, but that Rich is the appropriate contact for that.

I do have one question, however: in the introduction it states that the analysis is "meant to satisfy Section 6.6 requirements of the...site permit issues on August 17, 2011." Is this noise study intended to replace the noise study that you originally did (and was filed after our IR earlier this month)?

Thanks,
Kevin

Kevin George
Minnesota Public Utilities Commission
121 7th Place East, Suite 350 | St. Paul, MN 55101
(651) 201-2251 | Kevin.George@state.mn.us | mn.gov/puc/

**STATE OF MINNESOTA
BEFORE THE
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In the Matter of Big Blue Wind, LLC)	
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System in Faribault County, Minnesota)	
)	
)	

Exhibit B



Noise-Related Experience

General Experience

WSB has staff that are familiar with noise projects, particularly involving wind generators, residential noise complaints, and environmental documentation for large highway construction projects. WSB staff members have attended MnDOT's training course for the FHWA TNM 2.5 software and are certified in its use. Our staff are comfortable using noise metering equipment and various softwares including:

- Larson Davis 831 Noise Monitor and Vaisala Weather Station
- Larson Davis G3, G4 and DNA Software
- CadnaA Noise Modeling Software
- MINNOISE Noise Modeling Software
- FHWA TNM 2.5 Noise Modeling Software

Project Experience

- Odell & Nobles County Wind Farms
- Insurance Auto Auctions Inc. Site – Columbus, MN
- Anoka County Sheriff's Department Gun Range – Andover, MN
- Anoka County CSAH 24 Noise Collection – St. Francis, MN
- 50th Street EA Report Noise Analysis – Sartell, MN
- Rogers Industrial Boulevard Noise Analysis – Rogers, MN
- TH 169/TH41/CSAH 78 Environmental Assessment Worksheet Noise Analysis, MnDOT – Shakopee, MN
- TH 169 & Nine Mile Creek Proposal, MnDOT – Hopkins, MN
- TH 169 Reconstruction Project Environmental Assessment Worksheet Noise Analysis, MnDOT – Champlin, MN
- Fallon Avenue Overpass Project Memorandum Noise Analysis, City of Monticello – Monticello, MN
- Palmers Creek Wind Farm Preconstruction Noise Analysis
- 77th Street Underpass Environmental Assessment Worksheet Noise Analysis, MnDOT – Richfield, MN



Noise modeling helped reduce impacts when turbine siting the Nobels Wind Farm.

I. Purpose

The purpose of this Post-Construction Noise Analysis Protocol is to fulfill a request from Big Blue Wind, LLC (“Big Blue”) to provide Environmental and Permitting services, in the form of a post-construction noise measurement protocol for the Big Blue Wind Farm (“Project”). The area of study and Project are in Fairbault County, Minnesota, approximately 100 miles south/southwest of Minneapolis, Minnesota. Big Blue currently operates 18 Gamesa G97 wind turbines within the project limits, all with a common hub height of 78 meters. The purpose of the proposed noise measurement protocol is to satisfy the requirements of the Project’s permit while following the “Guidance for Large Wind Energy Conversion System (LWECS) Noise Study Protocol and Report” (“Guidance”) [1] issued by the Department of Commerce, Energy, Environment Review and Analysis (EERA, formerly Energy Facilities Permitting) of the state of Minnesota, in collaboration with the Minnesota Pollution Control Agency (MPCA) 7030.0040 Noise standards [2].

The Guidance outlines three overall objectives:

1. To confirm the validity of the noise modeling conducted prior to permit issuance or prior to construction;
2. To assess the modeling as a predictor of probable compliance with Minnesota noise standards;
3. To determine the noise levels at different frequencies and at various distances from the turbines at various wind directions and speeds; and

In addition to the objectives found in the Guidance, this protocol will also address the following two project-specific objectives:

1. To verify noise compliance at complainant’s property line; and
2. To satisfy EERA recommendations.

II. Noise Monitoring

Section II will describe the process, type of data and constraints used when collecting noise data from the Project. All content in Section II will trace compliance back to varying sections of the Guidance as found in **Exhibit A**.

Exhibit A – Traceability Matrix (2012 LWECS Guidance)

<u>Guidance Requirements</u>	<u>Relevant Section in Report</u>	<u>Comments</u>
Monitoring Conditions		
1. Monitoring Within the Project, Same Locations, Turbines On, Turbines Off.	IIA	Compliant with 1.a ii and 1.b
2. Monitoring Off-Site, Same Timeframe.	IIA	Compliant
3. Results from Monitoring Without Turbines Present or Operating.	IIA	Compliant
4. Data Sets.	IIA, IIF	Compliant
5. Seasonal Timing.	IIA	Compliant
6. All Turbines Operating.	IIA, IIF	Compliant
Monitoring Locations		

<u>Guidance Requirements</u>	<u>Relevant Section in Report</u>	<u>Comments</u>
7 through 13	IIB	Compliant
Monitoring Duration		
14.	IIC	Compliant – 15 days on/5 days off.
15-17.	IID	Compliant
Instruments		
18.	IIE	Compliant
Methodology		
19-22.	IIF, IIG, IIIA	Compliant
Processing Data		
23-25	IIIB	Compliant
Results and Charts		
26. Results at Varying Wind Speeds	IIIC	Compliant
27. Results at Varying Frequencies.	IIIC	Compliant
28. Document Varying Wind Directions and Other Meteorological Conditions	IIIC	Compliant
29. Comparison to Minnesota Noise Standards.	IIIC	Compliant
30. Map Location of Monitoring Points.	IIIC	Compliant
31. Results of Noise Modeling.	IIID	Compliant
Conclusions		
32.	IIID	Compliant
Noise Study Protocol		
33-34.	V	Compliant
Noise Study Report		
35-36.	IIID, IV	Compliant
E-Filing		
37.	V	Compliant

A. Monitoring Conditions

Monitoring conditions apply to the state of turbine operation on the project. For the Post-Construction Noise Analysis, monitoring conditions must meet the following requirements from the Guidance:

1. **Monitoring Within the Project, Same Locations, Turbines On, Turbines Off.** Using the same methods and the same monitoring locations within the project site, monitor sound during events described in 1.a. and 1.b. below:
 - a. with this project’s turbines not yet constructed or not operating:
 - i. during selection of turbine layout before any construction OR

- ii. later, with all of this project's turbines in place but not operating, either before or after operation; AND
 - b. during operation, with this project's turbines operating.
2. **Monitoring Off-Site, Same Timeframe.** In addition, concurrently with the monitoring in 1.b., conduct off-site monitoring to contribute additional data that supports evaluation of sound that exists in analogous environments in the absence of wind turbines, in the same timeframe. For comparability, noise monitoring methodology for off-site monitoring must be the same as for the monitoring in 1.b.

Turbines for the Project are already operational, so scenario 1a-i is not possible. The protocol will use condition 1a-ii for non-operation monitoring. Noise monitoring will also take place at an offsite location during the same collection periods in conditions 1a-ii and 1b.

Seasonal conditions apply to the monitoring process, and data shall not be collected between the months of November and April. This is to ensure monitoring results are not affected by snow cover throughout the Project.

B. Monitoring Locations and Rationale

Monitoring locations have been selected based on proximity to the turbines and noise complaints from residents within the project limits. Monitoring location M1 shall be placed nearest to the property line of the complainant, and if possible, on the complainant's property if permission is granted. Site M2 was selected with guidance from Big Blue due to its proximity to turbines T06-T09 and T15. There is a group of eight occupied structures within one mile of M2. Site M2 represents the worst-case receptor due to the number of turbines (five) within a one mile radius. Site M3 is located near turbines T10-T12 and represents a group of five occupied structures within one mile of these turbines. Site M3 is representative of receptors that have a lower concentration of turbines (three) but still within a one-mile radius proximity. Site M4 represents five occupied structures within a one-mile radius that are in proximity to two turbines, T14 and T17 that are spaced at a greater distance than sites M1-M3. Site M5 was selected as the off-site receptor. Site M5 is located approximately 1.25 miles south from turbine T18, which is the most isolated and southerly turbine within the project limits. Site M5 represents six occupied structures within one-mile of the monitoring location. The existing turbines and monitoring locations can be found in **Exhibit B**.

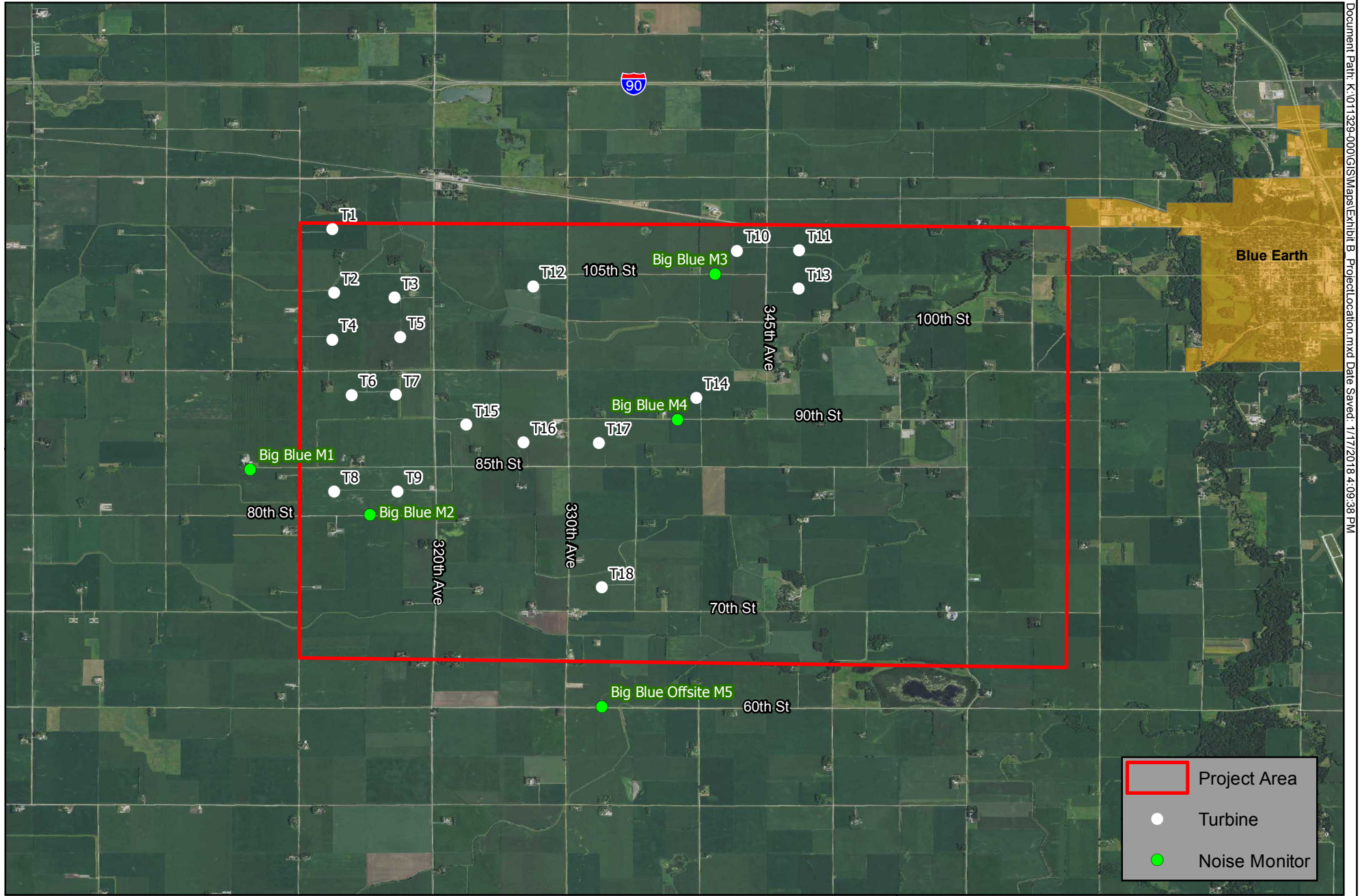
C. Monitoring Duration

The monitoring will collect data for 20 total days, May 1st to May 21st 2018. Five of these days will meet condition **II.A.1.a-ii** and Fifteen will meet condition b defined in **Section II.A** of this report. This allows for enough data collection to establish a wide range of noise profiles from the Project and correlate differing wind speeds to recorded noise levels at varying times of day. Big Blue will need to cease all wind energy production for condition II.A.1.a-ii. This non-operational period shall be coordinated with Big Blue well in advance of the site monitoring activities to ensure compliance.

D. Data Collection for Wind Speeds and Other Weather Conditions

The equipment used for noise data collection shall include portable weather stations capable of recording the following atmospheric conditions:

1. Temperature
2. Relative Humidity
3. Wind Speed
4. Precipitation
5. Atmospheric Pressure






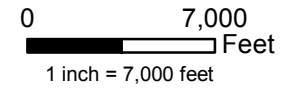
	Project Area
	Turbine
	Noise Monitor

Exhibit B - Project Location
Big Blue Wind Post-Construction Noise Analysis Protocol
Big Blue Wind, LLC



The Vaisala WXT530 Series weather transmitter can measure all five conditions and adds these measurements to the noise data collected per time period.

E. Proposed Instrumentation

The following list of equipment shall be used to collect both noise and atmospheric data. Each of the monitoring locations shall be outfitted with the following list of hardware:

1. Larson Davis 831 digital sound level meter
2. Vaisala WXT-530 Weather station
3. Pelican Weather-Proof Equipment Case
4. Five-Foot to Eight-Foot (5-8') Adjustable Tripod
5. Microphone – PCB Piezotronics 377B20
6. Preamplifier – Larson Davis PRM831

All the sound level monitors shall be calibrated to ANSI and IEC standards within six months of the data collection period. Additionally, a field calibration shall be performed with a Larson Davis CAL200 hand-held calibration unit before the equipment is deployed.

F. Data Collection Procedure

The procedure for collecting data for the Post-Construction Analysis shall consist of two phases; Equipment Testing and Field Deployment.

1. Equipment Testing

Before any of the instrumentation is placed in the field, it shall be set up at a neutral control location for a period of 24 hours and allowed to collect data with the identical constraints and settings used for monitoring on the Project. After 24 hours has elapsed, data shall be downloaded into a readable format (“Test Data”) and analyzed for the following information:

- Complete Data Sets – All Test Data shall be 100% complete and show no gaps in the assigned subsets (i.e., hourly summaries for any of the 24 hours of testing).
- Event Records – Personnel responsible for equipment testing shall create impulse noises above 70 dBA to trigger an audio file recording. The Test Data shall contain a recording of these events.
- Atmospheric Data – The Test Data shall be examined to determine if accurate atmospheric data were collected with the noise data. NOAA data shall be used as basis for the comparison.
- Battery Charge – After the 24-hour period the batteries shall be checked via the Larson Davis meter and a standard volt meter to ensure that extended operation does not drain the batteries greater than the expected rate for normal operation.

2. Field Deployment

Field deployment of the instruments can begin only if all Test Data meets expectations set in II.F.1 of this report. Before transporting instruments into the field, the following list of equipment is suggested:

- Chains/cables and padlocks for securing instruments
- Camera
- Phillips and standard screwdrivers
- Nuts & bolts & adapters for battery terminals
- Sharp scissors or utility knife
- Logbook and pen
- Printed maps of area with site locations marked
- 12v 20 Ah Batteries

- Paracord cut into three to four-foot (3'-4') lengths for anchoring tripod
- Hose clamps
- Metal stakes
- Hammer
- Laptop
- USB/Mini USB adapter cord
- LTE Wi-fi hotspot enabled phone
- High-vis vest

Microphones will be installed on tripods approximately five feet above ground. Site calibration will be performed on each Larson Davis 831 with a single CAL 2000 unit before and after each ten-day monitoring period. The microphones shall be placed at least twenty feet from any large surface that may reflect sound waves.

The Larson Davis unit will be configured to continually collect data using a FAST response setting every ten seconds, along with the relevant statistics for that period. The Larson Davis unit shall use a trigger threshold of 60 dBA for recording audio. These recorded audio files shall be used to corroborate any recorded spikes in noise for data point elimination. The remaining data shall be processed by the Larson Davis unit to produce hourly measurement values including un-weighted sound (in dB); A-weighted as L_{10} , L_{50} , L_{90} and L_{eq} (dBA); and C-weighted L_{10} , L_{50} , L_{90} and L_{eq} (dBC). Third octave band measurements ranging from 16 Hz to 8000 Hz will also be recorded.

Environmental sound measurements are greatly influenced by wind-induced noise. To avoid this unwanted effect, a foam wind screen that meets industry standards shall be used at all times. This enables the measurement of sound (without wind-induced noise effects on the microphone) in winds up to 11 miles/hour (i.e., 5 m/s) at the measurement level. Measurements taken during winds higher than 11 miles per hour and during periods of precipitation shall not be used in the analysis as per Monitoring Condition 4 of the Guidance. For each location both raw and filtered data will be provided along with the percentage of data removed.

In addition to the sound data collected by the instrumentation, field personnel shall be required to photograph each site to document relative location of wind turbines, sketch out any environmental impacts near the monitoring location and document any noise sources other than the turbines.

Field personnel shall be required to visit each monitoring location every 72 hours to verify proper operation of the instruments. During the field visits, personnel shall download data from the Larson Davis unit to a laptop PC, swap out the 12 V batteries and document any disturbances to the instruments. The noise data from the Larson Davis unit will be examined in the field for any gaps or periods of excessive wind or precipitation that would invalidate significant amounts of data. The monitoring period may be extended based on poor data quality.

G. LWECS Guidance

All sections of this protocol follow the steps and requirements described in the October 2012 Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report. Exhibit B traces each of the steps in the Guidance to a section in this report.

III. Analysis Methodology

A. Required Data

The following data are required for the final analysis in the Post-Construction Noise Analysis

- Hourly unweighted L_{10} , L_{50} , L_{90} and L_{eq} values
- Hourly A-weighted L_{10} , L_{50} , L_{90} and L_{eq} values
- Hourly C-weighted L_{10} , L_{50} , L_{90} and L_{eq} values
- Wind speed at microphone height
- Wind speed at hub height
- Precipitation
- Humidity
- Temperature
- One third octave band measurements from 16 Hz to 8000 Hz
- Audio files for noise event data

B. Data Processing

Hourly data series for the entire measurement period for each point will be created in the form of L_{10} , L_{50} , L_{90} and L_{eq} sound levels, in dB, dBA and dBC. These data series as well as concurrent data series of wind speed (miles per hour) at hub height and microphone height and relative humidity will be presented in different charts (one per monitoring location). Hub height wind speed shall be provided by Big Blue at specified turbines for comparison purposes. Meteorological data from nearby weather towers shall also be collected for verification of weather instrumentation.

For the worst-case receptor measurement location and off-site measurement point, a comparative third-octave band chart will be created for a representative wind speed and over a range of at least 16 Hz to 8000 Hz, using un-weighted, A-weighted, and C-weighted L_{eq} data.

Once the data are downloaded from the noise monitors, it must be examined for invalid data sets. Invalid data sets occur when wind speeds are greater than 11 miles/hour at microphone height or if there is recorded precipitation. The reason points become invalid is that the higher wind speeds and precipitation generate enough noise to obscure noise generated from the turbines. Any unusual spikes in noise values should also be examined and compared to the recorded audio file. If the cause of the spike is not turbine related—such as noise generated from farm machinery, vehicles, barking dogs or other environmental factors—these points must be eliminated as well.

C. Data Analysis

Once the data are processed, time-series charts specified in Section 26 of the Guidance shall be created for all the required data sets. Based on Section 26 and 27 of the Guidance, the following charts shall be included for each monitoring location in the Post-Construction Noise Analysis;

- Hourly L_{eq} with Hub Height Wind
- Hourly L_{eq} with Precipitation
- Hourly A-Weighted Centiles with Hub Height Wind
- Hourly C-Weighted Centiles with Hub Height Wind
- Hourly A-Weighted Centiles with Mic Height Wind
- Hourly C-Weighted Centiles with Mic Height Wind
- Hourly L_{10} Sound Levels vs. MPCA Noise Limits
- Hourly L_{50} Sound Levels vs. MPCA Noise Limits

Three more charts will provide information on the spectral analysis of the worst-case receptor during on/off operations and the offsite location. These charts include a comparison of Unweighted, A-Weighted and C-Weighted spectral sound pressure levels during the three conditions.

All of the above charts shall be analyzed for any exceedances and correlations/discrepancies between hub/mic wind speed and the resulting sound levels should be drawn. Any excluded data

due to extraneous noise, precipitation, high wind or wind below cut-in speed should be tabulated and presented as a percentage of total collected data.

D. Final Report

The collected data and resulting analysis shall be placed in a narrative that describes the conditions found during the operational and non-operational data collection times. The final Post-Construction Noise Analysis report should address any correlation or discrepancies found between wind speed and noise levels, MPCA hourly exceedances and other conditions found while data were collected. The conclusion of the report should summarize the findings and make suggestions if noise created by the turbines are exceeding MPCA levels.

IV. Project Specific Considerations

During the preconstruction phase of the Project, predictive noise modeling was completed using noise sources that do not represent the Gamesa G97 noise output. Due to the lack of an accurate predictive noise model, any validation efforts associated with the Post-Construction Noise Analysis would not be accurate and could skew the results of the report.

V. Conclusion

Big Blue Wind LLC has requested a post-construction noise measurement protocol for the Big Blue Wind Farm. ("Project") The Project is located in Fairbault County, Minnesota, approximately 100 miles south/southwest of Minneapolis. The Project consists of 18 Gamesa G792 2.0 MW wind turbine generators and at a hub height of 78 meters.

This protocol has been developed to comply with provisions found in the "Guidance for Large Wind Energy Conversion System Noise Study Protocol and Report". It meets the requirements of the Project's LWECS permit from the Public Utilities Commission.

This protocol as well as the final noise measurement report will be E-filed as per the instructions in the Guidance paragraphs 33 through 37.

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of Big Blue Wind, LLC)	
36 Megawatt Large Wind Energy Conversion)	MPUC Docket No. IP-66851/WS-10-1238
System in Faribault County, Minnesota)	
)	
)	

Exhibit C

From: Miltich, Louise (COMM) <louise.miltich@state.mn.us>
Sent: Monday, November 20, 2017 10:56 AM
To: Charles Hoemberg
Cc: Michael Rutledge; KCarlton@fageninc.com; Davis, Richard (COMM)
Subject: RE: Big Blue Wind Farm Noise Study

Charlie,

I have been in communication with PUC staff on this matter. My understanding is that before moving forward, we will be looking to the commission staff to file a letter in the record identifying recommended next steps. I expect commission staff will be filing something soon and in the meantime, I am going to hold on any further recommendations.

Thanks,

Louise I Miltich
Planner Principal
Minnesota Department of Commerce
85 7th Place East, Suite 280, Saint Paul, MN 55101
P: 651-539-1853
C: 651-470-1666

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-----Original Message-----

From: Charles Hoemberg [mailto:choemberg@bigbluwindfarm.com]
Sent: Monday, November 20, 2017 9:33 AM
To: Miltich, Louise (COMM) <louise.miltich@state.mn.us>
Cc: Michael Rutledge <MRutledge@fageneng.com>; KCarlton@fageninc.com; Davis, Richard (COMM) <richard.davis@state.mn.us>
Subject: FW: Big Blue Wind Farm Noise Study

Louise,

Last week I had sent WSB's statement of qualifications for review. Can you please confirm you received the email?

We're trying to keep an aggressive schedule for work to be completed this year.

If you have any questions, please let me know.

Thanks

Charlie Hoemberg
Site Manager

Big Blue Wind Farm
8261 320th Ave.
Blue Earth, MN 56013
choemberg@bigbluwindfarm.com
C: 507.829.6620
O: 507.464.3316

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-----Original Message-----

From: Charles Hoemberg
Sent: Thursday, November 16, 2017 7:56 AM
To: 'Miltich, Louise (COMM)' <louise.miltich@state.mn.us>; Michael Rutledge <MRutledge@fageneng.com>
Cc: KCarlton@fageninc.com; Davis, Richard (COMM) <richard.davis@state.mn.us>
Subject: RE: Big Blue Wind Farm Noise Study

Louise,

Big Blue Wind Farm is providing you with a statement of qualifications for WSB according to the attached (201710-137030-01.pdf) document received November 01, 2017. Please review and advise if WSB is an acceptable consultant to complete the noise study.

If approved, we'll send the protocol for review and comments.

Thanks,

Charlie Hoemberg
Site Manager
Big Blue Wind Farm
8261 320th Ave.
Blue Earth, MN 56013
choemberg@bigbluwindfarm.com
C: 507.829.6620
O: 507.464.3316

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-----Original Message-----

From: Miltich, Louise (COMM) [mailto:louise.miltich@state.mn.us]
Sent: Monday, November 13, 2017 12:02 PM
To: Michael Rutledge <MRutledge@fageneng.com>
Cc: Charles Hoemberg <choemberg@bigbluwindfarm.com>; KCarlton@fageninc.com; Davis, Richard (COMM) <richard.davis@state.mn.us>
Subject: RE: Big Blue Wind Farm Noise Study

Michael, Thanks for checking - at this point in time, we will ask you to proceed with the 2012 guidance.

Louise I Miltich
Planner Principal
Minnesota Department of Commerce
85 7th Place East, Suite 280, Saint Paul, MN 55101
P: 651-539-1853
C: 651-470-1666

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-----Original Message-----

From: Michael Rutledge [mailto:MRutledge@fageneng.com]
Sent: Monday, November 13, 2017 12:00 PM
To: Miltich, Louise (COMM) <louise.miltich@state.mn.us>
Cc: Charles Hoemberg <choemberg@bigbluewindfarm.com>; KCarlton@fageninc.com; Davis, Richard (COMM) <richard.davis@state.mn.us>
Subject: RE: Big Blue Wind Farm Noise Study

Thank you very much. One additional question; the Big Blue Wind Farm site permit was issued in October, 2011. Would the noise protocols in effect at that time be the proper guiding document rather than those issued in 2012?

Thank you again for your help on this.

Mike

Mike Rutledge
Environmental Services Dept. Head
FAGEN ENGINEERING, LLC
P.O. Box 159
Granite Falls, MN 56241
320-564-3324 Main
320-564-2625 Direct
320-564-4861 Fax
www.fageninc.com

From: "Miltich, Louise (COMM)" <louise.miltich@state.mn.us>
To: Michael Rutledge <MRutledge@fageneng.com>,

Cc: "Davis, Richard (COMM)" <richard.davis@state.mn.us>,
"KCarlton@fageninc.com" <KCarlton@fageninc.com>, Charles
Hoemberg <choemberg@bigbluewindfarm.com>
Date: 11/13/2017 11:05 AM
Subject: RE: Big Blue Wind Farm Noise Study

Michael,

My responses to your comments are below in red. In response to your question about snow cover – yes, the monitoring should take place before there is notable snow cover, so time is of the essence. Please have your consultant refer to the attached LWECS noise monitoring guidance as they prepare a protocol. Thank you for your timely action on this and please feel free to get in touch with any further questions.

Thanks,

Louise

Louise I Miltich
Planner Principal
Minnesota Department of Commerce
85 7th Place East, Suite 280, Saint Paul, MN 55101
P: 651-539-1853
C: 651-470-1666

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-----Original Message-----

From: Michael Rutledge [mailto:MRutledge@fageneng.com]
Sent: Monday, November 13, 2017 10:29 AM
To: Miltich, Louise (COMM) <louise.miltich@state.mn.us>
Cc: Davis, Richard (COMM) <richard.davis@state.mn.us>; KCarlton@fageninc.com; Charles Hoemberg <choemberg@bigbluewindfarm.com>
Subject: Fw: Big Blue Wind Farm Noise Study

Ms. Miltich,

I am resending this email because I typed your email address incorrectly the first time.

Please let me know if you can provide any guidance on this matter. It is very important that we secure proposals from consultants asap so we can supply you with qualifications, secure your approval, develop a testing/monitoring protocol, again secure your approval, mobilize equipment and monitor an adequately windy period of time this fall. We don't want to miss this opportunity and have to wait until spring.

Any help/guidance you can provide would be greatly appreciated.

Mike

Mike Rutledge
Environmental Services Dept. Head
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www.fageninc.com

----- Forwarded by Michael Rutledge/Eng on 11/13/2017 10:27 AM -----

From: Michael Rutledge/Eng
To: louise.miltich@state.mn.us,
Cc: "Charles Hoemberg" <choemberg@bigbluewindfarm.com>,
KCarlton@fageninc.com
Date: 11/08/2017 03:14 PM
Subject: Big Blue Wind Farm Noise Study

Ms. Miltich,

In response to your comments to the PUC dated 10/31/17, we have contacted several potential consultants to conduct an on/off noise study at the Big Blue Wind site. There are a couple of matters we would like clarified so we can move forward expeditiously and get a proposal/protocol to you for review and concurrence.

1. Should this noise study be confined to the complaint only or should it be structured as a post-construction noise study for the project site?

This noise study should be structured as a post-construction noise study, but should include a monitor on the complainant's property.

- a. Do you have a minimum number of monitoring locations in mind?

Please refer to the LWECs guidance attached. The post-construction noise study is to include a minimum of three monitoring locations within the project area. The monitoring location at the complainant's property should be in addition to the minimum of three requirement.

2. Do you have an anticipated timeframe for your review/approval?

We will review and give you feedback with as quick a turnaround as possible. We'll shoot for a couple of days.

Thank you in advance for your guidance.

Mike

Mike Rutledge
Environmental Services Dept. Head
FAGEN ENGINEERING, LLC

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[attachment "FINAL LW ECS Guidance Noise Study Protocol OCT 8 2012.pdf" deleted by Michael Rutledge/Eng] [attachment "Appendix A FINAL LW ECS Guidance Noise Study Protocol OCT 8 2012.pdf" deleted by Michael Rutledge/Eng]

**STATE OF MINNESOTA
BEFORE THE
MINNESOTA PUBLIC UTILITIES COMMISSION**

In the Matter of Big Blue Wind, LLC 36 Megawatt Large Wind Energy Conversion System in Faribault County, Minnesota))))))	MPUC Docket No. IP-66851/WS-10-1238 <p style="text-align: center;">CERTIFICATE OF SERVICE</p>
--	----------------------------	---

The undersigned hereby certifies that true and correct copies of **Big Blue Wind Farm, LLC’s Response to Request for Response to Alleged Site Permit Violations and to Show Cause** were served on this day by U.S. Mail/e-filing/e-serving to the following:

NAME	EMAIL/ADDRESS	SERVICE
Generic Notice, Commerce Attorneys	commerce.attorneys@ag.state.mn.us	Electronic
Ian Dobson	Residential.Utilities@ag.state.mn.us	Electronic
Sharon Ferguson	sharon.ferguson@state.mn.us	Electronic
Stacy Kotch	stacy.kotch@state.mn.us	Electronic
Brian Meloy	brian.meloy@stinson.com	Electronic
Daniel P. Wolf	dan.wolf@state.mn.us	Electronic
Aaron Fagen	501 W. Hwy 212, PO Box 159, Granite Falls, WI 55101-2130	Paper

Dated this 18th day of January, 2018

/s/ Dylan M. Stanek
 Dylan M. Stanek