

**BEFORE  
THE OHIO POWER SITING BOARD**

In the Matter of the Application of Firelands Wind, )  
LLC for a Certificate of Environmental Compatibility )  
and Public Need to Construct a Wind-Powered ) Case No. 18-1607-EL-BGN  
Electric Generation Facility in Huron and Erie )  
Counties, Ohio. )

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**INITIAL BRIEF OF FIRELANDS WIND, LLC  
IN SUPPORT OF THE  
JOINT STIPULATION AND RECOMMENDATION**

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## I. INTRODUCTION

In this proceeding, Firelands Wind, LLC (“Firelands” or “Applicant”) seeks a certificate of environmental compatibility and public need (“Certificate”) to construct a wind-powered electric generation facility on leased land in Groton and Oxford Townships, Erie County, and Lyme, Norwich, Richmond, Ridgefield, and Sherman, Townships, Huron County, Ohio (“Project” or “Emerson Creek Wind Facility”) with a generating capacity of up to 297.66 megawatts (“MW”).<sup>1</sup> Firelands, the City of Willard, the Board of Commissioners of Huron County (“Huron Commissioners”), the Board of Trustees of Richmond Township of Huron County (“Richmond Trustees”), the Board of Trustees of Norwich Township of Huron County (“Norwich Trustees”), residents Tom Yingling and Kevin Erf, and the Staff of the Ohio Power Siting Board (“Staff”) (jointly referred to herein as “Stipulating Parties”) recommend the Board adopt the Joint Stipulation filed on September 11, 2020 (“Stipulation”) and grant the Certificate subject to the 44 conditions set forth in the Stipulation.<sup>2</sup>

As proven on the record in this proceeding, the conditions in the Stipulation ensure that all of the requirements for a certificate set forth in Ohio Revised Code (“R.C.”) Section 4906.10 will be met, including that the Board can determine: the nature of the probable environmental impact; that the facility represents “the minimum adverse environmental impact, considering the available technology and the nature and economics of the various alternatives...;” and that the facility serves “the public interest, convenience, and necessity.” In addition, the Stipulation satisfies the three-part test utilized by the Board for the review and consideration of stipulations, namely it: is the product of serious bargaining among all parties in this case; benefits the public interest; and does not violate any important regulatory principle or policy.

At the evidentiary hearing, the Local Residents’ expert witnesses only presented three issues in opposition to the Project: the avian studies conducted by the Applicant and its experts allegedly do not provide scientifically valid analyses; the preconstruction bat mist-net studies and

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<sup>1</sup> App. Ex. 1 at 2.

<sup>2</sup> Jt. Ex. 1 at 2-9; The only parties that presented witnesses opposed to the Project at the hearing were the Black Swamp Bird Observatory (“BSBO”) and the Local Residents, who are Alvin Didion, Patricia Didion, Jane Fox, Marvin Hay, Theresa Hay, Patricia Olsen, Sheila Poffenbaugh, Walt Poffenbaugh, Christina Popa, John Popa, Lori Riedy, Charles Rogers, Kenn Rospert, Dennis Schreiner, Sharon Schreiner, Donna Seaman, William Seaman, Deborah Weisenauer, Kenneth Weisenauer, and Gerard Wensink. While the Erie County Commissioners did not sign the Stipulation, they did not present evidence opposing the Stipulation at the hearing.

acoustic detection surveys allegedly were not sufficient, and the post-construction monitoring is allegedly deficient because the guidelines from the Ohio Department of Natural Resources (“ODNR”) are outdated and generate inaccurate fatality estimates; and there are potential geological and hydrogeological risks associated with the installation of the Project and allegedly there are deficiencies in the information contained in the Application. The lay witnesses testifying on behalf of the Local Residents raised two points: bald eagles and swans have been sighted in the Project area; and wind is an intermittent energy resource that could impact the availability of electricity on the PJM Interconnection, LLC (“PJM”) grid and renewable energy has allegedly higher production costs, which could cause electricity prices to rise.

With regard to the avian and bats, and geological/hydrogeology issues raised by the Local Residents, as explained in great detail below, the Application and commitments therein, coupled with the strong safeguards agreed to by the Signatory Parties, support a determination by the Board that the Stipulation should be approved as submitted as all criteria in R.C. Section 4906.10 has been thoroughly addressed. Moreover, while the lay witnesses point to the presence of bald eagles in the Project area, the evidence of record shows that such presence has been appropriately and thoroughly studied and the Stipulation provides all necessary safeguards to ensure the Project creates the minimum adverse impact. Further, as detailed in the Application and summarized below, the impact of the Project on the PJM grid has been studied and addressed by the experts at PJM; thus, the unsubstantiated assertion by the Local Residents’ lay witness is unfounded. Finally, the economics and costs of the Project, which were raised by the lay witness, is not a proper issue for debate before the Board.

As summarized below, the record in this case supports adoption of the Stipulation and the issuance of the Certificate to Firelands.

## **II. SUMMARY OF THE PROCEEDING**

The proceedings in this matter were conducted by the Board in accordance with the provisions in R.C. Chapter 4906 and Division 4906 of the Ohio Administrative Code (“O.A.C.”).

On January 31, 2019, as supplemented on March 18, April 11, July 10, and October 4, 2019, and January 24, 2020, Firelands filed an application with the Board for a certificate of environmental compatibility and public need (“Application”) to construct the proposed Project.

Prior to filing the Application, the Applicant held two public information meetings on November 15, 2018, and April 3, 2019. The Board held a local public hearing in this matter on August 20, 2020, using remote access technology in accordance with the Administrative Law Judge (“ALJ”) entry issued July 13, 2020.

On September 11, 2020, Firelands, the City of Willard, the Huron Commissioners, the Richmond Trustees, the Norwich Trustees, residents Tom Yingling and Kevin Erf, and Staff filed the Stipulation. The evidentiary hearing in this matter commenced on October 5, 2020. Following nine days of hearing, including rebuttal testimony from the Applicant, the ALJ determined that the briefs and reply briefs would be due by November 20, 2020, and December 4, 2020, respectively.<sup>3</sup>

### **III. PROJECT DESCRIPTION**

Firelands proposes to construct the new wind-energy facility on approximately 1,000 parcels or 32,000 acres of leased land located in Groton and Oxford Townships in Erie County and Lyme, Norwich, Richmond, Ridgefield, and Sherman Townships in Huron County, Ohio.<sup>4</sup> The permanent operating footprint of the facility will be approximately 84.5 acres of built facilities, or approximately 0.3% of the total leased land.<sup>5</sup>

The Project will consist of up to 87 wind turbines, each with a nameplate electric generating capacity of 4.2 to 5.7 MWs.<sup>6</sup> While the Application evaluated 87 proposed turbine locations, the Applicant expects that, depending on the turbine model chosen, only 52 to 71 turbines will actually be constructed.<sup>7</sup> The total generating capacity of the facility will not exceed 297.66 MW alternating current, with an annual energy production of approximately 847,000 to 952,000 megawatt hours (“MWh”).<sup>8</sup> In addition to the turbines, the facility will include access roads, buried collection line, an operations and maintenance (“O&M”) building, a laydown yard, meteorological towers, and a substation that will be located in Oxford Township, Erie County.<sup>9</sup> The buried collection line will be buried to approximately of 36 to 48 inches below the surface and

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<sup>3</sup> Tr. Vol. IX at 1305.

<sup>4</sup> App. Ex. 1 at 2, 6; App. Ex. 31 at 5.

<sup>5</sup> App. Ex. 1 at 7.

<sup>6</sup> App. Ex. 1 at 2; App. Exs. 4 and 5; App. Ex. 31 at 5.

<sup>7</sup> App. Ex. 31 at 5.

<sup>8</sup> App. Ex. 1 at 2; App. Ex. 31 at 5-6.

<sup>9</sup> App. Ex. 1 at 4, 7.

will be a total length of between 105 and 194 circuit miles depending on the number of turbines constructed.<sup>10</sup>

The purpose of the facility is to produce wind-powered electricity that will maximize energy production from the Project area wind resources in order to deliver clean, renewable electricity to the Ohio bulk power transmission system to serve the needs of electric utilities and their customers. The electricity generated will be transferred to the transmission grid operated by PJM for sale at wholesale or under a power purchase agreement (“PPA”). Firelands has a PPA contract in place with AEP Energy Partners, who in turn is seeking to meet demand from a new Google data center located in New Albany, Ohio.<sup>11</sup>

As summarized below, and thoroughly documented on the record in this case, the facility is designed to comply with all applicable state and federal regulations. The Applicant is committed to ensure that the final layout of the Project adheres to all applicable regulations.<sup>12</sup>

#### **IV. STANDARD OF REVIEW**

##### **A. CERTIFICATION CRITERIA**

Pursuant to R.C. Section 4906.10, the Board shall not grant a certificate for the construction, operation, and maintenance of a wind-powered electric generation facility, such as the Project proposed by Firelands, unless it finds and determines all of the following:

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas pipeline.<sup>13</sup>
- (2) The nature of the probable environmental impact.
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations.
- (4) That the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability.

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<sup>10</sup> *Id.* at 12-13.

<sup>11</sup> App. Ex. 31 at 6.

<sup>12</sup> *Id.*

<sup>13</sup> Since this Project is a proposed electric generating facility, this criterion is not applicable to this Application.

- (5) That the facility will comply with Chapters 3704., 3734., and 6111. of the Revised Code and all rules and standards adopted under those chapters and under sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Revised Code, the board shall consult with the office of aviation of the division of multi-modal planning and programs of the department of transportation under section 4561.341 of the Revised Code.
- (6) That the facility will serve the public interest, convenience, and necessity.
- (7) In addition to the provisions contained in divisions (A)(1) to (6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929. of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site.
- (8) That the facility incorporates maximum feasible water conservation practices as determined by the board, considering available technology and the nature and economics of the various alternatives.

The evidentiary record in this matter supports a Board finding that the criteria under R.C. Section 4906.10 are satisfied.

## **B. STIPULATION CRITERIA**

O.A.C. Rule 4906-2-24 authorizes parties to Board proceedings to enter into stipulations. Pursuant to O.A.C. Rule 4906-2-24(D), the terms of the stipulation are accorded substantial weight by the Board. *See, e.g., In re the Application of Northwest Ohio Wind Energy, LLC*, Case No. 13-197-EL-BGN (Dec. 16, 2013); *In re the Application of Amer. Transm. Systems, Inc.*, Case No. 12-1727-EL-BSB (Mar. 11, 2013); *In re the Application of Rolling Hills Generating LLC*, Case No. 12-1669-EL-BGA (May 1, 2013); *In re the Application of AEP Transm. Co., Inc.*, Case No. 12-1361-EL-BSB (Sept. 13, 2013); *In re the Application of Hardin Wind LLC*, Case No. 13-1177-EL-BGN (Mar. 17, 2014); *In re the Application of Paulding Wind Farm IV LLC*, Case No. 18-91-EL-



BGN (Feb. 21, 2019). In considering the reasonableness of a stipulation, the Board has used the following criteria:

- (1) Is the settlement a product of serious bargaining among capable, knowledgeable parties?
- (2) Does the settlement, as a package, benefit ratepayers and the public interest?
- (3) Does the settlement package violate any important regulatory principle or practice?

As set forth herein, the evidentiary record in this matter supports a Board finding that the criteria used by the Board to determine the reasonableness of a stipulation have been satisfied.

## **V. PROCEDURAL MOTIONS**

At the hearing in this matter, the ALJ denied, in part, the Applicant's Motion *In Limine* to Strike Improper Intervenor Testimony ("Motion to Strike") filed by the Applicant on October 9, 2020, regarding certain portions of the prefiled direct testimony of Local Residents' witnesses Dennis Schreiner and Mark Shieldcastle. As discussed further below, because significant portions of the testimony of Mr. Schreiner and Mr. Shieldcastle are irrelevant, unreliable, prejudicial, and otherwise improper in relation to the issues actually before the Board, the testimony should be stricken from the record and precluded from being part of the record in this matter. The Board should limit the witnesses' and the participation by the Local Residents and BSBO to only relevant matters.

### **A. Legal Authority**

O.A.C. Rule 4906-2-29(F) provides that:

Any party that is adversely affected by a ruling issued under rule 4906-2-28 of the Administrative Code or any oral ruling issued during a public hearing or prehearing conference and that (1) elects not to take an interlocutory appeal from the ruling...may still raise the propriety of that ruling as an issue for the board's consideration by discussing the matter as a distinct issue in its initial brief....

Pursuant to O.A.C. Rule 4906-2-09(B)(8), the Board and ALJ may take such actions as are necessary to "[p]revent the presentation of irrelevant or cumulative evidence" and "[a]ssure the hearing proceeds in an orderly and expeditious manner." Additionally, O.A.C. Rule 4906-2-12(D) provides requirements pertaining to intervention and states the Board or ALJ may grant "limited

participation, which permits a person to participate with respect to one or more specific issues, if:  
(a) The person has no real and substantial interest with respect to the remaining issues.”

Additionally, the Ohio Rules of Evidence may be considered in an advisory capacity in relation to an administrative hearing. *Board of Edn. for Orange City School Dist. v. Cuyahoga Cty. Bd. of Revision*, 74 Ohio St.3d 415, 417 (1996). An administrative agency should not act on evidence that is clearly not admissible, competent, or probative of facts that the agency is to determine. *Haley v. Ohio State Dental Bd.*, 7 Ohio App.3d 1, 6 (2d Dist.1982); *In re Application of Milton Hardware Co.*, 19 Ohio App.2d 157, 162 (10th Dist.1969). Administrative agencies have a duty to base their conclusions on competent evidence. *State ex rel. Chrysler Plastic Products Corp. v. Industrial Comm.*, 39 Ohio App.3d 15, 16 (10th Dist.1987).

As explained and supported further below, Firelands respectfully requests that the Board reconsider and reverse the following rulings by the ALJ, which denied, in part, the Motion to Strike.

**B. Applicant’s Motion to Strike portions of Dennis Schreiner’s testimony should be granted.**

At the hearing in this matter, the Motion to Strike certain portions of Mr. Schreiner’s prefiled direct testimony that was filed on September 21, 2020, on behalf of the Local Residents was denied.<sup>14</sup> The Applicant appreciates that the ALJ did not believe that Firelands would not be prejudiced by Mr. Schreiner’s testimony in this case because the Applicant would have broad latitude regarding cross-examination in consideration of a rebuttal witness or testimony.<sup>15</sup> However, providing latitude in cross-examination and offering the potential for rebuttal does not cure the prejudice imposed on the Applicant by permitting the objectionable testimony of Mr. Schreiner into the record in this case. In particular, even before Applicant had the opportunity to cross-examine Mr. Schreiner or offer rebuttal testimony, the ALJ explained the decision to deny the Motion to Strike as based on a determination that “Mr. Schreiner’s experience again as outlined in the Navy, at Davis-Besse, and as further outlined in responses 6 and 7 [regarding his nuclear engineering employment], does qualify him to appear and provide relevant testimony . . . regarding intermittency which is at play here in regard to a wind facility and grid interconnection

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<sup>14</sup> Tr. Vol. VII at 834-835.

<sup>15</sup> *Id.*

have relevance for the Board's consideration regarding the necessity of the project as well as regarding pricing and cost information.”<sup>16</sup> This statement could suggest that Mr. Schreiner qualifies as an expert with respect to his broad and generalized assertions regarding intermittent renewable energy resources, regardless of their lack of foundation in any specific factual or technical analysis regarding the Project.

As explained below, the bulk of Mr. Schreiner’s testimony is, in fact, irrelevant to this proceeding because it is not grounded in any direct experience pertaining to the Project’s interconnection with the PJM transmission grid or its participation in the PJM wholesale markets. The Applicant, therefore, requests that questions and responses 8 through 15 (pages 4:13 through 11:13)<sup>17</sup> be stricken from the record in this case, in order to prevent the inclusion of testimony in the record that provides only irrelevant and generic statements rather than a specific analysis regarding the Project’s impacts on the transmission system that is backed by pertinent experience.

Mr. Schreiner’s testimony indicates that he is testifying on behalf of the Local Residents.<sup>18</sup> These parties do not specify any purpose for his testimony, or how it relates to the Board’s consideration of the eight factors listed in R.C. Section 4906.10. In general, the significant majority of Mr. Schreiner’s testimony relates to the role of wind generation in the regional wholesale market and transmission grid, purporting to describe what “effects . . . intermittent energy sources” – including wind energy – “have on the PJM grid”<sup>19</sup> as well as the how the allegedly higher costs of wind generation compared to other energy sources “affect[s] the price of electricity for consumers.”<sup>20</sup> Mr. Schreiner never provides discussion as to how these matters relate to the Project, let alone how they pertain to the factors relevant to the Board’s decision under R.C. Section 4906.10. Therefore, Firelands respectfully requests that the Board strike questions and responses 8-15.<sup>21</sup>

The only applicable statutory factors as to which this testimony regarding the effects of wind generation on the PJM grid might be relevant are R.C. Sections 4906.10(A)(4) and (6), which respectively require the Board to consider whether “the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected

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<sup>16</sup> *Id.* at 835.

<sup>17</sup> LR Ex. 1 at 4-11.

<sup>18</sup> *Id.* at 1.

<sup>19</sup> *Id.* at 6.

<sup>20</sup> *Id.* at 11.

<sup>21</sup> *Id.* at 4-11.

utility systems and that the facility will serve the interests of electric system economy and reliability,” and whether “the facility will serve the public interest, convenience, and necessity.” However, Mr. Schreiner’s testimony cannot be considered relevant to the Board’s consideration of either of these factors because he does not offer any testimony regarding the specific generation facility proposed by Firelands nor does he refer to any information present in any regional plans.

The questions and answers contained on pages 4-11 of Mr. Schreiner’s testimony appear to concern: Mr. Schreiner’s experience with the PJM grid (Q 8); Mr. Schreiner’s definition of an “intermittent energy source” (Q 9-10); Mr. Schreiner’s views on “the impacts of intermittent energy sources on the PJM grid” (Q 11-12); the effects of intermittent energy sources on the availability of electricity (Q 13); the cost of electricity generation from wind turbines versus other energy sources (Q 14); and the influence of production costs for electricity on the price of electricity for consumers (Q 15). In none of these interchanges does Mr. Schreiner mention the Project or assert any facts or opinions<sup>22</sup> relating to the impacts of the Firelands facility. He provides general discussion of basic operation of the transmission grid and wind turbines,<sup>23</sup> average statistics regarding electricity production from certain generation types in the 2012-2019 timeframe,<sup>24</sup> and assertions regarding the effects of renewable generation in California and Germany.<sup>25</sup> In other words, Mr. Schreiner does not offer any specific statements for the Board’s consideration as to how the Project would interact with “regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems,” or affect “electric system economy and reliability” or “the public interest, convenience, and necessity.” Absent such statements, Mr. Schreiner’s testimony cannot inform the Board’s determinations regarding R.C. Section 4906.10(A) and is not relevant to this proceeding. Firelands accordingly urges the Board to strike pages 4:13 through 11:13 of Mr. Schreiner’s testimony as irrelevant to this proceeding.

To the extent the ALJ’s statements regarding Mr. Schreiner’s experience might suggest his generic assertions constitute relevant expert testimony, even without any specific analysis regarding the Emerson Creek Wind Facility, they do not. Mr. Schreiner’s claim to expertise on

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<sup>22</sup> Any opinions expressed would be improper as Mr. Schreiner is not an expert witness qualified to render opinions, nor was he disclosed as an expert witness. Mr. Schreiner is a lay witness testifying on behalf of the Local Residents.

<sup>23</sup> LR Ex. 1 at 4-8.

<sup>24</sup> *Id.* at 8-9.

<sup>25</sup> *Id.* at 9-11.

“the operation of the PJM grid” rests on the contention that “my knowledge of how the grid operates is significantly higher than the average person” and his experience with operation of a nuclear generation plant.<sup>26</sup> He has never worked for PJM or any other regional transmission organization, and his alleged experience with the PJM grid rests on his work when he was a control room operator at a nuclear generation facility in Ohio from 1977 to 1981 – a timeframe when Mr. Schreiner acknowledges that PJM did not yet exist.<sup>27</sup> He, therefore, could not identify any PJM manuals directing the tasks of a control room operator or dispatch operators to which he claims expertise.<sup>28</sup>

Mr. Schreiner has not worked on the PJM interconnection process for any generation resource,<sup>29</sup> which is the relevant process whereby PJM “ensure[s] that a given resource will not cause violations of applicable NERC [North American Electric Reliability Corporation (“NERC”) reliability] standards, as well as PJM’s own reliability safeguards.”<sup>30</sup> Until after his deposition in this case, Mr. Schreiner was not aware of whether PJM is engaged in any efforts to ensure reliability even if intermittent sources are connected to the transmission grid.<sup>31</sup> In his testimony, Mr. Schreiner was under the impression that intermittent energy sources “connect and disconnect from the grid,” which is not true based on operating manuals PRC-024 and PRC-025, which do not allow for the connection and disconnection of generation facilities, a requirement enforced by NERC.<sup>32</sup> When asked about these operating manuals, Mr. Schreiner was not aware of them.<sup>33</sup> In his testimony, he also claimed that the Project may not adhere to cybersecurity requirements for generation facilities; in fact, all generation projects interconnecting with the grid are required to follow all applicable NERC Critical Infrastructure Protection standards, which focus on cybersecurity. He is not familiar with the differences or similarities between the tariffs governing operation of PJM versus the California Independent System Operator (“ISO”), and does not know how the California ISO manages capacity resources.<sup>34</sup> He expressed that he does not know what PJM network upgrade costs are, a critical component in PJM’s review of an interconnection

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<sup>26</sup> Tr. Vol. VII at 847; LR Ex. 1 at 4.

<sup>27</sup> Tr. Vol. VII at 847-849; LR Ex. 1 at 4.

<sup>28</sup> Tr. Vol. VII at 848-849.

<sup>29</sup> *Id.* at 852-853.

<sup>30</sup> App. Ex. 90 at 4.

<sup>31</sup> Tr. Vol. VII at 849-851.

<sup>32</sup> LR Ex. 1 at 6.

<sup>33</sup> Tr. Vol. VII at 854.

<sup>34</sup> *Id.* at 855-856.

request for any generating facility.<sup>35</sup> Specifically, with respect to the Emerson Creek Wind Facility, although Mr. Schreiner suggested he had reviewed the PJM System Impact Study and Feasibility Study submitted in conjunction with the Firelands Application, he was unfamiliar with the assessment of network upgrades that is a significant part of the results of those studies. He also did not know that network upgrades are designed to improve grid reliability.<sup>36</sup>

While Mr. Schreiner's various roles in operating a nuclear plant undoubtedly involved technical engineering, that experience with management of a nuclear generation resource is not directly relevant to operation of an energy source such as a wind facility. By contrast, Applicant's rebuttal witness Deepesh Rana does have the relevant expertise and specific factual knowledge to attest that the Project will not negatively impact the reliability of the grid and that Mr. Schreiner failed to provide a valid analysis showing it would drive up costs in PJM's wholesale market.<sup>37</sup>

In sum, Mr. Schreiner did not offer any specific factual analysis regarding potential impacts of the Project that would be relevant to the Board's application of R.C. Section 4906.10, and does not have the relevant expertise or experience to pronounce on such issues without performing a fact-specific analysis. Therefore, the Applicant respectfully requests the Board strike questions and responses 8 through 15 (pages 4:13 through 11:13)<sup>38</sup> from Mr. Schreiner's direct testimony from the record in this case.

**C. Applicant's Motion to Strike portions of Mark Shieldcastle's testimony should be granted in total.**

The Motion to Strike certain portions of Mr. Shieldcastle's prefiled direct testimony that was filed on September 21, 2020, on behalf of the Local Residents and BSBO was denied, in part, by the ALJ at the hearing in this matter.<sup>39</sup> Specifically, the ALJ denied the motion with regard to question and response 18 (pages 31:14 through 35:8). As explained herein, this question and response should be stricken from the record in this case, in order to prevent the inclusion of irrelevant evidence in the record.

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<sup>35</sup> *Id.* at 879.

<sup>36</sup> *Id.* at 853-854, 876-877, 878-879; App. Ex. 1 at Ex. B; App. Ex. 1 at Ex. C.

<sup>37</sup> App. Ex. 90 at 5-6.

<sup>38</sup> LR Ex. 1 at 4-11.

<sup>39</sup> Tr. Vol. VII at 917-918.

Mr. Shieldcastle's prefiled direct testimony indicates that the purpose of his testimony is to render purported expert opinions pertaining to the environmental impact of the Project on birds.<sup>40</sup> However, his testimony far exceeds that purpose and the scope of his purported areas of expertise, and includes improper content that should be stricken from the record.

Mr. Shieldcastle attempts to testify regarding "the importance of protecting the birds passing through the Project Area to the people residing in Huron County and Erie County, and along Lake Erie to the north of these counties."<sup>41</sup> Simply put, Mr. Shieldcastle cannot testify on behalf of others regarding their feelings and beliefs—let alone entire communities of thousands of people. Thus, Mr. Shieldcastle's entire response to question 18 on pages 31 through 35 should be stricken.<sup>42</sup>

Furthermore, much of Mr. Shieldcastle's testimony offered in response to question 18 is irrelevant speculation for which he offers no evidentiary support. For instance, Mr. Shieldcastle states:

[A] simple chance to watch a bright yellow and black bird at the feeder or to witness the great wingspan of a soaring symbol of our country float effortlessly by brings pleasure and a calming effect to everyday life.<sup>43</sup>

The Biggest Week in American Birding brings nearly a 100,000 people to enjoy these birds and with a conservative estimate of over 40 million dollars in economic benefit to the region (the actual estimated range of benefit is \$40 million to \$90 million).<sup>44</sup>

There is a direct connection between habitat conservation and the economic impact of birding tourism.<sup>45</sup>

Those are just a few of Mr. Shieldcastle's irrelevant statements for which he offers no evidentiary support. He makes claims "[b]ased on numerous studies" but fails to identify the

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<sup>40</sup> BSBO Ex. 1 at 1.

<sup>41</sup> *Id.* at 31-35.

<sup>42</sup> *See Saum ex rel. Saum v. Kelly*, 3rd Dist. Hancock No. 5-04-53, 2005-Ohio-2895, ¶ 22 ("[W]e find that the trial court correctly disregarded... testimony... because it was not based on personal knowledge and constituted hearsay. [B]ecause such testimony would be inadmissible at trial, it would be improper to consider for the purposes of summary judgment.").

<sup>43</sup> BSBO Ex. 1 at 31-32.

<sup>44</sup> *Id.* at 32.

<sup>45</sup> *Id.* at 35.

referenced studies or attach them to his prefiled testimony.<sup>46</sup> He also purports to opine on the health benefits of bird watching with statements, such as:

Birds enhance the quality of our lives in myriad ways.

[S]ooner or later birds will lure us outdoors. Studies have shown that when we're outdoors, moving around and breathing fresh air, we tend to take deeper breaths. With more oxygen transported to all the cells of our bodies, including our brains, we become more alert and our mood is likely to be elevated.<sup>47</sup>

Mr. Shieldcastle is obviously not qualified to provide testimony regarding purported physiological benefits of bird watching. That testimony is wholly unsupported, in addition to being irrelevant, and should be stricken. Mr. Shieldcastle was identified as a witness for his purported expertise regarding birds, bats, and other wildlife issues. Mr. Shieldcastle's testimony regarding purported health benefits unrelated to the Project is improper, beyond the scope of his purported areas of expertise regarding "wildlife issues," and should not be considered.<sup>48</sup>

## **VI. ARGUMENTS IN SUPPORT OF ADOPTION OF THE STIPULATION AND APPROVAL OF CERTIFICATION**

The Stipulation and the record in this proceeding support a finding and determination by the Board that all of the criteria in R.C. Section 4906.10 have been met; therefore, the Stipulation should be adopted and a Certificate should be issued to Firelands. The Stipulating Parties have presented a strong and all-inclusive Stipulation that is supported by the record in this proceeding. Of particular importance is Condition 1 in the Stipulation, which requires that the Applicant:

...install the facility, utilize equipment and construction practices, and implement mitigation as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the Staff Report.<sup>49</sup>

As detailed herein, this condition in the Stipulation includes extensive and significant commitments and conditions by which Firelands must monitor, construct, and operate the facility.

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<sup>46</sup> *Id.* at 32.

<sup>47</sup> *Id.* at 33.

<sup>48</sup> *See Early v. The Toledo Blade*, 130 Ohio App.3d 302, 318, 720 N.E.2d 107 (6th Dist.1998) ("The Supreme Court of Ohio has noted that a trial court is empowered, pursuant to Evid.R. 104(A), to make a 'threshold determination' concerning an expert witness's qualifications to testify."); BSBO Ex. 1 at 2-3 ("I obtained a Bachelor of Science degree in Wildlife Management from The Ohio State University in 1974. I had various statistical and study design workshops through my employment with the Ohio Division of Wildlife, DNR.").

<sup>49</sup> Jt. Ex. 1 at 2-3.



Thus, the Stipulation and the record provide strong support for a finding by the Board that all of the requisite criteria set forth in R.C. Section 4906.10 have been met and that Firelands should be issued a Certificate.

**A. The record in this proceeding supports the finding and determination by the Board that the basis of need criterion in R.C. Section 4906.10(A)(1) does not apply to this Application.**

Pursuant to R.C. 4906.10(A)(1), prior to granting a certificate, the Board must determine the basis of the need for the facility *if the facility is an electric transmission line or gas pipeline*. However, the facility proposed in this matter is an electric generation facility.<sup>50</sup> Therefore, “the basis of need” as specified under R.C. Section 4906.10(A)(1) is not applicable to the facility proposed in this case.

**B. The Stipulation and the record in this proceeding enable the Board to determine the nature of the probable environmental impact and, therefore, the Application and Stipulation comply with R.C. Section 4906.10(A)(2).**

As summarized below, the record in this proceeding provides a copious amount of information and documentation to enable the Board to determine the nature of the probable environmental impact of the facility, including the ecological, geological and hydrogeology, land use, cultural, and public/safety impacts.

***1. Ecological***

The Applicant conducted surveys for all species. These survey efforts were, at a minimum, in accordance with or, in most instances, in exceedance of United States (“U.S.”) Fish and Wildlife Service (“USFWS”) and the Ohio Department of Natural Resources (“ODNR”) guidelines. Based on these survey results, USFWS and ODNR have not requested additional survey information and have made recommendations, which have been included as conditions in the Stipulation, to ensure minimum probable environmental impact. Additionally, wetland surveys were completed, showing minimal wetland impacts anticipated from the Project.<sup>51</sup>

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<sup>50</sup> App. Ex. 1 at 1.

<sup>51</sup> App. Ex. 35 at 7.

The record reflects that measurable impacts on the quality or surrounding water resources are not anticipated, because the facility: will not discharge water or waste into streams and water bodies; operations will not require use of water for cooling; and the facility will add only small areas of impervious surface that will be dispersed throughout the Project area and will have a negligible effect on surface water runoff and groundwater recharge. Since private wells are typically located within 100 feet of residences, the turbine setback from residences helps ensure that private wells will not be damaged. Therefore, construction of the Project is not anticipated to physically damage private wells or affect well yields. Installation of turbine foundations has the greatest potential to result in localized impacts to groundwater; however, based on the preliminary turbine design, shallow foundations are anticipated to be able to support the turbines.<sup>52</sup>

Soil compaction from the use of construction equipment could temporarily limit the efficiency of surface water infiltration to groundwater; however, the areas affected will be a miniscule percentage (0.26%) of the ground surface within the Project area and will not have a noticeable impact on groundwater recharge.<sup>53</sup> Once construction is complete, all soil will be restored. Restored topsoil will be stabilized with seeding and/or mulching, unless other arrangements have been made with the landowner. These actions will assure that the site is returned to its preconstruction condition and that long-term impacts are minimized.<sup>54</sup>

The Project has been designed and will be constructed so that impacts to waters of the U.S. (“WOTUS”) meet the requirements for authorization under the Nationwide Permit (“NWP”) Program. The studies for impacts on WOTUS were based on a facility design with 87 turbines. However, since it is expected that only 52 to 71 turbines will actually be constructed, those impacts will be reduced.<sup>55</sup> The studies concluded that the Project will have limited impacts to WOTUS.<sup>56</sup>

There will be no construction-related impacts to wildlife areas, nature preserves, or other conservation areas. Potential impacts to undeveloped areas, plants, and animals may occur during construction as a result of installation of the Project and associated facilities and the upgrades to local public roads. However, it is not anticipated that any plant species in the Project area will be significantly reduced in abundance as a result of construction activities. Construction-related

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<sup>52</sup> App. Ex. 1 at 51-52.

<sup>53</sup> *Id.* at 52.

<sup>54</sup> *Id.* at 83-84, 150.

<sup>55</sup> *Id.* at 148, Ex. Z; App. Ex. 31 at 5; App. Ex. 35 at 5.

<sup>56</sup> *Id.* at 35 at 7.

impacts to wildlife are anticipated to be very limited and none of the impacts will be significant enough to affect local populations of any resident migratory wildlife species. Because most facility components are sited in active agricultural land that provides limited wildlife habitat, any impacts are anticipated to be very minor. Likewise, because the facility is sited away from wetlands and streams, and the soil disturbance/exposure due to construction will generally occur in areas already subject to regular plowing, siltation and sedimentation will be avoided and managed per the National Pollutant Discharge Systems (“NPDES”) program, the Stormwater Pollution Prevention Plan (“SWP3”), and the erosion and sediment control plan.<sup>57</sup>

Approximately 26 acres of forest will be impacted by the construction of the facility, but the majority of the impacts will be temporary (98%) and the forests will not be significantly fragmented. Impacts to natural communities have been avoided to the extent possible. Of the 84.5 total acres of land that will be permanently disturbed: 83.3 is agricultural; 0.2 is barren; 0.3 is urban; 0.5 is forestland. Native vegetation and agricultural crops disturbed during construction will be reestablished during restoration.<sup>58</sup>

An ecological assessment for the Project was conducted, which included both a desktop review and a field survey.<sup>59</sup> The assessment covered: vegetative communities; surface waters; aquatic and terrestrial plant and animal life; species of commercial and recreational value; threatened and endangered species.<sup>60</sup> The dominant ecological communities in the Project area are agricultural crops, with less amounts of forestland and disturbed/developed land. During the field survey, minimal wildlife use in these areas was observed. Many of the waterbodies delineated were identified as potentially providing habitat, but at reduced quality due to surrounding land use impacts on water quality from such things as high sediment loading during storms and fertilizer in

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<sup>57</sup> App. Ex. 1 at 142-143.

<sup>58</sup> *Id.* at 143-144.

<sup>59</sup> *Id.* at 104, Ex. Z; The desktop reviews included datasets from the: Ohio Wetland Inventory (“OWI”); National Wetland Inventory (“NWI”); U.S. Geological Survey (“USGS”) topographic maps; U.S. Department of Agriculture (“USDA”) Soil Conservation Service Soil Surveys of Erie, Huron, and Seneca Counties; historical aerial photographs and farmed wetland maps from the USDA Farm service Agency; the USGS National Hydrography Dataset; ODNR State-listed Species by County list; USFWS Ohio County Distribution lists; Audubon Important Bird Areas data; Cornell Lab of Ornithology eBird data; aerial imagery; USFWS; NatureServe; USDA Natural Resources Conservation Service PLANTS database; ODNR Natural Heritage databases; USGS North American Breeding Bird Survey (“BBS”); Audubon Christmas Bird Count; Hawk Migration Association of North America; American Society of Mammologists; Ohio Frog and Toad Calling Survey; Ohio Salamander Monitoring Program; National Amphibian Atlas; Ohio Aquatic Gap Analysis Program; ODNR field guides; ODNR hunting and trapping regulations; and ODNR’s statewide and county-specific compilations of state-listed species..

<sup>60</sup> *Id.* at Ex. Z.

runoff.<sup>61</sup> The site-specific vegetation studies focused on identifying plant communities/habitats, and on delineating sensitive features such as wetlands and streams.<sup>62</sup>

Construction impacts to wildlife species and their habitats will be very limited, due to the fact that facility components have been sited away from sensitive habitats such as forestland, streams, and wetlands. With regard to state-listed plant species, the habitat for the majority of these species are closer to Lake Erie and not in the Project area, which is well inland. Any areas that are in the Project location have been avoided.<sup>63</sup>

During operation of the facility, aside from minor disturbance associated with routine maintenance and occasional repair activities, no other disturbance to plants, vegetative communities, wetlands, or surface waters are anticipate. Operational impacts to wildlife are expected to be limited to possible displacement and some possible avian and bat mortality as discussed in further detail below. In addition, species such as deer and wild turkey generally adapt quickly to the presence of man-made features in the habitat; therefore, significant displacement of game species is not expected.<sup>64</sup>

Annual avian fatalities from terrestrial wind turbines in the U.S. (0.14-0.33 million) is quite minor when compared to other anthropogenic sources of mortality, such as: collision with buildings (365-988 million); vehicles (89-340 million); communications towers (6.6 million); power lines (8-57 million); predation by domestic cats (1,400-3,700 million); and use of agricultural pesticides (72 million).<sup>65</sup> The anticipated avian mortality rate at the Project site, which is spread across many avian species, and the individuals affected represent a fraction of a percent of the populations that migrate through Northwest Ohio. Consequently, on a scientific basis, the avian mortality it is not reasonably considered a biologically significant impact.<sup>66</sup> It is also noteworthy that this rate is comparable to the impacts associated with previous Board-approved wind farms.<sup>67</sup>

Avian collision levels with wind turbines vary based on the species, season, and region. Studies of the Project area revealed a relatively low use of the site by raptors, such as the red-tail

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<sup>61</sup> App. Ex. 1 at 105; Ex. Z.

<sup>62</sup> *Id.* at 120.

<sup>63</sup> *Id.* at 153-154.

<sup>64</sup> *Id.* at 154, 156.

<sup>65</sup> *Id.* at 158; App. Ex. 32 at Att. REG-2.

<sup>66</sup> App. Ex. 1 at 159.

<sup>67</sup> *Id.*

hawk. Even where concentrated hawk migration does occur, evidence suggests that risk to migrating raptors is not great and not likely biologically significant. The low impacts expected by the Project on the raptor species are not likely to affect local or regional populations. Similarly, collision risk to resident waterbirds, such as waterfowl and shorebirds, in the Project area is likely to be minimal, even during migration. Waterbirds and Canada geese do not tend to collide with wind turbines or tall structures.<sup>68</sup>

The potential population level impacts for bird species are very low for a single species. In addition, it was found that use of the Project by federal or state bird species listed as threatened or endangered, was low at the Project.<sup>69</sup>

The Project area reveals no indicators of an elevated risk of collision risk to bats and is consistent with other wind projects in the Mid-west where the post-construction studies reveal that the annual bat fatality rates range average 7.9 bats/MW (range 4.9 to 11.0 bats/MW). With the 297.66 MW Project, it is anticipated that it will result in an average of 2,352 bat deaths per year (range 1,459 to 3,275 bat deaths per year). However, it is important to note that, unlike the safeguards committed to in the Application, required under the Stipulation, and recommended by USFWS in the technical assistance letter (“TAL”), many of the projects used to create the average of 7.9 bats/MW in the Mid-west operate without any feathering or curtailment designed to minimize bat mortality.<sup>70</sup>

While the ecological assessment and studies found various species present in or nearby the Project area, as discussed below, the Application and the Stipulation provide numerous safeguards for any ecological impact that could potentially be associated with the facility. The species that were identified in the Project area are: the Indiana bat, which is both a state- and federally-listed endangered species; the northern long-eared bat, which is both a state- and federally-listed threatened species; several mammalian species of concern; several aquatic species that are state-listed endangered species and are thought to occur in the water sheds; and the rayed bean mussel, white catpaw, and northern riffleshell that are federally-listed endangered species. There are also amphibian, reptile, and aquatic species likely to occur within 0.25 miles of the Project area; however, these species are generally common and widely distributed throughout Ohio. Risks to

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<sup>68</sup> *Id.* at 157-158.

<sup>69</sup> App. Ex. 32 at 22.

<sup>70</sup> App. Ex. 1 at 159; Jt. Ex. 1 at 5.

listed aquatic species are minimal, because the majority of facility components are being sited in active agricultural land; therefore, soil disturbance/exposure due to construction will generally occur in areas already subject to regular plowing, tilling, harvesting, etc.<sup>71</sup> There are some commercial species that are trapped or hunted for fur and/or castoreum, as well as recreational species that are hunted as game that could be present in the Project area.<sup>72</sup>

The site-specific wildlife studies completed for the Project focused on endangered, threatened, and special concern species, as well as birds and bats. Numerous avian and bat studies were completed through the Project area and surrounding areas between 2009 and 2019, which were designed and completed in accordance with ODNr's *On-Shore Bird and Bat Pre-and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio* ("ODNR Protocols"), as well as the USFWS and ODNr recommendations.<sup>73</sup> The cumulative number of survey locations, and the amount of area surveyed for raptor and eagle nest surveys, passerine migration surveys, breeding bird surveys, and acoustic bat surveys exceeded the effort recommended in the ODNr Protocols, and the survey methods were consistent with the recommendations of ODNr and USFWS.<sup>74</sup> The following avian and bat surveys were completed in the Project area:<sup>75</sup>

<b>Survey Type</b>	<b>Dates Completed</b>
Raptor Nest Survey and Monitoring	2009, 2010, 2011, 2012, 2013, 2014, 2018, 2020
Raptor Migration/Use	2010-2011, 2016-2017, 2018-2019
Passerine Migration	2010-2011, 2012, 2016-2017
Eagle Use	2010-2011, 2011-2012, 2016-2017, 2018-2019
Breeding Bird	2011, 2012, 2017, 2018
Owl Playback	2012-2013
Bat Activity	2010, 2011
Bat Mist-Net	2011, 2012, 2017, 2018

<sup>71</sup> App. Ex. 1 at 114-117.

<sup>72</sup> *Id.* at 117-120.

<sup>73</sup> *Id.* at 120; App. Ex. 47.

<sup>74</sup> App. Ex. 32 at 21.

<sup>75</sup> App. Ex. 1 at 121, Exs. R- T, V-X; App. Ex. 32 at 4-17.

With regard to the impact on bald eagles as a result of the Project, it is noteworthy that, to date, there has been only one bald eagle fatality reported in the news in Ohio.<sup>76</sup> For context, Ohio has 39 operating wind projects, with a total of 419 turbines producing 864 MWs of electricity. The total number of projects in the state include 11 projects that are closer to the shore of Lake Erie than this Project and where bald eagle population densities are highest.<sup>77</sup>

The raptor studies and reports for the Project were performed in accordance with the ODNR Protocols, the USFWS Land-Based Wind Energy Guidelines (“USFWS Guidelines”), and the USFWS Eagle Conservation Plan Guidance (“USFWS ECPG”). In accordance with these guidelines and protocols, raptor nest surveys were completed in 2009, 2011, 2012, 2013, 2014, and 2018. Surveys of raptor nests completed in March and April 2018 in and around the Project area reported 3 occupied eagle nests were within the Project area and 3 occupied nests were within a 2-mile buffer. The results of the survey influenced the Applicant’s decision to move the Project boundary so two of those nests are no longer located within the boundary of the Project. Additional eagle nest monitoring surveys completed at the 2 occupied eagle nests previously within the Project area revealed that eagle activity was concentrated within 0.5 mile of each nest location.<sup>78</sup>

The most recent raptor surveys were completed in March and April 2020 and were conducted in accordance with the USFWS ECPG. The March 2020 report documented bald eagle nests within 1.2 miles of the Project. The survey identified 4 in-use bald eagle nests, 2 within the Project area, and 2 between 0.4 and 0.6 miles from the Project area.<sup>79</sup>

Raptor migration surveys were completed throughout the Project area, and in accordance with the ODNR Protocols, between 2010 and 2017 for a total of 50 survey points and 509 hours of surveys. The objective of the surveys was to document use of the Project area by raptors during spring and fall migration to assess potential risk to migrating raptors from the Project.<sup>80</sup> The only federal or state listed species was the state endangered northern harrier. In the 2010-2011 study, 823 observations of raptors were recorded, which is a low number given the large number of survey hours (336). The most commonly observed raptors were turkey vultures and red-tailed hawks, and 27 northern harriers, a state endangered species, were observed. Results of surveys completed in

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<sup>76</sup> <https://www.toledoblade.com/local/environment/2020/05/01/Bald-eagle-killed-by-wind-turbine-at-Wood-County-site/stories/20200503028>

<sup>77</sup> App. Ex. 33 at 20; Tr. Vol. II at 298.

<sup>78</sup> App. Ex. 1 at 121-122, Ex. R-2, Ex. R-3; App. Ex. 32 at 5; App. Ex. 33 at 5-6.

<sup>79</sup> App. Ex. 33 at CF-4.

<sup>80</sup> App. Ex. 1 at K-1.

2016-2017 and 2018-2019 were similar to the 2010-2011 results with red-tailed hawks the most commonly observed raptor and northern harrier the only federal or state listed species observed. Based on the survey results, the Project area does not appear to be of great importance to special status or migratory raptors and it does not appear to be located in a concentrated migration corridor.<sup>81</sup>

In addition to the passerine migration surveys conducted in earlier years and documented in the Application, surveys were completed in 2016-2017 in the northern and southern parts of the Project area. These surveys followed the ODNR Protocols with the objective of determining the seasonal and spatial use of the Project area by migrating passerines and other birds, as well as the potential risk of the construction and operation of the Project to migrating passerines. For the northern survey, 137 surveys were completed, during which 76 individual species were observed, comprised of primarily widespread and abundant species, with no federal threatened or endangered species observed. Two birds of conservation concern defined by the USFWS were observed, including 9 red-headed woodpeckers and 10 wood thrush. The results of the northern survey indicated that the Project area is not heavily used by listed species or other species of concern as migratory stopover habitat. For the southern survey, 205 surveys were completed, during which 83 species were recorded. No federal or state threatened or endangered species were recorded. Four USFWS avian species of conservation concern were recorded, including 1 bald eagle, 4 boblink, 3 wood thrush, and 3 red-headed woodpecker.<sup>82</sup>

In addition to the breeding bird surveys conducted in earlier years and documented in the Application, surveys were completed in 2017 and 2018 in the southern and northern areas of the Project. These surveys followed the ODNR Protocols with the objectives to document the diversity and abundance of bird species observed during the breeding season, and document occurrences and locations of sensitive species. ODNR Protocols only require surveys for turbines that will be located in potential bird nesting habitat; however, since the turbines will be located in tilled cropland, the ODNR recommended survey effort was exceeded since no turbines will be located in potential nesting habitat. For the northern portion, 959 observations were recorded of 64 species. No federal or state threatened or endangered species were recorded. Three USFWS birds of conservation concern were recorded in low numbers near forested riparian habitat,

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<sup>81</sup> *Id.* at Ex. S; App. Ex. 32 at 9-11; App. Ex. 33 at 12-15, CF-2, CF-4

<sup>82</sup> App. Ex. 1 at Ex. T; App. Ex. 32 at 11-13.



including willow flycatcher, wood thrush, and red-headed woodpecker. For the southern portion, 472 observations were recorded of 55 species. No federal or state threatened or endangered species were recorded. Three USFWS birds of conservation concern were recorded in low numbers including field sparrow, northern flicker, and red-headed woodpecker.<sup>83</sup>

Owl surveys were completed between December 2012 and April 2013. Survey methods followed the ODNR Protocols. During the survey, 1 eastern owl was recorded.<sup>84</sup>

In addition to the surveys for large birds and eagles that occurred in earlier years and are documented in the Application, surveys were completed in the Project area in 2018 and 2019. These surveys followed methods in the USFWS ECPG. The survey time totaled 648 hours, during which 25 species totaling 2,958 individual observations were recorded (of those 1,160 were large bird observations). The ring-billed gull, Canada goose, turkey vulture, tundra swan, American crow, mourning dove, and rock pigeon were the most commonly observed species. Five species of raptor were recorded (red-tailed hawk, Cooper's hawk, northern harrier, bald eagle, and American kestrel), with the majority of observations composed of red-tailed hawks. Thirty-three bald eagles and no golden eagles were observed during the 60-minute surveys. Bald eagle observations were recorded year round and were concentrated near an active nest near the Project.<sup>85</sup> No federal threatened or endangered species were observed. One state endangered species, the northern harrier, was recorded during 28 observations. One red-headed woodpecker, a USFWS species of concern, was recorded incidentally during the summer. It is undisputed on the record in this case that population level impacts to large bird species are not expected to occur.<sup>86</sup>

Bat acoustic surveys were conducted in 2011 and 2012 in the southern and northern areas of the Project, respectively, to provide information on bat activity and to determine the relative levels of bat activity between acoustic monitoring locations, as well as to identify peak period of bat activity and how these peaks may relate to weather conditions. The surveys were consistent with the ODNR Protocols. Bat activity was recorded at two met towers located in open crop fields and at two ground locations near forests. Bat activity was higher near the forests. Tree bat species, such as the eastern red bat, the hoary bat, and the silver-haired bat, were recorded. No Indiana bat calls were identified during the acoustic survey; however, northern long-eared bats, which are

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<sup>83</sup> App. Ex. 1 at Ex. V-2; App. Ex. 32 at 14-15.

<sup>84</sup> App. Ex. 1 at Ex. W; App. Ex. 32 at 16.

<sup>85</sup> App. Ex. 33 at 15.

<sup>86</sup> App. Ex. 32 at 18-19; App. Ex. 33 at 14-15.

listed as threatened by USFWS and endangered by ODNR, were recorded during the acoustic and mist-net survey. Little brown bat and tri-colored bat, which are listed by ODNR, were also recorded. The majority of the bats recorded in the southern portion of the Project area were low frequency species, such as the hoary bats, the silver-haired bat, and the big brown bat.<sup>87</sup> Bat mortality occurs at every wind project and the acoustic and mist-net surveys at the site documented the presence of several bat species; however, there has been no established link between the rates of bats captured or rates of bat calls recorded during the pre-construction surveys and the level of bat mortality observed during post-construction surveys.<sup>88</sup>

In addition to earlier mist-net surveys, bat mist-net surveys were conducted in the Project area in 2017 and 2018, in accordance with the applicable USFWS Range-wide Indiana Bat Summer Survey Guidelines (“USFWS Indiana Bat Guidelines”), the ODNR Protocols, and the 2018 ODNR Division of Wildlife (“ODNR-DOW”) Guidance for Bat Permitted Biologist (“ODNR-DOW Guidelines”). These mist-net surveys were conducted to document bat species diversity and abundance in the Project area, and identify roosting habitat, foraging range, and spatial distribution of federally listed Indiana bats and northern long-eared bats, and state-listed Rafinesque’s big-eared bats and eastern small-footed bats, if captured. During the 2017 mist-net survey within the southern portion of the Project area, 337 bats of 6 species were captured, including one female Indiana bat that roosted outside of the Project area. No federally or state listed threatened or endangered species were discovered during the 2017 or 2018 surveys that were completed within the northern portion of the Project area. The October 2017 report showed 58 bats of 3 species captured and the September 2018 report showed 16 bats of 2 species were captured within this area.<sup>89</sup>

## **2. *Geological and Hydrogeology***

The initial review and studies of hydrogeological and geotechnical information for the facility was conducted using documentation produced by federal, state, and local agencies.<sup>90</sup> This

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<sup>87</sup> App. Ex. 1 at Ex. X; App. Ex. 32 at 16-17, 24.

<sup>88</sup> *Id.* at 24.

<sup>89</sup> App. Ex. 1 at Ex. Y; App. Ex. 34 at 4-6.

<sup>90</sup> App. Ex. 1 at 75, Ex. E; The agencies reviewed include: the Federal Emergency Management Administration (“FEMA”); USGS; USDA Soil Conservation Service Soil Surveys of Erie, Huron, and Seneca Counties; the Ohio Department of Transportation (“ODOT”); the Ohio Department of Agricultural (“ODA”); the Ohio Environmental Protection Agency (“OEPA”); ODNR; the Departments of Health in Huron, Erie, and Seneca Counties; and the Ohio State University Agricultural Extension Office.

documentation was reviewed to develop an understanding of the suitability of the soils within the Project area for grading, compaction, and drainage for the Project area.<sup>91</sup> Based on the setback requirements for the turbines in this Project from habitable structures and neighboring properties, the studies support a conclusion that construction of the proposed turbines is not likely to have a negative impact on local geology and/or hydrogeology. The local geology and/or hydrogeology will not be prohibitive regarding construction of the proposed turbines, access roads, or substation.<sup>92</sup>

Many residents in the vicinity of the Project rely on private wells for their potable water. A survey was sent to 140 landowners in the Project area regarding water wells on their properties. Of the 94 that responded to the survey: 50 indicated they had no wells and most were connected to the municipal water supply; 22 had one well; 14 had two wells; and 7 had three or more wells.<sup>93</sup> The survey revealed that at some locations the private water well and corresponding groundwater levels were less than 20 feet deep and that the wells were typically located close to the homes, barns, or other outbuildings on the property.<sup>94</sup>

In addition to the initial geotechnical review and reconnaissance, an additional geotechnical subsurface exploration and geotechnical engineering evaluation for the Project was performed. This study explored and evaluated subsurface conditions at the proposed building sites, conducted a geological/geotechnical risk hazard assessment, and developed geotechnical design and construction recommendations for the Project. All of the geological and hydrogeological studies performed for the Project addressed all of the requirements set forth in the Board's rules and regulations, including, but not limited to: evaluating the impact to public and private water supplies; reviewing maps aquifers, water wells, and drinking water source protection; compliance with drinking water source protection plans; analyzing prospects for flooding in the area; evaluating suitability of the site geology and plans to remedy any inadequacies; evaluating the suitability of soil for grading, compaction, and drainage, and plans to remedy any inadequacies and restore the construction reclamation; and describing plans for test borings and the timing for providing information to the Board regarding subsurface soil properties, static water level, rock

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<sup>91</sup> App. Ex. 1 at 79, Ex. E.

<sup>92</sup> *Id.* at Ex. E; App. Ex. 39 at 5.

<sup>93</sup> App. Ex. 1 at 75, Ex. E.

<sup>94</sup> *Id.* at Ex. E; App. Ex. 39 at 5.

quality description, percent recovery, and depth and description of bedrock contact.<sup>95</sup> The principle source of groundwater in the Project area is carbonate limestone bedrock aquifer.<sup>96</sup>

The subsurface exploration found that the site is suitable for construction and operation of the proposed Project. The bedrock at the Project site mainly consisted of shale and limestone, and the soils encountered in the geotechnical borings extended to the top of the bedrock, which was encountered at depths that ranged from 2 to 49 feet below the existing site grade.<sup>97</sup>

The majority of the proposed turbine sites are located to the east and south in the Ohio Shale Formation where the underlying bedrock is shale. Shale is not prone to karst development and is also not typically conducive to well development due to poor yields.<sup>98</sup>

There are portions of the Project in the extreme northwestern portion of the Project site where underlying bedrock formations consist of limestone. Limestone is a type of carbonate bedrock that may be susceptible to karst features such as voids and other solution cavities. Bedrock is generally shallower within the western portion of the Project area and deeper in the eastern portion. Consequently, foundation considerations vary depending on the location of each turbine. Due to the depth of bedrock, excavation within bedrock may be necessary in the western portion of the area to install foundations. Where determined reasonable and appropriate, these areas may be grouted in order to provide adequate foundation support. Based on the geotechnical investigations, potential solution cavities within the bedrock were encountered; therefore, some sites could be near karst features.<sup>99</sup> Boring logs included in the additional geotechnical investigation indicated that only a couple of borings advanced through limestone bedrock that exhibited potential voids within the limestone and these voids appeared to be limited to less than 2 feet in vertical extent. Therefore, construction of the proposed turbines should have a minimal impact on the quality, availability, and/or movement of groundwater in the Project area.<sup>100</sup>

From an engineering perspective, it is important to ensure that buildings and structures do not experience settlements in these areas. As will be detailed below, the probability of settlement occurring can be reduced by performing measures such as bedrock grouting. Further, at sites where the karst hazard assessment indicated a probability, additional testing/investigation and

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<sup>95</sup> App. Ex. 1 at Ex. E; App. Ex. 39 at 3-4; App. Ex. 38 at 3-4, Att. AW-2.

<sup>96</sup> App. Ex. 1 at 75, Ex. E.

<sup>97</sup> App. Ex. 38 at 5.

<sup>98</sup> *Id.* at 5; App. Ex. 39 at 5.

<sup>99</sup> App. Ex. 1 at 80, 82, Ex. E; App. Ex. 38 at 5-6.

<sup>100</sup> App. Ex. 39 at 5.

remedial actions will be taken.<sup>101</sup> Moreover, in accordance with Stipulation Condition 7, the final Project design and foundation design will account for karst topography.<sup>102</sup>

OEPA, as well as other regulatory agencies, have adopted regulations that restrict specific activities within Source Water Protection Areas (“SWPA”). However, construction of the facility will not constitute an activity that would be restricted within either a surface water or ground water source SWPA.<sup>103</sup> The Capital Aluminum and Glass SWPA ground water protection area is located in the western portion of the Project and four turbines are located in this SWPA. There are six Inland Surface Water Protection Areas located in the eastern and southeastern portions of the Project area, and two turbines are located in these SWPAs. The Aqua Ohio – Tiffin, City of Fremont, and the Attica Village Inland SWPAs all overlap the southwest corner of the Project area and there are three turbines within these SWPAs. Studies of these areas within the Project and the programs that have adopted rules related to the presence of SWPAs have concluded that the construction of the proposed facility will not constitute an activity that would be restricted within either the surface water or groundwater SWPA. Importantly, the Applicant has committed to implement best management practices (“BMPs”) during construction and operation of the turbines and associated facilities that will protect against negative impacts to the SWPAs.<sup>104</sup>

The Applicant has committed that the geotechnical engineer will examine all foundation designs and compatibility with the supporting soil at each turbine site, and approve the work prior to placement of foundation components.<sup>105</sup> This commitment is reinforced with Stipulation Condition 7 that requires, in part, that 30 days prior to the preconstruction conference Firelands shall submit:

- (1) Detailed engineering drawing of the final Project design so that Staff can determine that the final design is in compliance with the Certificate.
- (2) The detailed engineering drawings for the final Project design and foundation design shall account for karst topography and include the identity of the registered professional engineer(s), structural engineer(s), or engineering firm(s), licensed to practice engineering in the state of Ohio who reviewed the approved designs.<sup>106</sup>

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<sup>101</sup> App. Ex. 38 at 5-6.

<sup>102</sup> Jt. Ex. 1 at 3.

<sup>103</sup> App. Ex. 1 at 75, Ex. E; App. Ex. 39 at 6.

<sup>104</sup> App. Ex. 1 at 77-78, Ex. E; App. Ex. 39 at 6.

<sup>105</sup> App. Ex. 1 at 81, Ex. E.

<sup>106</sup> Jt. Ex. 1 at 3.

A review of geologic structural and seismic information reflects that no epicenters lie within the Project area. The closest seismic event to the Project area was located approximately 18 miles west of the area and occurred in 1936.<sup>107</sup>

There are no turbine sites proposed within designated 100-year floodplains.<sup>108</sup> However, as a safeguard, Stipulation Condition 17 requires that, prior to construction, either a copy of a floodplain permit be provided if it is later found to be necessary for construction or a copy of correspondence with the floodplain administrator showing that no permit is necessary be provided.<sup>109</sup>

### **3. *Land Use/Agriculture***

Both temporary and permanent impacts to land use will occur; however, these changes will affect a tiny percentage of leased lands and the facility will be compatible with the agricultural land uses that dominate the Project area. It is estimated that 1,439 acres of agricultural land will be disturbed by the Project. However, of that estimation, only approximately 82 acres will result in the permanent loss of agricultural land, as 1,357 acres will be temporary due to construction. More than 97% of the total impacts from construction and operation of the facility will occur on land used for agriculture. There will be no commercial, residential, or industrial land permanently lost as a result of the Project. Only very minor changes in land use are anticipated within the Project area as a result of facility operation and no changes are predicted outside the Project area. Aside from occasional maintenance and repair activities, facility operation will not interfere with on-going land use.<sup>110</sup>

### **4. *Cultural***

A cultural resources review for a 10-mile area surrounding the Project area was completed to identify known cultural resources in the vicinity of the facility so that impacts to these resources could be minimized.<sup>111</sup> The Applicant seeks to avoid any potentially significant (i.e., NRHP-

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<sup>107</sup> App. Ex. 1 at 81, Ex. E.

<sup>108</sup> *Id.* at 79, Ex. E.

<sup>109</sup> Jt. Ex. 1 at 17.

<sup>110</sup> App. Ex. 1 at 189-191, 222.

<sup>111</sup> *Id.* at 205-206, Ex. I; App. Ex. 37 at 3; The review included the following records: State of Ohio Historic Preservation Office ("SHPO"); National Register of Historic Places ("NRHP"); NRHP Determination of Eligibility properties; National Historic Landmarks List; Ohio Historic Inventory; ODOT Historic Bridge

eligible or – unevaluated) archaeological sites located in the Project area. Based on the results of the field surveys completed at 9 possibly eligible NRHP sites in 2018, it was determined that no NRHP-eligible components are present within the construction boundaries of the Project, with the exception of site 33HU0043. Based on these results, the Applicant revised the facility layout so that there will be no direct impacts to known cultural resources, including site 33HU0043 from the construction of the Project.<sup>112</sup> While known cultural resources were identified within the Project area, the Project is not expected to directly impact those known cultural resources.<sup>113</sup> Significantly, Stipulation Condition 14 requires, in part, that the Applicant continue to adhere to its Programmatic Agreement (“PA”) with the SHPO and that the Applicant minimize impacts to cultural resources, including avoiding site 33HU0043.<sup>114</sup> The PA defines the roles and responsibilities of SHPO and Firelands with respect to addressing potential impacts to cultural resources resulting from the Project. The PA also defines the phasing of the required archaeological and historic/architectural surveys for the Project and defines the subsequent process of review and concurrence of cultural resource surveys for the Project, as well as ongoing consultation with SHPO for technical assistance and dispute resolution.<sup>115</sup>

The Applicant completed a Visual Impact Assessment (“VIA”) that includes a viewshed analysis, field verifications, and photographic simulations, and assesses the potential visual impacts of the Project.<sup>116</sup> This analysis identified locations within the 10-mile visual area from the Project where there is potential for the turbines to be seen from ground-level vantage points. Viewshed mapping indicated that the Project has the potential to be visible from slightly more than half of the 10-mile radius visual study area. In most locations where the Project will be visible, less than half of the proposed turbines are likely to be seen, with only 17.2% of the visual study area having predicted visibility of over 34 turbines (out of a total of 87 proposed). This modeling analysis is conservative in that it assumes all 87 turbines are built even though only 52 to 71 will be constructed. The greatest potential for unscreened views of the Project will be in rural

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Inventory; Ohio Archaeological Inventory; Ohio Genealogical Society cemetery files; and Mills Archaeological Atlas of Ohio (1914).

<sup>112</sup> App. Ex. 1 at 206-207, Ex. I.

<sup>113</sup> App. Ex. 37 at 4.

<sup>114</sup> Jt. Ex. 1 at 4.

<sup>115</sup> App. Ex. 37 at 5.

<sup>116</sup> App. Ex. 2; App. Ex. 46 at 3, 9-14.

residential and agricultural areas. In more densely developed areas, most of the proposed turbines will be at least partially screened by trees and structures.<sup>117</sup>

There are no: national or state parks; national heritage areas; national wildlife refuges; national natural landmarks; national recreation areas; national seashores; national forests; national or state designated wild, scenic, or recreational rivers; or state historic markers within the study area. However, the Project's visual study area includes 377 sites that could be considered visually sensitive resources ("VSRs") of local, regional, or statewide significance. These include 142 individual properties and 15 districts listed on the NRHP; 36 properties eligible for listing on the NRHP; 11 state wildlife areas; one river listed on the Nationwide Rivers Inventory; one designated scenic byway; two state and federally designated trails; four State nature preserves; nine areas of intensive land use; 19 major transportation corridors; 92 local parks; four local trails; and 41 local water resources.<sup>118</sup>

The visibility and visual impact of the turbines will be variable, based on landscape setting, the extent of natural screening, and distance of the viewer from the facility.<sup>119</sup> Visibility of the turbines will be eliminated in small areas throughout the area studied where blocks of forest vegetation occur, along forested stream corridors, and visibility will be drastically reduced or eliminated in cities and villages due to screening provided by trees and structures. Areas of screened views increase in size with distance from the facility. The blade tip viewshed analysis indicated that approximately 57.5% of the area studied within 10-miles will potentially have views of some portion of a turbine. Note though that views of the facility from the majority of residences and historic sites within the residential area will be fully or partially screened. Views of the turbines will be most available from the more rural/agricultural portions of the area. However, some screening will be provided by wooded lots, hedgerows, farm buildings, rural residences, and yard trees. Views from a long distance are not likely where homes and roads are surrounded by vegetation and the lack of topography allows the foreground (0-0.5 miles) and mid-ground (0.5-4 miles) vegetation to screen the view. The Project will be visible from most of the transportation corridors in the area.<sup>120</sup> The actual significance of the visual impact of the red flashing lights at night on the turbines from a given viewpoint will depend on how many lighted turbines are visible,

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<sup>117</sup> *Id.* at 15.

<sup>118</sup> App. Ex. 2, Fig. 5; App. Ex. 46 at 7.

<sup>119</sup> App. Ex. 1 at 216, App. Ex. 2; App. Ex. 46 at 17.

<sup>120</sup> App. Ex. 1 at 211-212; App. Ex. 2.



what other sources of lighting are present in the view, the extent of screening provided by structure and tress, and nighttime viewer activity. Nighttime visibility of the lights will be limited in cities, villages, hamlets, and along highways where existing lights already compromise dark skies. The low to moderate scenic quality of the working agricultural landscape that makes up the majority of the Project area limits the facility's visual impact.<sup>121</sup>

The review of recreational and scenic areas within 10-miles of the Project area revealed: two trails, Buckeye Trail and North Coast Inland Trail (0.1 and 0.3 miles from a turbine, respectively); Erie Sand Barrens State Nature Preserve (1.9 miles from a turbine); West Branch Huron River (2 miles from a turbine); Dupont Marsh State Nature Preserve (6.6 miles from a turbine); Lake Erie Coastal Ohio Trail Scenic Byway (6.7 miles from a turbine); Sheldon Marsh State Nature Preserve (6.9 miles from a turbine); Old Woman Creek National Estuarine Research Reserve (8.8 miles from a turbine).<sup>122</sup> With regard to the Buckeye Trail, views of the turbines will be visible along some portions of the trail, the facility sound level may exceed 49 A-weighted decibels ("dBA") for a limited distance, and, while shadow flicker may be experienced along approximately 2.3 miles of the trail, it will be less than 30 hours per year along the entire route. For the North Coast Inland Trail, which is a bike route that will extend approximately 105 miles from Lorain, Ohio to Toledo, Ohio, some views of the turbines may be visible along portions of the route, the sound level will not exceed 49 dBA, and shadow flicker may exceed 30 hours per year on 750 feet of the trail. For the Erie Sand Barrens State Nature Preserve, there will be partial visibility of the Project from the reserve, but views from certain portions of the reserve will be screened, the sound levels will not exceed 49 dBA, and there will be no shadow flicker. The West Branch of the Huron River will be entirely screened from the Project, the sound levels will not exceed 49 dBA, and there will be no shadow flicker. Extremely limited views of the Project may be seen from the Dupont Marsh State Nature Preserve, the Lake Erie Coastal Ohio Trail Scenic Byway, the Sheldon Marsh State Nature Preserve, and the Old Woman Creek National Estuarine Research Reserve, since most turbines are at a far distance and are screened from view, the sound levels will not exceed 49 dBA, and there will be no shadow flicker.<sup>123</sup>

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<sup>121</sup> App. Ex. 1 at 216; App. Ex. 2.

<sup>122</sup> App. Ex. 1 at 207, Ex. I.

<sup>123</sup> *Id.* at 208-210, Ex. I.

## 5. *Communications*

As detailed below, an analysis of the effect, if any, on the communications systems as a result of the construction and operation of the Project revealed that no turbine will conflict with any Federal Communications Commission (“FCC”)-licensed or known planned microwave link, no land mobile or public safety or other omnidirectional transmitting station are expected to be adversely affected, and television (“TV”) is not expected to be an intractable problem.<sup>124</sup> Based on a conservative estimate, approximately 10% of the receiver locations within 3 miles of a turbine could be affected when a rotating turbine blade is between the TV station and the resident’s receiver. Based on this 10% criteria, up to 233 households could be affected to varying degrees.<sup>125</sup> Any disruptions to TV broadcast signals, if they occur, can be resolved. Possible resolutions include, but are not limited to: relocation of the antenna; installation of a better antenna with a higher gain; or cable or satellite TV.<sup>126</sup> If a resident requires cable television in order to replace a digital signal that is impaired by the Project, the Applicant commits to paying the monthly subscription fee for cable television.<sup>127</sup> The Applicant is committed to work with residents to ensure that, if they experience degraded off-air television service after the installation of the facility, the situation is investigated and resolved.<sup>128</sup>

FM broadcast station signals are not expected to be adversely impacted by the wind turbines. With regard to AM broadcast stations, any station within 1.86 miles of a turbine may be adversely affected; however, the closet AM directional transmitter is located 2.1 miles from the closet turbine. Therefore, there is no expectation of disruptions in transmitted signals due to the turbines.<sup>129</sup>

The National Telecommunications and Information Administration (“NTIA”) of the U.S. Department of Commerce was notified of the proposed Project. To determine if there are any concerns with the Project as it relates to radar interference, NTIA provided the plans for the facility to the federal agencies represented in the Interdepartmental Radio Advisory Committee (“IRAC”), which include the Department of Defense, the Department of Education, the Department of Justice,

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<sup>124</sup> App. Ex. 44 at 3-4, Ex. I.

<sup>125</sup> App. Ex. 1 at 100, Ex. Q.

<sup>126</sup> *Id.* at 101.

<sup>127</sup> Tr. Vol. I at 41, 11, 16-22.

<sup>128</sup> App. Ex. 1 at 101.

<sup>129</sup> *Id.* at 101, Ex. Q.

and the Federal Aviation Administration (“FAA”). Upon review, no agency had issues with the turbine placements for the Project.<sup>130</sup>

To determine the effect of the proposed facility upon the existing microwave communications in the area, an extensive Fresnel zone analysis was conducted, which calculated the Worse Case Fresnel Zone (“WCFZ”). The WCFZ is the zone where the siting of obstructions, such as turbines, should be avoided. Based on the dimensions of the largest turbine model under consideration for the Project, it was determined that none of the proposed turbine locations will obstruct a WCFZ. Therefore, no turbine will conflict with any FCC–licensed or known microwave link, and no degradation of microwave telecommunications is anticipated.<sup>131</sup> As detailed below, to ensure there is no conflict or degradation of microwave communications, Stipulation Condition 38 requires that all existing licensed microwave paths and licensed communications systems will be subject to avoidance or mitigation.<sup>132</sup>

There is a remote possibility that wind turbines could cause blockage at the base station on Real-time Kinematic (“RTK”) Global Positioning System Locator systems in a particular area for mobile farming vehicles. However, if this were to occur and become a problem in a particular area creating a necessity for the installation of a repeater station nearby to solve the problem, the Applicant will fund the purchase and installation of a repeater station.<sup>133</sup>

## **6. Public and safety**

No significant impact on local public services and facilities is expected. The principal impact on public services in the site locale will be a temporary increase in traffic on roads leading to the Project area, due to deliveries of equipment and materials during construction.<sup>134</sup> The transportation study for the Project identified the primary and alternative transportation routes for the site, evaluated the existing characteristics of the roadways and bridges, described anticipated impacts, identified mitigation measures to address impacts, and identified locations where improvements to roads were likely needed.<sup>135</sup> In addition, the transportation provider delivering the facility components will further evaluate all roadways prior to delivery as part of the special

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<sup>130</sup> *Id.* at 102; App. Ex 15 at Att. 3.

<sup>131</sup> App. Ex. 1 at 103, Ex. Q; Jt. Ex. 1 at 9.

<sup>132</sup> *Id.*

<sup>133</sup> App. Ex. 31 at 10; App. Ex. 44 at 4.

<sup>134</sup> App. Ex. 1 at 200.

<sup>135</sup> *Id.* at 39-40, Ex. D.

permitting process, which is required for vehicles and/or loads that exceed the legal dimensions or weights specified by ODOT, in accordance with R.C. Section 4513.34. The transportation study also investigated impacts to bridges, and height limitations for bridges and overpasses. Prior to construction, the transportation provider will obtain all necessary permits from ODOT, the counties, and any affected townships. All public upgrades will be identified as part of the final transportation routing plan, or any road use maintenance agreement (“RUMA”).<sup>136</sup> Based on the information collected during the transportation study investigation and the information from ODOT, sufficient infrastructure exists via the primary and secondary roads to transport turbine components to the site.<sup>137</sup>

Selected roadways will be video-documented to establish the existing conditions prior to and after construction. Upon completion of construction, the Application will return all roadways to their preconstruction conditions, in accordance with local permitting and any RUMAs.<sup>138</sup>

There is a very low risk of tower collapse and blade failure; thus, any potential impact is negligible. The facility’s setbacks from residences and adjacent property lines will protect the public from in the unlikely event of a tower collapse or blade throw.<sup>139</sup>

The turbines have control systems in place to shut down the turbine during significant icing events, which mitigate most ice throw. Thus, for ice throw to occur there would need to be a failure of the control systems responsible for preventing the turbine from spinning when ice is accumulating, which is unlikely.<sup>140</sup>

The Applicant retained a noise control engineer with 17 years of experience in the field of acoustics to evaluate and report on the potential sound impacts from the proposed facility.<sup>141</sup> The resulting Noise Impact Assessment Report reviewed the background sound level to determine what minimum environmental sound levels are consistently present and available to mask or obscure potential sound from the facility, such as sound from insects, trees, leaves, and the wind itself. It has been found that at moderate to high wind speeds, when turbine sound levels are most significant, the level of natural masking sound is normally also relatively high due to tree or grass

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<sup>136</sup> *Id.* at 41-42.

<sup>137</sup> *Id.* at 44, Ex. D.

<sup>138</sup> *Id.* at 44.

<sup>139</sup> *Id.* at 86.

<sup>140</sup> *Id.* at 87-88, Ex. L.

<sup>141</sup> App. Ex. 41 at 2.

rustle; thus, reducing the perceptibility of the turbine noise.<sup>142</sup> Moreover, sounds generated by wind turbines are similar to sounds generated by a number of devices, human activities, and environmental settings, including wind, rain, insect, traffic, air conditioning systems, lawn equipment, video games, and radio/TV broadcasts.<sup>143</sup>

O.A.C. Rule 4906-4-09(F)(2) imposes a sound level standard of 5 dBA above the nighttime ambient sound level measured in the area, using the equivalent continuous sound level (“Leq”) as the metric for sound at any non-participating sensitive receptor.<sup>144</sup> As supported by the record and the Stipulation, the Applicant will comply with this requirement.

Based on ambient sound monitoring, the existing nighttime background Leq in the area is 44 dBA, which, when applying the Board’s sound level limits results in a nighttime sound level limit of 49 dBA.<sup>145</sup> All residences, both non-participating and participating, are projected to experience sound levels of 49 dBA or less from the Project turbines. All non-participating residences are projected to be at 48 dBA or less from the Project turbines. With regard to the substation, the highest sound level was modeled to intermittently be 54 dBA at participating receptors located adjacent to the collection substation during hot summer days when the cooling fans are operating; however, at night and when the cooling fans are not operating the sound level at the closest residence to the substation, which is a participating receptor, is 49 dBA.<sup>146</sup> Adverse impact to sound-sensitive areas from facility-related sound is not anticipated as the sound level will not exceed 49 dBA. Even though residential sound impacts are anticipated to be minor, the Applicant will employ the following additional mitigation measures: implementing BMPs for sound abatement during construction, including use of mufflers, vehicle maintenance, limiting hours of construction, and notifying landowners of certain construction sound impacts in advance. It is also noteworthy that the sound evaluation conducted for the Project was a very conservative study; thus, the sound levels at many locations will be lower than those modeled, since the results were based on 87 turbines utilizing the worst-case scenario sound levels and the Applicant will only construct 52 to 71 turbines; therefore, the Project will not actually produce such high levels of sound.<sup>147</sup> The audible sound design goals of the facility conform to the guidelines of the World

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<sup>142</sup> App. Ex. 1 at 64, Ex. G.

<sup>143</sup> App. Ex. 42 at 12, 19-20.

<sup>144</sup> App. Ex. 41 at 3.

<sup>145</sup> App. Ex. 1 at 69, Ex. G; App. Ex. 41 at 8.

<sup>146</sup> App. Ex. 1 at 71, Ex. G; App. Ex. 41 at 10-11.

<sup>147</sup> App. Ex. 1 at 73-74; App. Ex. 31 at 5.

Health Organization (“WHO”) and the national Association of Regulatory Utility Commissioners (“NARUC”), both of which are conservative and, therefore, protective.<sup>148</sup>

An expert epidemiologist and public health professional, with a Doctorate in Epidemiology and over 30 years of experience working full time in the field of epidemiology, provided undisputed evidence on the record that “at or below the proposed noise levels for the Emerson Creek Wind Facility [49 dBA nighttime noise outside non-participating residences], the epidemiological evidence does not demonstrate that wind turbine emissions harm human health.” A thorough review of the epidemiological evidence today provides no basis for establishing a causal relationship between the noise from wind turbines and any disease of harm to human health.<sup>149</sup> The Community Noise and Health Study (“Health Canada Study”), which is one of the largest and best-designed studies on wind turbines and health, demonstrated that there is no clear or consistent association between noises from wind turbines and any quality of life effect or health effect, including any sleep disturbance, blood pressure, and heart rate.<sup>150</sup> Further, health-related studies found that myocardial infarction stroke, diabetes, hypertension, use of sleep medication, and use of anti-depressant medication did not find any clear or consistent evidence that exposure to wind turbine noises leads to actual increases in these health outcomes.<sup>151</sup> Therefore, Dr. Mundt concludes that, “claims of wind turbine emissions harming human health have not and cannot be substantiated epidemiologically.”<sup>152</sup> In his review, Dr. Mundt found no causal connection between sound levels of less than 50 dBA from wind turbines and any human disease or other indicator of serious harm to human health.<sup>153</sup>

Dr. Mundt notes that annoyance is not a disease or an indicator of harm to health. However, annoyance has been associated with an individual’s attitude for or against wind turbines, and these attitudes can be influenced by conditioning, that is convincing people that some stimulus (sound from wind turbines) is likely to harm them, even if it is incapable of doing such harm.<sup>154</sup> Dr. Mundt explains that, “general annoyance with wind turbines, personal benefit, physical safety concerns, property ownership, province, noise levels, and sensitivity to noise” are statistically

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<sup>148</sup> App. Ex. 1 at Ex. G; App. Ex. 42 at 9.

<sup>149</sup> *Id.* at 3, 8-9.

<sup>150</sup> App. Ex. 42 at 13-15; Feder et al., (2015).

<sup>151</sup> App. Ex. 42 at 15-16.

<sup>152</sup> *Id.* at 8.

<sup>153</sup> *Id.* at 28-29, Att. KM-5.

<sup>154</sup> *Id.* at 12, 16.

inter-correlated. In addition, while not related to wind turbine noise, a number of health indicators, such as migraines, dizziness, tinnitus, chronic pain, and restless leg syndrome, were statistically correlated with annoyance. According to Dr. Mundt, this suggests either that the individuals with these conditions are more easily annoyed with environmental stimuli or they are more likely to self-report annoyance.<sup>155</sup> Several controlled studies demonstrated that self-reporting annoyance and other subjective complaints reflect, in part, that preconceptions about the ability of the noise from wind turbines to harm health, damage the environment, or lead to economic loss, can be significantly influenced by factors such as the color of the wind turbine.<sup>156</sup>

O.A.C. Rule 4906-4-09 (H)(1) imposes the requirement that the facility shall be operated so that shadow flicker levels do not exceed 30 hours per year at any non-participating receptor. As supported by the record and the Stipulation, the Applicant will comply with this requirement.

The record reflects a study of shadow flicker was conducted using a conservative, maximum-case scenario, which included various assumptions including: that all 87 turbines would be constructed (only 52 to 71 will be constructed); the turbines are in continuous operation during daylight hours (which is not the case as the blades do not spin below the cut-in speed); and sensitive receptors were assumed to have only windows and no screening of trees or buildings.<sup>157</sup> Out of the 1,495 receptors located within 4,921 feet of a turbine site that were studied the percentage of those receptors and the number of hours per year they would expect to experience shadow flicker is as follows: 642/43% (0 hours); 17/1% (0 to 2 hours); 432/29% (1-10 hours); 204/14% (10-20 hours); 88/6% 20-30 hours; and 112/7% more than 30 hours. Of the 112 receptors predicted to receive more than 30 hours per year of shadow flicker, 55 are non-participants.<sup>158</sup> Given all the maximum-case scenario assumptions, shadow flicker impacts on non-participating receptors will be reduced prior to construction and may be entirely eliminated at some receptors. The predicted shadow flicker values will not actually be experienced at these receptors because the Applicant has committed to implement the necessary mitigation measures through operational design, following the realistic shadow flicker analysis using the specific array for construction, to achieve compliance of 30 hours per year at all non-participating receptors. Mitigation measures could

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<sup>155</sup> *Id.* at 17, Att. KM-5; Michaud, et al., (2016d)

<sup>156</sup> App. Ex. 42 at 18; Crichton et al., (2014a); Crichton et al., (2014b); Crichton et al., (2015); Crichton and Petrie (2015); Maffei et al., (2013); Ruotolo et al., (2012).

<sup>157</sup> App. Ex. 1 at 91, 95, Ex. H; App. Ex. 31 at 5.

<sup>158</sup> App. Ex. 1 at 92, Ex. H.

include screening such as vegetative planting, and/or curtailment of certain turbines operation during select times.<sup>159</sup> The Applicant will conduct a preconstruction shadow flicker analysis to determine the actual shadow flicker effects based on the final turbine model and the sites. Moreover, Stipulation Condition 34 requires the Applicant to docket a shadow flicker study showing that the cumulative shadow flicker impacts will not exceed 30 hours per year at any non-participating sensitive receptor.<sup>160</sup>

Shadow flicker effects beyond approximately 4,900 feet are considered negligible, because shadow flicker diminishes as the distance between receptors and turbines increase.<sup>161</sup> The proposed turbine models operate at a frequency of 1 hertz (“Hz”) or less. There is no evidence that turbines can trigger seizures – in fact, most people with photo sensitive epilepsy are sensitive to flickering around 16 to 25 Hz.<sup>162</sup> Dr. Mundt, further notes that “self-reported high annoyance with wind turbine shadow flicker was statistically correlated with general annoyance with wind turbines (such as visual perception), concern for physical safety, and self-reported noise sensitivity.”<sup>163</sup>

An expert, with over 35 years of experience in the field of real estate appraisal, provided a Market Impact Analysis specific to Ohio and the Project area with respect to the potential impact of wind turbines on the value of rural residential and agricultural property. The analysis completed by the expert included an analysis of the sale of property in rural areas comparable to the Project area in this case. The detailed analysis concluded that proximity to a wind farm did not impact the price of the proximate sale of property in the rural areas studied. In fact, a survey of the county auditors in those areas studied revealed that there was no market evidence to support a negative impact on residential property values as a result of the development of and the proximity to a wind farm facility, and there were no reductions in assessed value of such property. Further, peer-reviewed studies that address the potential effects of wind turbines on property values have not found statistical evidence that the values of homes near wind turbines are affected.<sup>164</sup>

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<sup>159</sup> *Id.* at 93, 96, 99.

<sup>160</sup> Jt. Ex. 1 at 8.

<sup>161</sup> App. Ex. 1 at 90.

<sup>162</sup> *Id.*; App. Ex. 42 at 24.

<sup>163</sup> *Id.* at 17; Voicescu, et al., (2016).

<sup>164</sup> App. Ex. 40 at 3-7, MM-2.



Neither construction nor operation of the facility will cause interference with navigable airspace; thus, it will not cause any adverse impacts to the existing air travel network.<sup>165</sup> Following its review of the proposed turbines, the FAA issued Determination of No Hazard (“DNH”) for the turbines finding that the turbines, at their proposed heights and locations, will not exceed the threshold established for a finding of hazard and that the turbines will not have a substantial adverse effect on air traffic efficiency.<sup>166</sup> It is noteworthy that part of the FAA review process includes an assessment by federal agencies external to the FAA, i.e., the Department of the Army, the Department of the Air Force, the Department of the Navy, the Office of the Secretary of Defense, and the Department of Homeland Security, to determine what, if any, impact the Project could have to their operations.<sup>167</sup> As the basis for its determination, the FAA found that: the turbines will not have a significant adverse effect on navigable airspace; the structures will not conflict with airspace required to conduct normal visual flight rules (“VFR”) traffic pattern operations or have a substantial adverse effect on VFR en route flight operations; and there were no substantial adverse instrument flight rule (“IFR”) effects as the affected airspace will be adjusted to mitigate the height of structures.<sup>168</sup>

As attested to on the record by a specialist in the areas of helicopter accident reconstruction and analysis who is a certified Airline Transport Pilot through the FAA, helicopters can be safely operated within and near a wind farm in either daytime or nighttime conditions. It is undisputed on the record, that the completion of a helicopter emergency medical service (“EMS”) flight in and around wind turbines presents no greater difficulty than other existing obstacles or obstruction present in or near the Project area. Moreover, even with the presence of a nearby wind farm, during a flight with clear weather, good visibility, and ceilings above 1,000 feet, there should be no significant time delay for an EMS helicopter to arrive on the scene.<sup>169</sup>

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<sup>165</sup> App. Ex. 1 at 120, 200; App. Ex. 43 at 12.

<sup>166</sup> *Id.* at 10, Att. BMD-2.

<sup>167</sup> *Id.* at 6.

<sup>168</sup> *Id.* at 12.

<sup>169</sup> App. Ex. 45 at 2, 4-5.

**C. The Stipulation and record in this proceeding support a finding and determination by the Board that the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of various alternatives in compliance with R.C. Section 4906.10(A)(3).**

As discussed herein, the Applicant has committed to a number of measures through its Application and the Stipulation in order to ensure the Project has the minimum adverse environmental impact. The commitments noted herein include, but are not limited to: extensive wildlife monitoring and mitigation measures (further described in detail below); transportation management; communications and radio paths; cultural and historical preservation; safety measures; decommissioning; and the requisite permitting.

The Stipulation provides a well-balanced approach to ensuring that the facility represents the minimal adverse impact to the environment, while also taking into consideration the need for certainty with regard to the construction and operation of the Project, and a reasonable and effective approach to maintaining the safeguards. Therefore, as set forth in the Application and affirmed by the Stipulating Parties through the Stipulation, the record supports a finding of compliance with R.C. Section 4906.10(A)(3).

***1. Ecological***

The facility has been sited in this location in order to minimize tree clearing, impacts to wetlands and surface waters, as well as potential shadow flicker and sound impacts.<sup>170</sup>

Potential risks to listed aquatic species are minimal because the majority of facility components are being sited in active agricultural land; therefore, soil disturbance/exposure due to construction will generally occur in areas already subject to regular plowing, tilling, harvesting, etc. In addition, in order to prevent adverse effects to water quality and aquatic habitat during construction, runoff will be managed under a NPDES construction storm water permit, a SWP3, and a soil erosion and sediment control plan. Specific mitigation measures for protecting surface water resources will include: designating no equipment access areas and restricted activity areas; and employing low impact stream crossing techniques.<sup>171</sup>

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<sup>170</sup> App. Ex. 1 at 25.

<sup>171</sup> *Id.* at 117, 152, Ex. E.

In accordance with Section 404 of the Clean Water Act (“CWA”), the Applicant has taken steps to site the facility in order to avoid Category 3 wetlands and minimize any potential impacts on wetlands and streams to the maximum extent practicable.<sup>172</sup> As a result, the vast majority of impacts will be avoided through design (e.g., boring – see below) or will be temporary in nature. Importantly, for all identified stream and wetland crossing points, effective construction techniques and BMPs required by the SWP3 will be used to avoid and minimize impacts.<sup>173</sup> Moreover, the boundaries of jurisdictional streams and wetlands within and immediately adjacent to construction will be demarcated with highly visible flagging, staking, or fencing. These areas will be depicted on construction drawings and workers will be trained on the importance of staying within the defined limits.<sup>174</sup>

Horizontal directional drilling (“HDD”) will be used in most locations to avoid impacting wetlands and waterbodies. This safeguard is in place for all Category 3 wetlands in accordance with Stipulation Condition 16.<sup>175</sup> HDD accomplishes the installation of buried utilities with minimal impact by routing the utility under a sensitive area. The Applicant has an HDD Frac-out Contingency Plan that sets forth procedures to avoid, minimize, and remediate potential environmental impacts resulting from an inadvertent return of drilling fluid during HDD operations. Equipment restrictions and erosion and sediment control measures will also be utilized to reduce adverse impacts to water quality, surface water hydrology, and aquatic organisms. In addition, vegetation clearing along stream banks and in wetland areas will be kept to a minimum.<sup>176</sup> Erosion and sediment control measures will be inspected by a qualified individual throughout construction and restoration to assure that they are functioning properly.<sup>177</sup>

Stipulation Condition 18 enhances the safeguards in place for the facility by requiring that a Staff-approved environmental specialist be on site during construction activities that may affect sensitive areas including, but not limited to: wetlands and streams; and locations of threatened or endangered species. Pursuant to this condition, the environmental specialist may stop construction

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<sup>172</sup> *Id.* at 27, 54, 144, 149; App. Ex. 35 at 7, 9.

<sup>173</sup> App. Ex. 1 at 27, 144-145, Ex. Z; App. Ex. 35 at 7.

<sup>174</sup> App. Ex. 1 at 151.

<sup>175</sup> *Id.* at 54, 150; Jt. Ex. 1 at 5.

<sup>176</sup> App. Ex. 1 at 54, 150, Ex. AA.

<sup>177</sup> *Id.* at 151-153.

to assure that unforeseen environmental impacts do not progress and to recommend procedures to resolve the impact.<sup>178</sup>

In the off chance that there is an accidental discharge of oil during construction that could impact the groundwater, the Spill Prevention, Control, and Countermeasure (“SPCC”) Plan will be finalized by the general contractor during the final design and detailed construction drawing process. The SPCC Plan outlines the procedures that will be implemented to prevent the release of hazardous substances into the environment and, in the event of a release, it discusses how to contain and respond to the release.<sup>179</sup>

Should groundwater be encountered during excavation, water removal will be conducted in accordance with BMPs, including: using a sump pit; discharging clean pumped water to a vegetated and stabilized area; pumping sediment-laden water through a filter bag; and not discharging water directly in to a receiving water body.<sup>180</sup>

The Stipulation enhances and strengthens many of the safeguards set forth in the Application to minimize any potential impacts to the environment. Among other requirements and commitments set forth in the Application and Stipulation, below is a summary of some of the important ecological safeguards agreed to by the Stipulating Parties:

- (1) HDD and other methods to avoid Category 3 wetlands (Condition 16).
- (2) An environmental specialist to be on-site during construction (Condition 18).
- (3) Prior to in-water work, the Applicant will provide information to Staff and ODNR indicating no mussel impacts would occur at stream crossings (Condition 25).
- (4) The Applicant shall conduct no in-water work on perennial streams April 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat (Condition 26).
- (5) If impacts to potential habitat for the Blanding’s turtle, Kirtland’s snake, and smooth greensnake are proposed, the Applicant will obtain an ODNR- approved herpetologist to conduct habitat suitability surveys. If suitable habitat is present, suitable methods to avoid impacts will be employed (Condition 29).<sup>181</sup>

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<sup>178</sup> Jt. Ex. 1 at 5.

<sup>179</sup> App. Ex. 1 at 52-53; App. Ex. 15 at 3.

<sup>180</sup> App. Ex. 1 at 53.

<sup>181</sup> Jt. Ex. 1 at 5-7.

In addition to the safeguards and requirements in the Stipulation, the Applicant has incorporated other safeguards and commitments into the siting and operation of the Project, including that the turbines have been placed farther apart and the towers are tubular structures.<sup>182</sup>

## **2. *Avian and Bat***

The Applicant has coordinated extensively with USFWS and ODNr to ensure the facility, through both design and operational mitigation measures, will have a minimum adverse environmental impact. Through extensive coordination with and review by expert agencies, along with the strict conditions included in the Stipulation, the facility will have a minimum adverse environmental impact.

The primary reason for declining bird populations is habitat loss and fragmentation of important habitat, such as nesting areas. The Project area is dominated by agricultural land that does not provide suitable nesting habitat for most bird species. The Applicant has reduced impacts to bird habitat by avoiding forested areas, grasslands, and wetlands in siting the turbines. In addition, because the Applicant will use flashing lights instead of burning lights on the turbines, the potential for birds to be confused during migration and be attracted to turbines, is reduced.<sup>183</sup>

The design of the Project has also reduced potential impacts on bats by avoiding placing turbines in forested areas, minimizing forest clearing, and by focusing on necessary tree clearing in the winter to avoid direct impacts to bats roosting in the forest.<sup>184</sup> The Applicant has also obtained a TAL from USFWS that outlines measures the Project will use to avoid the potential take of the Indiana and northern long-eared bats. These measures include feathering blades of all turbines below 6.9 meters per second (“m/s”) at night during the spring and fall migration periods, and during the summer maternity period at turbines located within 2.5 miles of an Indiana bat roost. Implementation of the USFWS recommended measures will also reduce the potential impacts of the Project to other bat species. The Project may also elect to develop a Habitat Conservation Plan (“HCP”) in the future and obtain an incidental take permit, which would require measures to minimize and mitigate potential impacts to listed bat species. Minimization

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<sup>182</sup> App. Ex. 1 at 161.

<sup>183</sup> App. Ex. 32 at 21-23.

<sup>184</sup> *Id.* at 23.

measures within an HCP would require USFWS review and approval, and will significantly reduce mortality of other bat species.<sup>185</sup>

While federal law does not require the Applicant to obtain an Eagle Take Permit (“ETP”), in accordance with Stipulation Condition 31, the Applicant has committed to develop and implement an Eagle Conservation Plan (“ECP”) prior to the start of construction in coordination with USFWS and in accordance with the USFWS ECPG and the 2016 Revised Eagle Take Permit Regulations; and apply for an ETP prior to operation of the Project.<sup>186</sup> The ETP application process follows a staged process that includes landscape-scale preliminary analysis, site-specific surveys, risk assessment, and preparation of an ECP. In seeking an ETP, the Applicant will prepare an ECP that characterizes the eagle risk and provides a plan for avoidance, minimization, and ongoing adaptive management of the risk during the operations of the Project. As explained by the USFWS, the ECP is a living document that will be revised and updated through coordination between USFWS and the Applicant. The ECP is shared with the USFWS along with an ETP application form and application fee, and the USFWS initiates evaluation of the ECP via the National Environmental Policy Act (“NEPA”). The NEPA analysis evaluates the environmental impacts of the federal action, in this case, approval of a permit for the incidental take of eagles. At the completion of NEPA analysis, the USFWS will either approve the permit application, reject the permit application, or approve it with additional conditions.<sup>187</sup>

The Stipulation enhances and strengthens many of the safeguards set forth in the Application to minimize any potential impacts to birds and bats. Among other requirements and commitments set forth in the Application and Stipulation, below is a summary of some of the important safeguards agreed to by the Stipulating Parties:

- (1) The Applicant will contact Staff, ODNr, and USFWS within 24 hours if state of federal listed species are encountered during construction, operation, or maintenance. Activities that could adversely impact the species are to be immediately halted until an appropriate course of action has been agreed upon (Condition 19).

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<sup>185</sup> *Id.* at 24-25;

[http://batsandwind.org/pdf/Good%20et%20al.%202012\\_Fowler%20Report.pdf](http://batsandwind.org/pdf/Good%20et%20al.%202012_Fowler%20Report.pdf);  
<https://tethys.pnnl.gov/sites/default/files/publications/Martin-et-al-2017.pdf>;  
<https://tethys.pnnl.gov/sites/default/files/publications/Arnett-et-al-2013.pdf>;  
<https://wildlife.onlinelibrary.wiley.com/doi/full/10.1002/wsb.1025>.

<sup>186</sup> Jt. Ex. 1 at 7.

<sup>187</sup> App. Ex. 33 at 18; NEPA 42 U.S.C. § 4321.

- (2) Compliance with all operational measures detailed in the USFWS TAL for avoidance of Indian and northern long-eared bat take, which includes feathering of turbines during period of risk (Condition 20).
- (3) Turbines will be feathered below manufacturer's cut-in speed during summer season (May 16 through July 31), to minimize bat strikes (Condition 21).
- (4) A post-construction avian and bat monitoring plan that is consistent with the Protocols (Condition 22).
- (5) If a significant mortality, as defined in the ODNR Protocols, has occurred to birds and/or bats, as soon as possible and no longer than 30 days after receiving notification, the Applicant will implement practices to rectify the significant mortality (Condition 23).
- (6) Adherence to seasonal cutting dates of October 1 through March 31 for removal of certain trees (Condition 24).
- (7) Construction in upland sandpiper and northern harrier preferred nesting habitat types shall be avoided during species' nesting periods (Conditions 27 and 28).
- (8) The Applicant will develop and implement an ECP prior to the start of construction in coordination with USFWS and in accordance with the USFWS Eagle Conservation Plan Guidance document and 2016 Revised Eagle Take Permit Regulations (50 Code of Federal Regulations ["CFR"] 22). The Applicant shall apply for an ETP prior to operation of the Project (Condition 31).<sup>188</sup>

In addition to the safeguards and requirements in the Stipulation, the Applicant has incorporated the following safeguards and commitments in to the siting and operation of the Project:

- (1) Turbines will be sited to avoid known bald eagle nests and known areas of concentrated eagle use.
- (2) Turbines will be placed in agricultural fields to avoid wooded areas that provide habitat for bats.
- (3) Turbines will be set back a minimum of 1,000 feet from suitable Indiana bat habitat within 2.5 miles of the documented Indiana bat roost or average of the identified roosts.
- (4) Turbine blades will be feathered below wind speeds of 6.9 m/s from 30 minutes before sunset to 30 minutes after sunrise during spring (March to May 15) and fall

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<sup>188</sup> Jt. Ex. 1 at 5-7

(August 1 to October 31) migration, unless otherwise authorized by ODNR or USFWS.

- (5) Blades of turbines within 2.5 miles of a documented Indiana bat roost, or the average of the identified roosts, will be feathered below 6.9 m/s from 30 minutes before sunset to 30 minutes after sunrise during summer (May 16 to July 31), unless otherwise authorized by ODNR or USFWS.<sup>189</sup>

### **3. *Geological and Hydrogeology***

To maintain soil stability during construction, adequate surface water run-off drainage will be established and properly controlled at each site to minimize any increase in the moisture content of the subgrade material. Positive drainage of each construction site will be created by gently sloping the surface toward drainage swales.<sup>190</sup> Prior to construction, if it is determined that the area where the collection line is to be installed includes an area of unstable slopes, excessive unconsolidated rock, standing or flowing water, and/or suspected drain tile, the Applicant will use the method of open trench installation to reduce or eliminate any adverse impact.<sup>191</sup>

Importantly, the Applicant has committed to implement BMPs during construction and operation of the turbines and associated facilities that will protect against negative impacts to the SWPAs.<sup>192</sup> As stated previously, Stipulation Condition 17 requires the Applicant, prior to construction, to provide Staff a copy of any floodplain permit required for construction of the Project or a copy of correspondence with the floodplain administrator showing that no permit is required.<sup>193</sup>

At sites where the geotechnical investigation found that the potential for karst development indicated a moderate to high probability, the Applicant will have additional testing/investigations completed, such as electrical imaging or void assessment.<sup>194</sup> If the results of the electrical imaging indicate there is not a presence of solution cavities or karst development, the probability of karst development can be considered low and no remedial measures would be required according to the experts. At sites where karst features are then identified, as recommended by a licensed geotechnical engineer, the Applicant will employ remediation measures, such as bedrock grouting

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<sup>189</sup> App. Ex. 1 at 161.

<sup>190</sup> *Id.* at 83.

<sup>191</sup> *Id.* at 13.

<sup>192</sup> *Id.* at 77-78, Ex. E.

<sup>193</sup> Jt. Ex. 1 at 17.

<sup>194</sup> Tr. Vol. VI at 763-764.



to remediate the karst features encountered in limestone bedrock formations. This bedrock grouting will reduce the movement of water in soluble bedrock and prevent the occurrence of possible land subsidence. Once the remedial measures are performed, the probability of karst development is anticipated to be low according to the experts.<sup>195</sup>

#### **4. *Land Use/Agricultural***

The Applicant has and will employ various measures to minimize the visual impact of the facility. Lighting at the proposed substation will adhere to utility standards and be kept to a minimum, turned on only as needed by switch or motion detector. Turbine lighting will adhere to the FAA regulations, with medium intensity red strobes used at night, rather than white strobes or steady burning red lights. Further, the white color of the turbines, as mandated by the FAA to eliminate the need for day time lighting, minimizes contrast with the sky under most conditions, especially when viewed at a distance against the horizon. Other measures incorporated into the Project that reduce or mitigate visual impact, include, but are not limited to: consistent design, speed, color, height, and rotor diameter of the turbine; the O&M building will reflect the vernacular architecture of the area; new road construction will be minimized by utilizing existing roads where possible; and advertising on the turbines will be prohibited.<sup>196</sup>

Significant impacts to agricultural land have been avoided through careful design of the facility, which deliberately sited the facility components along field edges/hedgerows to the extent practicable.<sup>197</sup> In addition, as detailed in the record, the Applicant has set forth specific and detailed requirements to reduce impacts to agricultural land during facility construction, operation, and maintenance.<sup>198</sup>

Wherever feasible, existing roads and farm drives will be upgraded for use as access roads for the Project. This process will minimize impacts to active agricultural areas, natural communities, and wetland/stream areas. In the event an access road has to cross a stream, the Applicant commits to design the crossing to allow adequate flow so as not to affect the flow of

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<sup>195</sup> App. Ex. 38 at 7-8.

<sup>196</sup> App. Ex. 1 at 218-220; App. Ex. 2; App. Ex. 46 at 19.

<sup>197</sup> App. Ex. 1 at 220; App. Ex. 12.

<sup>198</sup> App. Ex. 1 at 225-228.

water. Where an access road is adjacent to or crosses wetlands, streams, or drainage ditches, appropriate sediment and erosion control measures (e.g., silt fence) will be installed.<sup>199</sup>

A soil erosion and sedimentation control plan will be developed and implemented as part of the SWP3 that is required by the NPDES General Permit for the Project.<sup>200</sup> Erosion and sediment control measures, which could include silt fence, hay bales, and/or temporary siltation basins, will be installed and maintained throughout site development in order to protect surface waters, wetlands, groundwater, and storm water quality. The Applicant will detail the location of these features in the construction drawings that will be reviewed by the contractor prior to construction and will be approved by the OEPA as part of the NPDES review. Moreover, throughout construction, a qualified individual will also inspect these features to ensure that they are functioning properly.<sup>201</sup>

The Applicant has committed that, where buried collection lines cross active agricultural fields, an attempt will be made to determine the location of any subsurface drain tiles through consultation with the landowner and review of public records. Moreover, Firelands commits that, if any drain tiles are damaged during construction, they will immediately identify and repair the damaged tile. It is anticipated that a local drain tile contractor or the farmer tending the land will be involved in repair activities.<sup>202</sup>

Where construction of buried cable occurs in agricultural areas, replacement of soil material will occur immediately after installation of the buried collection lines. Subgrade soil will be replaced around the cable and topsoil will be replaced at the surface. Any damaged drain tiles will be repaired and all areas adjacent to the open trench will be restored to original grades and surface conditions. Restoration will be completed through seeding and mulching of all exposed soil, or by other appropriate farming methods in active agricultural fields.<sup>203</sup>

## **5. Cultural**

Stipulation Condition 14 requires, in part, that the Applicant continue to adhere to its PA with SHPO and that the Applicant minimize impacts to cultural resources, including avoiding site

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<sup>199</sup> *Id.* at 15.

<sup>200</sup> *Id.* at 18, 53.

<sup>201</sup> *Id.* at 18-19.

<sup>202</sup> *Id.* at 13, 223-224.

<sup>203</sup> *Id.* at 13-14.

33HU0043.<sup>204</sup> As explained herein and in the PA itself, the PA defines the phasing of the required archaeological and historic/architectural surveys for the Project, including the completion of the surveys, the identification and evaluation of effects on cultural resources, and the development of minimization/mitigation plan if avoidance of impacts is not feasible.<sup>205</sup>

## **6.      *Communications***

The commitments in the Application, coupled with the enhancements in Stipulation Conditions 37 and 38 support a determination that the Project will have minimum, if any, impact on communications systems in the area. Condition 37 provides that, at least 30 days before the preconstruction conference, the Applicant will have an independent Ohio-registered surveyor conduct a microwave path study that identifies all existing microwave paths that intersect with the Project, and a WCFZ analysis for each path. In addition, Condition 38 requires that all existing licensed microwave paths and licensed communications systems are subject to avoidance and mitigation measures, and that such measures shall be completed prior to construction. Further, after construction, Condition 38 requires the Applicant to mitigate all observed impacts to microwave paths and licensed communications systems within seven days or within a longer time period acceptable to Staff.<sup>206</sup>

As stated previously, in the unlikely event that the wind turbines cause blockage at the base station on an RTK Global Positioning System Locator system, the Applicant will fund the purchase and installation of a repeater station.<sup>207</sup>

## **7.      *Public and Safety***

The Applicant will comply with the sound and shadow flicker constraints required by the O.A.C. Rules 4906-4-09(F) and (H). In fact, these requirements influenced the selection of the turbine models under consideration for the facility, as well as the determination of suitability of individual sites, so as to minimize the sound and shadow flicker impacts to nearby residences. The

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<sup>204</sup> Jt. Ex. 1 at 4; App. Ex. 17.

<sup>205</sup> *Id.*

<sup>206</sup> Jt. Ex. 1 at 8-9.

<sup>207</sup> App. Ex. 31 at 10.

Applicant has committed to deploy operational curtailment and/or other mitigation measures to ensure that non-participating residences stay below the threshold for acceptable shadow flicker.<sup>208</sup>

The Applicant will continue to take all necessary precautions to ensure the safe operations of the facility, including the appropriate setback distances.<sup>209</sup> All 87 potential turbine sites will comply with the requirements in R.C. 4906.201 and the O.A.C., such that: the distance from the turbine base to the property line of the wind farm property will be at least 1.1 times the total height of the turbine structure as measured from the tower's base to the tip of a blade at its highest point; and the turbine must be at least 1,125 feet in horizontal distance from the tip of the turbine's nearest blade at 90 degrees to the property line of the nearest adjacent property.<sup>210</sup> Depending on the turbine model chosen, the setback to property lines will be between 1,355 and 1,384 feet.<sup>211</sup> The O.A.C. also requires a setback to electric transmission lines, gas pipelines, gas distribution lines, hazardous liquid pipelines, and public roads. All 87 proposed turbine locations meet the setback to known gas pipelines, gas distribution lines, electric transmission lines, and hazardous liquid pipelines for all turbine models under consideration. There are two turbine locations, T67 and T70 that may be located within the setback to public roads, depending on the turbine model ultimately selected. However, the Applicant will only build turbines at a given site that comply with the O.A.C. setback requirements for non-participating property lines, public roads, gas pipelines, gas distribution lines, electric transmission lines, and hazardous liquid pipelines.<sup>212</sup> The turbine setback will protect homes and roadways from the remotely possibility of blade shear or ice throw. The setbacks will also mitigate sound and shadow flicker at non-participating residences, and lessen any potential visual impact of the turbines.<sup>213</sup>

The Stipulation also provides safeguards that address public safety for trails such as the North Coast Inland Trail, which is a bike route that is being extend approximately 105 miles from Lorain, Ohio to Toledo, Ohio.<sup>214</sup> Stipulation Condition 15 requires the Applicant to coordinate the timing and location of temporary closures of any multi-use trails during construction in the Project area with the owner of the trails or appropriate entities prior to construction.<sup>215</sup>

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<sup>208</sup> App. Ex. 1 at 26.

<sup>209</sup> App. Ex. 31 at 8.

<sup>210</sup> App. Ex. 1 at 192.

<sup>211</sup> App. Ex. 31 at 12.

<sup>212</sup> App. Ex. 1 at 193.

<sup>213</sup> App. Ex. 31 at 12.

<sup>214</sup> App. Ex. 1 at 208, Ex. I.

<sup>215</sup> Jt. Ex. 1 at 4.

It is undisputed on the record that the commitments in the Application, as reinforced by the conditions in the Stipulation, support a finding that the Project will be constructed and operated in accordance with the manufacturer specifications and in adherence to strict industry safety requirements, including the National Fire Protections Association (“NFPA”) 70E code standards. The compliant installation, along with the integrated safety systems that will be incorporated in to the design of the facility, minimize the chance for fire occurring on the turbines or electrical stations. However, if fire would occur, the system control and data acquisition (“SCADA”) system that will be installed will sense that the equipment is compromised and report conditions to the control center. Project maintenance personnel will respond and, depending on the specific situation, the affected turbine(s) may be immediately shut down.<sup>216</sup> Safety monitoring equipment that will be used on the turbines and monitored by the SCADA system include, lightning protection systems, a system to monitor the temperature of the unit and any ice formation on the unit, and a monitor for the wind speed and power output. If ice accumulates on the blades and the ratio becomes too high, the turbine will stop itself. In addition, the turbines will be equipped with equipment that will shut down the turbines in the event of excessive blade vibrations or when wind speed exceed maximum values.<sup>217</sup>

Construction activities will occur primarily on private land well removed from adjacent roads and residences; thus, exposure for the general public to construction-related risks/hazard will be very limited. Firelands will meet with local emergency first responders to share the Applicant’s Emergency Action Plan (“EAP”) and to review and discuss the planned construction process, to be sure they are aware of any potential issues that might occur. The EAP includes procedures for responding to fires and medical emergencies with the tower or the nacelle.<sup>218</sup>

Moreover, the Applicant will include local rescue workers in regular joint training for the emergency procedures specific to the turbine model used for the facility. The Applicant will also equip fire and emergency responders with proper equipment to enable them to respond to emergency situations.<sup>219</sup> In addition, should Firelands receive certification as a Qualified Energy

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<sup>216</sup> App. Ex. 31 at 9.

<sup>217</sup> App. Ex. 1 at 61-62.

<sup>218</sup> *Id.* at 60, Ex. P; App. Exs. 12 and 15.

<sup>219</sup> App. Ex. 1 at 62-63.

Project under R.C. 5727.75, as envisioned by Stipulation Condition 44, the Applicant will provide additional training and equipment to local first responders.<sup>220</sup>

Any turbine chosen for the Project will be certified as meeting international design standards by independent product safety certification organizations. Such certifications require that the turbines have a design life of at least 20 years and, in determining certification they consider, weather extremes, average wind speed, wind gusts, and turbulence intensity. The generation equipment safety manuals and the Health and Safety Policy and Facility Safety Manuals address safety measures specific to operations and maintenance employees, such as first aid, protection against falls, and personal protective equipment.<sup>221</sup> Further, Stipulation Condition 35 enhances these safeguards by requiring that the Applicant specifically submit to Staff the relevant portions of the chosen turbine manufacturer's turbine restart procedures due to vibration, ice accumulation, lightning storm, and collector or feeder line failure.<sup>222</sup>

The engineering standards of the turbines used for the facility will meet all applicable engineering standards. State of the art braking systems, pitch control, sensors, and speed controls on the turbines will greatly reduce any risk of blade throw. In the unlikely event of blade throw, the Applicant will have procedures in place, including emergency shutdown procedures, post-event site security measures, prompt notification of state and local officials, and the implementation of the manufacturer's specific blade throw safety procedures. In addition, the Applicant will conduct annual training for its operating staff and local first responders on the procedures to be implemented in the event of a blade throw incident.<sup>223</sup>

Stipulation Condition 32 requires the Applicant to notify Staff within 30 minutes of the discovery of any extraordinary event, which include, but at not limited to, tower collapse, turbine failure, thrown blade or hub, collector or feeder line failure, injury to any person, property damaged by ice throw, or nacelle fire. Within 30 days after the incident, the Applicant will then submit to Staff a report detailing the incident and corrective actions to be taken to avoid, prevent, mitigate, or minimize a reoccurrence.<sup>224</sup>

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<sup>220</sup> Jt. Ex. 1 at 9.

<sup>221</sup> App. Ex. 1 at 62, Exs. O and P; App. Ex. 82.

<sup>222</sup> Jt. Ex. 1 at 8.

<sup>223</sup> App. Ex. 1 at 86.

<sup>224</sup> Jt. Ex. 1 at 7-8.

**D. The Stipulation and record in this proceeding support the finding and determination by the Board that the facility is consistent with regional plans for expansion of the electric power grid in compliance with R.C. Section 4906.10(A)(4).**

The record reflects that the facility will interconnect with the American Transmission Systems, Inc. (“ATSI”) system via the Beaver-Davis Besse 345 kilovolt (“kV”) circuit via a new 345 kV switchyard, point of interconnection (“POI”).

As an owner, operator, and/or user of the bulk power system (“BPS”), Firelands is subject to compliance with the federal government’s approved reliability standards that are developed and enforced by NERC. Generators, such as Firelands, that want to interconnect with the BPS located in the PJM control area are required to submit an interconnection application for review of system impacts. PJM, as the regional transmission organization charged with planning for upgrades, studies the interconnection request and determines whether construction of expansions and/or upgrades of the PJM transmission system are needed to maintain compliance with reliability criteria with the addition of the requested interconnection generation source. The NERC reliability standards are included as part of the system evaluation conducted by PJM.<sup>225</sup>

The PJM initial Feasibility Study and System Impact Study included the analysis of the ATSI 345 kV system. As part of the Feasibility Study, PJM evaluated compliance with the reliability criteria for summer peak conditions in 2020. The potential network impacts evaluated included generator deliverability, multiple facility contingency, contribution to previously identified overloads, short circuit, potential congestion due to local energy deliverability, and system reinforcements. As part of the System Impact Study, the network impact evaluation considered generator deliverability, light load analysis, multiple facility contingency, short circuit, contribution to previously identified overloads, new system reinforcements, construction to previously identified system reinforcements, and potential congestion due to local energy deliverability.<sup>226</sup>

In the System Impact Study, PJM found that with the two planned baseline upgrades there would be no overloads. In addition, PJM concluded in its study that there would be no network impacts, circuit breaker problems, or energy delivery impacts.<sup>227</sup> The System Impact Study by

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<sup>225</sup> Staff Ex. 1 at 60.

<sup>226</sup> App. Ex. 1 at 29-30.

<sup>227</sup> *Id.* at Ex. C; Staff Ex. 1 at 61.

PJM shows that the Project will not negatively impact grid reliability, and will instead act as an additional generation resource, increasing capacity and reliability on the local grid.<sup>228</sup> Therefore, as supported by Staff, “the facility would provide additional electrical generation to the regional transmission grid, would be consistent with plans for expansion of the regional power system, and would service the interests of electric system economy and reliability.”<sup>229</sup>

The record and Conditions 12 and 13 of the Stipulation support a determination that the facility is consistent with regional plans for the electric power grid and that the facility will serve the interests of electric system economy and reliability. Specifically, Condition 12 requires that, prior to construction, Applicant have a signed Interconnection Service Agreement with PJM that “includes construction, operation, and maintenance of system upgrades necessary to integrate the proposed generation facility into the regional transmission system reliably and safely.” Further, Stipulation Condition 13 requires that the facility will inject no more than 297.7 MW into the BPS at any time.<sup>230</sup>

**E. The Stipulation and record in this proceeding support the finding and determination by the Board that the facility complies with the air and water pollution control, withdrawal of waters of the state, solid and hazardous wastes, and air navigation requirements under R.C. Section 4906.10(A)(5).**

Wind turbines generate electricity without combusting fuel or releasing pollutants into the atmosphere; therefore, state and federal air pollution permits are not required for the facility.<sup>231</sup> In addition, wind turbines generate electricity without the use of fuel or water, and without generating waste.<sup>232</sup> While the O&M facilities will use water and generate sewage and wastewater comparable to a small business office, and will dispose of any waterborne wastes through a septic system, no other facility components will use measurable quantities of water or discharge measureable quantities of waste water.<sup>233</sup> The amount of construction waste will be minimal; however, any waste will be collected and disposed of in accordance with federal, state, and local regulations. Where appropriate, waste will be sorted for recycling. Operation of the facility will not result in significant generation of debris or solid waste. As stated previously, the O&M facility

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<sup>228</sup> App. Ex. 31 at 9.

<sup>229</sup> Staff Ex. 1 at 61.

<sup>230</sup> Jt. Ex. 1 at 4.

<sup>231</sup> App. Ex. 1 at 48-50.

<sup>232</sup> *Id.* at 12.

<sup>233</sup> *Id.*



will generate waste typical of a small business office and disposal of such will be thorough local solid waste disposal and recycling services.<sup>234</sup>

To further ensure compliance with all necessary requirements, the Applicant has committed to obtaining the following permits prior to construction:

- (1) The Ohio NPDES construction stormwater permit, OEPA Permit No. OH000004. To obtain this permit, the Applicant will develop a SWP3 and file a Notice of Intent (“NOI”) with the OEPA.
- (2) An individual Nationwide Permit under Section 404 of the CWA, which is not available until after final designs because the application will need to reflect the final boring locations and collection locations.
- (3) The Water Quality Certification (401) from the OEPA.
- (4) An Ohio Isolated Wetland permit, even though the Project is not expected to have impacts based on the design; however, after final engineering if it is determined necessary, the Applicant will go through the permitting process.
- (5) An Ohio Permit to Install (“PTI”) on-site sewage treatment under O.A.C. Rule 3745-42.<sup>235</sup>

The Stipulating Parties resolved all aviation issues and there was no opposition to the aviation resolutions at the hearing in this matter. The siting of the facility, as set forth in the Application and the Stipulation, avoids impacts to existing aviation networks.<sup>236</sup> The turbines will be illuminated as minimally as possible to the extent allowed by the FAA and will follow specific guidelines to reduce collision risk.<sup>237</sup> There are no known private or public use airports, helicopter pads, or landing strips within or adjacent to the Project area. The Applicant has worked with the FAA, the ODOT Office of Aviation, and the Signatory Parties to ensure there will be no impacts as a result of the Project.<sup>238</sup> The commitments in the Application, as well as Stipulation Conditions 39 through 43, provide significant safeguards to ensure that the Project does not impact aviation in the area and complies with all aviation requirements. Specifically, the Applicant has committed to not construct turbine locations T-80, T-81, T-82, and T-83, which were a concern to the City of

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<sup>234</sup> *Id.* at 57-58.

<sup>235</sup> *Id.* at 51, 53; App. Ex. 15 at 3.

<sup>236</sup> App. Ex. 1 at 59, Ex. J.

<sup>237</sup> *Id.* at 161.

<sup>238</sup> *Id.* at 59, Ex. J; Jt. Ex. 1 at 9.

Willard (a Signatory Party to the Stipulation) and the Willard Airport. Moreover, the Applicant must: meet all recommended and prescribed FAA DNH letter requirements to construct an object that may affect navigable airspace; file a copy of the FAA DNH letter for the meteorological towers; and file copies of the FAA temporary construction permits for work activity involving cranes. In addition, at least 30 days prior to the preconstruction conference, the Applicant will hold a training session to inform local aviation stakeholders of changes to flight procedures and altitudes outlined in the FAA DNH letter.<sup>239</sup>

**F. The Stipulation and record in this proceeding support the finding and determination by the Board that the facility will serve the public interest, convenience, and necessity in compliance with R.C. Section 4906.10(A)(6).**

The Project will provide a positive economic impact to the local community. The record and testimony from the community support the fact that the facility will promote the long-term economic viability of the affected farms by supplementing the income of participating farmers.<sup>240</sup> Approximately 90% of the over 200 agreements signed by landowners to participate in the Project have one or more of the signees or beneficiaries to the agreement living in the community where the Project is located.<sup>241</sup> It is undisputed on the record, and comments submitted by various community members and stakeholder support, that there are substantial economic benefits to the community through tax payments to schools and local governments, new jobs, use of Ohio manufacturing, preserving the environment through a carbon-free generation source, local generation of energy, diversification of electric power, and maintaining current land use.<sup>242</sup>

It is important to note that Firelands has participated in numerous meetings and presentations regarding the Project in the local community for many years including meeting with public officials, local civic organizations, the landowners and adjacent landowners, schools, churches, various clubs, and the media. Moreover, the Applicant has a local office in the Project area to help general Project development and community outreach.

Several of the government entities within 5 miles of the Project area have adopted comprehensive land use plans and/or economic development plans, including: Sandusky, Seneca,

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<sup>239</sup> *Id.*

<sup>240</sup> App. Ex. 1 at 26.

<sup>241</sup> App. Ex. 31 at 13.

<sup>242</sup> *Id.* at 7; Local Hearing Tr. (Aug. 20, 2020) at 45, 55, 83, 94, 103, 110, 128, 132, 135, 139, 142, 163, 170, 176, 196, 218, 222, 224, 236, 239.

Huron, and Erie Counties; Perkins Township; and the cities of Bellevue and Norwalk. The development of the proposed facility is compatible and in compliance with all of the land use plans in the area. The Project adheres to these plans by providing additional agribusiness economic opportunities while maintaining land in agricultural use, as well as by providing local jobs. Further, the Project is not an additional drain on local resources.<sup>243</sup>

The Project is expected to have economic benefits both locally and statewide both directly and indirectly. The Jobs and Economic Development Impact (“JEDI”) model created by the National Renewable Energy Laboratory of the U.S. Department of Energy (“DOE”) was used by Firelands to estimate the number of jobs and the economic development impacts for the Project through construction and operation.<sup>244</sup> Based on the JEDI computations, it is anticipated that the Project will generate employment, creating an estimated 305 on-site jobs during the construction and operation of the Project.<sup>245</sup> In addition, it is estimated that there will be \$19 million of annual earnings for the on-site construction positions and \$800,000 for annual earnings for the on-site operation and maintenance positions. The money injected into the state’s economy through the creation of these jobs will have long-term, positive impacts on individuals, households, and businesses.<sup>246</sup> In addition, turbine manufacturing and supply chain industries could also generate an additional 553 jobs across the state of Ohio over the course of Project construction, and construction could induce demand for an additional 247 jobs in the state through the spending of additional household income. The JEDI model results revealed the total impact of construction of potentially 1,096 new jobs could result in up to \$62.9 million of earnings.<sup>247</sup> For operations and maintenance of the facility, it is estimated to generate a demand for 53 jobs per year with annual earnings of approximately \$3.1 million, and a total economic output increase of an estimated \$10.6 million.<sup>248</sup>

The Project will have a significant positive impact on the local tax base, including the local schools and other taxing districts that serve the area.<sup>249</sup> In accordance with Condition 44 of the Stipulation, should Firelands receive certification as a Qualified Energy Project (“QEP”) and be

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<sup>243</sup> App. Ex. 1 at 195-197, 201-202; App. Ex. 31 at 10, 13, NP-3 – NP-9.

<sup>244</sup> App. Ex. 1 at 35, Ex. F.

<sup>245</sup> *Id.*

<sup>246</sup> *Id.* at 36, Ex. F.

<sup>247</sup> App. Ex. 1 at 37, Ex. F; App. Ex. 36 at 4, 6.

<sup>248</sup> *Id.*

<sup>249</sup> App. Ex. 1 at 199.

authorized for the Payment in Lieu of Taxes (“PILOT”) program in a given county under R.C. Section 5727.75, Firelands will comply with all requirements under that statute, including, but not limited to, entering into a RUMA, providing training and equipment to local first responders, and engaging in a university program.<sup>250</sup> Under a PILOT program, the increase in local annual tax revenues would be between \$1.8 and \$2.7 million for the life of the Project. Since the facility will make few, if any, demands on local government services, the PILOT payment made to the local government will be a net positive gain and represent an important economic benefit to the local area.<sup>251</sup> If a PILOT is not in place for the Project, it is anticipated that annual property tax payments would initially be \$4.3 million and decrease to \$0.6 million at the end of 30 years of operations.<sup>252</sup>

The Applicant has submitted a Complaint Resolution Plan to ensure that any complaints about the facility construction or operation are adequately investigated and resolved. A hotline and website will be set up to receive and formally document all complaints.<sup>253</sup> Moreover, Stipulation Conditions 10 and 11 underscore the Applicant’s commitments to: provide notice of the start of construction and start of operation; provide copies of the complaint process; and document any complaints received on the Project. Specifically, the Applicant is required to provide notice of the start of construction and operation to Staff, affected property owners and tenants, residents within one mile of the Project, parties to this case, public officials, emergency responders, airports, schools, and libraries, as well as anyone who has requested updates regarding the Project. Firelands is required to file this notice in the docket.<sup>254</sup> The Applicant’s Complaint Resolution Plan will be implemented to ensure that any complaints regarding construction or operation sounds are investigated and resolved. The plan provides that a hotline number will be setup to receive and formally document all complaints.<sup>255</sup>

The record and the Stipulation reflect that the Applicant will comply with all requirements set forth in the Stipulation and O.A.C. Rule 4906-4-09,<sup>256</sup> including, but not limited to:

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<sup>250</sup> Jt. Ex. 1 at 9.

<sup>251</sup> App. Ex. 1 at 37-38, 199; App. Ex. 36 at 4, 7.

<sup>252</sup> App. Ex. 31 at 12.

<sup>253</sup> App. Ex. 1, Ex. M; App. Ex. 12.

<sup>254</sup> Jt. Ex. 1 at 4.

<sup>255</sup> App. Ex. 1 at 74, Ex. M; App. Ex. 12.

<sup>256</sup> Jt. Ex. 1 at 3.

- (1) Adhere to all applicable state and federal safety, construction, environmental, electrical, communications, and FAA requirements.<sup>257</sup>
- (2) Comply with the manufacturer's most current safety manual.<sup>258</sup>
- (3) Provide a fully detailed geotechnical exploration and evaluation to confirm there are no issues to preclude development of the facility 30 days prior to the preconstruction conference. The report will include: borings at each turbine location to provide subsurface soil properties, static water level, rock quality description, percent recovery, and depth and description of the bedrock contact; and recommendations for final design and construction of each turbine foundation.<sup>259</sup>
- (4) Provide the final engineering drawing and then, prior to commencement of construction once the final engineering designs are completed, the general contractor selected for the Project will also finalize the construction and maintenance access plan and the vegetation management plan.<sup>260</sup>
- (5) Limit, to the greatest extent possible, the use of herbicide in proximity to surface waters.<sup>261</sup>
- (6) Employ erosion and sedimentation control measures, construction methods, and BMPs when working near environmentally-sensitive areas or in close proximity to any watercourse, including seeding disturbed areas, inspection of erosion control measures, marking watercourses, watercourse avoidance, protection of sensitive areas, location of structures, and stormwater runoff.<sup>262</sup>
- (7) No commercial signage or advertisements will be located on the turbines, towers, or related infrastructure and, should vandalism occur, the Applicant to remove or abate the damage to preserve the aesthetics of the Project.<sup>263</sup>
- (8) Adhere to the PA entered into between Firelands and SHPO that defines the phasing of the required archaeological and historic/architectural surveys for the Project, including the completion of the surveys (Phase 1), the identification and evaluation of effects on cultural resources (Phase 2), and the development of minimization/mitigation plan if avoidance of impacts is not feasible (Phase 3).<sup>264</sup>
- (9) Continue to coordinate with USFWS, ODNR, and Staff regarding protection of wildlife.<sup>265</sup>

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<sup>257</sup> App. Ex. 1 at 229; Jt. Ex. 1 at 3, 5, 9.

<sup>258</sup> App. Ex. 1 at 229.

<sup>259</sup> *Id.* at 229-230, Ex. E; App. Ex. 38 at Att. AW-2; Jt. Ex. 1 at 3.

<sup>260</sup> *Id.*; App. Ex. 1 at 232; App. Ex. 15 at 5.

<sup>261</sup> App. Ex. 1 at 233.

<sup>262</sup> *Id.* at 234.

<sup>263</sup> *Id.* at 235.

<sup>264</sup> *Id.* at 236; App. Ex. 17; App. Ex. 37 at 5, Att. GJ-2.

<sup>265</sup> App. Ex. 1 at 236-237; Jt. Ex. 1 at 5-7.

- (10) Reduce potential impacts of ice throw by: restricting public access to the facility; instructing workers on potential hazards; and installing and utilizing an ice warning system.<sup>266</sup>
- (11) Restrict sound impacts by limiting construction hours to those hours permitted by the Board's rules and operating the facility so that: it does not result in sound levels to any non-participating sensitive receptor within 1 mile of the Project boundary that exceed the Project area ambient nighttime Leq by 5 dBA; and, during daytime operation, only operate at the greater of the Project area ambient nighttime Leq plus 5 dBA or the validly measured ambient Leq plus 5 dBA at the location of the sensitive receptor.<sup>267</sup>
- (12) Minimize possibility of blade shear by equipping the Project with 2 independent braking systems, a pitch control system, lightning protection system, turbine shutoffs, a safety feature bypass, and design the wind turbine generators to conform to industry standards.<sup>268</sup>
- (13) Operate the facility so that shadow flicker levels do not exceed 30 hours per year at any non-participating sensitive receptor.<sup>269</sup>
- (14) Adhere to the decommissioning requirements of the Board, which include, in part:
  - (a) Provide the final decommissioning plan to Staff at least 30 days before the preconstruction conference, which shall include: the lands intended future use; the engineering and equipment to be used; and a timetable including steps to be taken to comply with applicable air, water, solid waste, and health and safety laws and regulations.
  - (b) File a revised decommissioning plan every 5 years that reflects advancements in engineering techniques.
  - (c) At the Applicant's expense, complete decommissioning within 12 months after the end of the useful life of the facility or individual turbines. If no electricity is generated for a continuous period of 12 months, or if the Board deems the facility or a turbine to be in a state of disrepair, it will be presumed to have reached the end of its useful life. The Board may also require decommissioning of individual wind turbines due to health, safety, wildlife impact, or other concerns.

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<sup>266</sup> App. Ex. 1 at 238.

<sup>267</sup> *Id.* at 239.

<sup>268</sup> *Id.* at 239-240.

<sup>269</sup> *Id.* at 240.

- (d) An independent, registered professional engineer, licensed to practice engineering in Ohio, must be retained by the Applicant to estimate the total cost of decommissioning. This estimate is to be conducted every 5 years.
- (e) Post and maintain for decommissioning a performance bond in an amount equal to the per-turbine decommissioning costs multiplied by the sum of the number of turbines constructed. The Applicant shall maintain such funds throughout the remainder of the term and shall adjust the amount of the assurance, if necessary, to offset any increase or decrease in the decommissioning costs.<sup>270</sup>

The conditions in the Stipulation, coupled with the numerous commitments by the Applicant in the Application, support a finding by the Board that the facility will serve the public interest, convenience, and necessity in compliance with R.C. Section 4906.10(A)(6).

**G. The Stipulation and the record in this proceeding enable the Board to determine the impact of the facility on the viability as agricultural land of any land in an existing agricultural district, therefore, the Application and Stipulation comply with R.C. Section 4906.10(A)(7).**

The presence of the wind turbines will help preserve agricultural land and avoid conversion of that land to other developed land uses, such as seasonal or permanent high-density residences. Furthermore, the facility will not result in a change in land use and will promote the long-term economic viability of the affected farms by supplementing income of participating farmers.<sup>271</sup>

The facility footprint was designed in order to minimize impacts to active agricultural land. Great effort was made in the siting process to place turbines and access roads along field edges in order to minimize disturbance and loss of active agricultural land to the maximum extent possible. In addition, the Project will not physically impact any agricultural-related structures, will not result in a change in land use, and is compatible with farming practices.<sup>272</sup>

As stated previously, it is estimated that 1,439 acres of agricultural land will be disturbed by the Project; however, only approximately 82 acres will result in the permanent loss of agricultural land, as 1,357 acres will be temporary due to construction. Information from the Huron County Auditor revealed that the impact of the facility on agricultural district land in that county would equated to a total 246 acres that could be disturbed, of which 226.5 acres would be

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<sup>270</sup> *Id.* at 46, 240-244.

<sup>271</sup> *Id.* at 224.

<sup>272</sup> *Id.* at 25-26, 220.

temporarily disturbed and 19.5 would be permanently lost. It was found that Erie County does not have designated agricultural districts.<sup>273</sup> The Project will permanently impact 71 acres of agricultural land that is part of the state of Ohio's Current Agricultural Use Value ("CAUV") program.<sup>274</sup>

As stated by Staff, the impact of the proposed facility on the viability of existing agricultural land in an agricultural district has been determined, and, therefore, complies with the requirements specified in R.C. 4906.10(A)(7).<sup>275</sup>

**H. The Stipulation and record in this proceeding support the finding and determination by the Board that the facility incorporates the maximum feasible water conservation practices under R.C. Section 4906.10(A)(8).**

As stated previously, while the O&M center will use water at a rate comparable to a typical small business, no other facility component will use measurable quantities of water.<sup>276</sup> As stated by Staff, "water consumption associated with the proposed electric generation equipment does not warrant specific conservation efforts."<sup>277</sup>

Moreover, According to the DOE Office of Energy Efficiency Report addressing the conservation benefits of wind energy as compared to thermoelectric power, a 297.66 MW wind farm, such as this Project, will conserve approximately 469 million gallons of water annually. The reasoning is that a wind-powered electric generation facility does not use or consume water as do the conventional thermal power plants.<sup>278</sup> Therefore, the facility complies with R.C. Section 4906.10(A)(8).

**I. The Stipulation satisfies the first part of the three-part test for evaluation of contested settlements and is the product of serious bargaining among capable knowledgeable parties.**

Following the August 20, 2020 local public hearing in this matter, the Parties had several meetings to discuss potential settlement of the issues in this case. All parties in the case were noticed of all meetings and provided drafts of all proposed settlement documents. All interests,

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<sup>273</sup> *Id.* at 189-191, 221.

<sup>274</sup> *Id.* at 222.

<sup>275</sup> Staff Ex. 1 at 73.

<sup>276</sup> App. Ex. 1 at 12.

<sup>277</sup> Staff Ex. 1 at 74.

<sup>278</sup> App. Ex. 1 at 56.



the Applicant, Staff, county officials, and residents were provided an opportunity to fully participate in the settlement discussions and each interest had knowledgeable counsel who have experience in settlement negotiations and have participated in other Board proceedings, and/or have been involved in other regulatory proceedings, and/or are knowledgeable about the issues addressed in the Stipulation.<sup>279</sup> In addition, the Stipulating Parties represent a broad range of interests: including, residents in the Project area, local public officials; commercial; and the overall interest of the state of Ohio and the public through the Staff. Therefore, the first-prong of the test considered by the Board to determine the reasonableness of the Stipulation has been satisfied.

**J. The Stipulation satisfies the second part of the three-part test for evaluation of contested settlements and as a package benefits ratepayers and the public interest.**

The record evidence in this proceeding, together with the provisions of the Stipulation, ensures that the Project will represent the minimum adverse environmental impact for both construction and operations, considering the state of available technology and the nature and economics of the various alternatives. The Project further serves the public interest and will generate positive economic impacts for the region. The positive economic benefits include: beneficial impacts to the local economy; new state and local jobs; over \$170 million of economic input locally and regionally; and tax revenues to the counties over the 30-year lifespan of the Project of approximately \$50-60 million to Huron County and \$20-22 million to Erie County.<sup>280</sup>

Demand for locally-generated clean energy in Ohio is substantial. Many large corporations, along with utilities, universities, and local businesses, are seeking to meet their energy usage demands with clean energy. As stated previously, Firelands has a PPA contract in place with AEP Energy Partners, who in turn is seeking to meet demand from a new Google data center located in New Albany, Ohio. Without access to clean energy generating sources, such as the proposed Project, businesses such as Google may not site their developments in Ohio.<sup>281</sup>

These factors, along with the detailed information set forth in the Application and the Stipulation, as summarized herein, provides a package that benefits the public interest. Therefore, the second-prong of the test utilized by the Board in its consideration of a stipulation has been met.

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<sup>279</sup> App. Ex. 31 at 18.

<sup>280</sup> *Id.* at 19.

<sup>281</sup> *Id.* at 18-19

**K. The Stipulation satisfies the third part of the three-part test for evaluation of contested settlements and does not violate any important regulatory principle or practices.**

The Board has jurisdiction under R.C. Chapter 4906 to review the record in this case and determine if the record, as a whole, supports a finding that the Stipulation meets the requisite criteria in R.C. Section 4906.10. The record reflects that the Applicant has complied with every requirement, both statutory and regulatory, that is necessary in proceedings requesting a certificate to site a generation facility in Ohio. It is further well-documented that all of the important regulatory principles and practices – both substantive and procedural - have been met and, in some situations, exceeded. No regulatory principle will be violated by virtue of the Board acknowledging the expansive record that supports adoption of the Stipulation submitted by the Stipulating Parties. Therefore, the third and final test supporting the Board’s adoption of the Stipulation has been met.

**VII. CONCLUSION**

For the reasons set forth above, the Board should grant in total the Motion to Strike filed by the Applicant on October 9, 2020, regarding certain portions of the prefiled direct testimony of Local Residents’ witnesses Dennis Schreiner and Mark Shieldcastle.

Moreover, as thoroughly set forth herein, all of the criteria in R.C. Section 4906.10 have been addressed by the Stipulating Parties in the Stipulation. In addition, all 3 prongs of the test utilized by the Board in its consideration of a stipulation have been met. Therefore, for the foregoing reasons, the Board should adopt the Stipulation without modification and issue a Certificate to Firelands.

Respectfully submitted,

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## CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons listed below via electronic mail this 20<sup>th</sup> day of November, 2020.

/s/ Christine M.T. Pirik

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Summary: Brief - Initial Brief of Firelands Wind, LLC in Support of the Joint Stipulation and Recommendation electronically filed by Christine M.T. Pirik on behalf of Firelands Wind, LLC