

November 26, 2019

Ms. Tanowa Troupe, Secretary  
Ohio Power Siting Board  
Docketing Division  
180 East Broad Street, 11<sup>th</sup> Floor  
Columbus, Ohio 43215-3797

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

**Response to Third Data Request from Staff of the Ohio Power Siting Board**

Dear Ms. Troupe:

Attached please find Firelands Wind, LLC's ("Applicant") response to the Third Data Request from the staff of the Ohio Power Siting Board ("OPSB Staff"). The Applicant provided this response to OPSB Staff on November 14 and November 22, 2019.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

Terrence O'Donnell (0074213)

William V. Vorys (0093479)

DICKINSON WRIGHT PLLC

150 East Gay Street, Suite 2400

Columbus, Ohio 43215

(614) 591-5461

[cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)

[todonnell@dickinsonwright.com](mailto:todonnell@dickinsonwright.com)

[wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)

(Counsel is willing to accept service via email.)

**Attorneys for Firelands Wind, LLC**

Cc: Tamara Turkenton  
Jonathan Pawley

Ms. Tanowa Troupe  
Firelands Wind, LLC  
Case No. 18-1607-EL-BGN  
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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 these cases. In addition, the undersigned certifies that a copy of the foregoing document is also being served upon the persons below this 26<sup>th</sup> day of November, 2019.

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

Counsel/Intervenors:

[werner.margard@ohioattorneygeneral.gov](mailto:werner.margard@ohioattorneygeneral.gov)  
[jstock@beneschlaw.com](mailto:jstock@beneschlaw.com)  
[mgurbach@beneschlaw.com](mailto:mgurbach@beneschlaw.com)  
[norwichtwp1339@gmail.com](mailto:norwichtwp1339@gmail.com)  
[richardwiles@willard-oh.com](mailto:richardwiles@willard-oh.com)  
[rstrickler@huroncountyohprosecutor.com](mailto:rstrickler@huroncountyohprosecutor.com)  
[jstephens@huroncountyohprosecutor.com](mailto:jstephens@huroncountyohprosecutor.com)  
[ggross@eriecounty.oh.gov](mailto:ggross@eriecounty.oh.gov)  
[heather@hnattys.com](mailto:heather@hnattys.com)

Administrative Law Judge:

[jay.agranoff@puco.ohio.gov](mailto:jay.agranoff@puco.ohio.gov)  
[michael.williams@puco.ohio.gov](mailto:michael.williams@puco.ohio.gov)

COLUMBUS 59714-18 127779v1

**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. )

**FIRELANDS WIND, LLC'S RESPONSE TO THE  
THIRD DATA REQUEST  
FROM THE STAFF OF THE OHIO POWER SITING BOARD**

On January 31, 2019, as supplemented on March 18, 2019, April 11, 2019, July 10, 2019, and September 12, 2019, as revised on October 4, 2019, Firelands Wind, LLC (“Applicant”) filed an application (“Application”) with the Ohio Power Siting Board (“OPSB”) proposing to construct a wind-powered electric generation facility in Huron and Erie Counties, Ohio (“Project”).

On November 5, 2019, the Staff of the OPSB (“OPSB Staff”) provided the Applicant with OPSB Staff’s Third Data Request. Now comes the Applicant providing the following responses to the Third Set of Interrogatories from the OPSB Staff.

Safety Manuals, Ohio Adm.Code 4906-4-08(A)(1)(c)

- 1. Please provide the generation equipment manufacturer's safety standards, specifically please send the “GE Renewable Energy, Technical Documentation Wind Turbine Generator Systems Manual for the 5.x-158 turbine model” referenced in the motion for protective order dated 9/12/2019.**

**Response:** The GE Renewable Energy, Technical Documentation Wind Turbine Generator Systems Manual for the 5.x-158 turbine model referenced in the motion for protective order filed in this docket on September 12, 2019, was inadvertently not included in the documents filed under seal on September 12, 2019. Therefore, the Applicant filed the manual under seal in this docket on November 5, 2019.

In addition, today the Applicant is filing under seal the Technical Documentation Wind Turbine Generator Systems 3MW and 5 MW Platform 50/60 Hz – Safety Manual (See Attachment 1). The Applicant is also filing a motion for protective order requesting that the document be treated as confidential.

Wind Velocity, Ohio Adm.Code 4906-4-08(A)(6)

2. **Please submit an addendum to the wind velocity analysis (dated 1/31/2019) that includes the GE158 5.5 MW and GE140 3.0 MW wind turbine models.**

**Response:** The narrative to the Application under the response to Ohio Adm.Code 4906-4-08(A)(6), found on page 85 of the Application narrative, should be revised as follows: The wind turbines proposed for the Facility are rated to withstand wind speeds well in excess of those likely to occur in the Project Area. International standards for wind turbines are developed by working groups of Technical Committee-88 of the IEC, a world-recognized body for standards development. All turbines under consideration for the Facility are designed to meet the standards of the IEC-61400 series and are rated to specific IEC wind classes. The Vestas V150 is certified for class IIIB/IEC S winds; the Siemens Gamesa SG145 is certified for Class IIB winds; and the Nordex N149 is certified for class IEC S winds. IEC IIIB provides that the structure is designed to operate under average wind speeds of 7.5 m/s (17 mph) and withstand extreme 10-minute average wind speeds of 37.5 m/s (84 mph), while class IIB provides that the structure is designed to operate under average wind speeds of 8.5 m/s (19 mph) and withstand extreme 10- minute average wind speeds of 42.5 m/s (95 mph). The General Electric GE158-5.8 and GE140-3.03 are certified for class IEC S winds. IEC class S is user defined. It is important to note that these IEC standards represent minimum design values.

Communications, Ohio Adm.Code 4906-4-08(A)(13)

3. **Please submit an updated Microwave Study for the Emerson Creek / Firelands Wind Farm that captures the GE158 5.5 MW and GE140 3.0 MW wind turbine models. The turbine dimensions that were analyzed (Evans Engineering Solutions report, Exhibit Q, page 2) are smaller than the GE158 5.5 MW and GE140 3.0 MW wind turbine models.**

**Response:** Attachment 2 contains an addendum to Exhibit Q of the Application, Engineering Report Concerning the Effects Upon FCC Licensed RF Facilities Due to Construction of the Emerson Creek Wind Energy Project, dated January 14, 2019, prepared by Evans Engineering Solutions.

Respectfully submitted,

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

(Counsel of Record)

Terrence O'Donnell (0074213)

William V. Vorys (0093479)

Dickinson Wright PLLC

150 East Gay Street, Suite 2400

Columbus, Ohio 43215

Phone: (614) 591-5461

Email: [cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)

[todonnell@dickinsonwright.com](mailto:todonnell@dickinsonwright.com)

[wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)

(Counsel agrees to receive service by email.)

***Attorneys for Firelands Wind, LLC***

## **Attachment 1**

### **Technical Documentation Wind Turbine Generator Systems 3MW and 5 MW Platform 50/60 Hz – Safety Manual**

## **CONFIDENTIAL**

Firelands Wind, LLC has requested confidential treatment of this document in accordance with OAC Rule 4906-2-21.

This document contains confidential trade secret information and, as such, is entitled to confidential treatment under state and/or federal statutes and regulations.

The redacted version has been filed with the OPSB.

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)  
(Counsel of Record)

Terrence O'Donnell (0074213)

William V. Vorys (0093479)

Dickinson Wright PLLC

150 East Gay Street, Suite 2400

Columbus, Ohio 43215

Phone: (614) 591-5461

Email: [cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)

[todonnell@dickinsonwright.com](mailto:todonnell@dickinsonwright.com)

[wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)

(Counsel agrees to receive service by email.)

***Attorneys for Firelands Wind, LLC***

## **Attachment 2**

Addendum to Engineering Report  
January 14, 2019  
Evans Engineering Solutions

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)

(Counsel of Record)

Terrence O'Donnell (0074213)

William V. Vorys (0093479)

Dickinson Wright PLLC

150 East Gay Street, Suite 2400

Columbus, Ohio 43215

Phone: (614) 591-5461

Email: [cpirik@dickinsonwright.com](mailto:cpirik@dickinsonwright.com)

[todonnell@dickinsonwright.com](mailto:todonnell@dickinsonwright.com)

[wvorys@dickinsonwright.com](mailto:wvorys@dickinsonwright.com)

(Counsel agrees to receive service by email.)

***Attorneys for Firelands Wind, LLC***



**ADDENDUM TO  
ENGINEERING REPORT DATED JAN. 14, 2019  
CONCERNING THE EFFECTS UPON  
FCC LICENSED RF FACILITIES  
DUE TO CONSTRUCTION OF THE  
EMERSON CREEK WIND ENERGY PROJECT  
In  
ERIE & HURON COUNTIES, OHIO**

**I. INTRODUCTION**

This engineering report is an addendum to our report of January 14, 2019 which describes the results of a study and analysis to determine the locations of federally-licensed (FCC) microwave and fixed station radio frequency (RF) facilities that may be adversely impacted as a result of the construction of the Emerson Creek Wind Energy Project in Erie and Huron Counties, Ohio. All illustrations, calculations and conclusions contained in this document are based on FCC database records and the January 2019 report.

The Emerson Creek wind project as currently planned involves the construction of between 66 and 71 wind turbines<sup>1</sup> on a stretch of land roughly between the city of Willard in Huron County and the village of Castalia in Erie County. The studies and illustrations in the previous report were based on the wind turbines having a 105-meter hub height and a 150-meter rotor diameter, with a blade tip height of 180 meters. The current plan for the turbines is that 64 of them will have a hub height of 107.5 meters and a rotor diameter of 158 meters, resulting in a blade tip height of 186.5 meters, and up to 23 turbines (if built) will have a hub height of 110 meters and a rotor diameter of 140 meters, resulting in a tip height of 180 meters. The purpose of this addendum report is to determine whether the increase in turbine dimensions will affect, in any way, the RF facilities in or near the project area that were detailed in the previous report.

Analyses for this addendum report were conducted only on the microwave paths, land mobile stations and other communications towers. The increased turbine dimensions will not affect the results of the broadcast study (AM, FM and TV).

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<sup>1</sup> While up to 71 turbines will actually be built, a total of 87 locations were studied for this report which includes alternative turbine sites.





The following tabulation and analysis consists of two sections:

1. Microwave point-to-point path analysis<sup>2</sup>
2. Land mobile, public safety and other communications tower sites

The attached figures were generated based upon the operating parameters of the FCC-licensed stations as contained in the FCC station database, with corrections of the antenna locations as needed.

The following analyses examine the pertinent FCC licensed services in the area for impact. This analysis assumes that all licensed services have been designed and constructed according to FCC requirements and good engineering practice. If this is not the case, the impacted facility must share responsibility with the wind project developer for the costs of any mitigation measures<sup>3</sup>.

## **II. ANALYSIS OF MICROWAVE LINKS**

For the January 2019 report, an extensive analysis was undertaken to determine the likely effect of the new wind turbine project upon the existing microwave paths, consisting of a Fresnel x/y/z axis study. The microwave paths have been overlaid on Google Earth™ maps, and the images of the microwave paths and the proposed turbines are also available in a KMZ file.

**Important Note:** Microwave path studies are based upon third party and FCC databases that normally exhibit a high degree of accuracy and reliability. Although Evans performs due diligence to ensure that all existing microwave facilities are represented, we cannot be responsible for errors in FCC databases that may lead to incomplete results. However, should such situations occur, Evans would perform an engineering analysis to determine how the additional facilities can be accommodated or, if wind turbine structures are already built, determine a method to re-direct an impacted beam path.

For this microwave study, *Worst Case Fresnel Zones* (WCFZ) were calculated for each microwave path. The mid-point of a microwave path is the location where the widest (or worst case) Fresnel zone occurs. The radius  $R$  of the Worst Case Fresnel Zone, in meters, is calculated for each path using the following formula:

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<sup>2</sup> Only point-to point microwave facilities were considered (for instance, a study of earth station facilities is not included).

<sup>3</sup> For instance, some microwave paths may have insufficient ground clearances as they are presently configured.

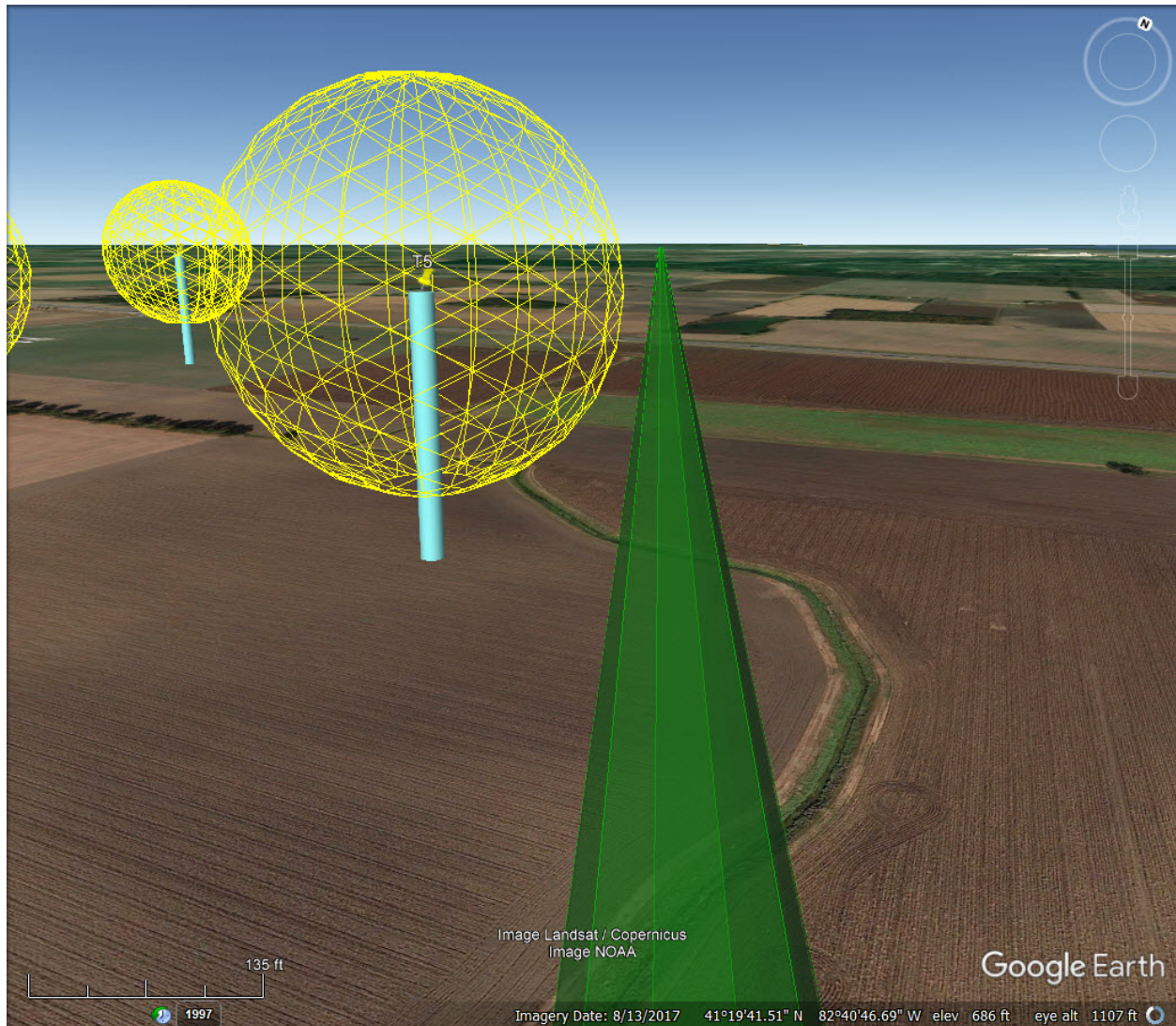


$$R \cong 8.65 \sqrt{\frac{D}{F_{\text{GHz}}}}$$

where  $D$  is the microwave path length in kilometers and  $F_{\text{GHz}}$  is the frequency in gigahertz.

In general, the WCFZ is defined by the cylindrical area whose axis is the direct line between the microwave link endpoints and whose radius is  $R$  as calculated above. This is the zone where the siting of obstructions should be avoided. In the January 2019 report, we identified 42 unique licensed microwave paths from the FCC database that are within 0.5 mile of the project area boundary. These microwave paths are listed in Table 1 of the January report and mapped in Figures 1 and 2 of that report.

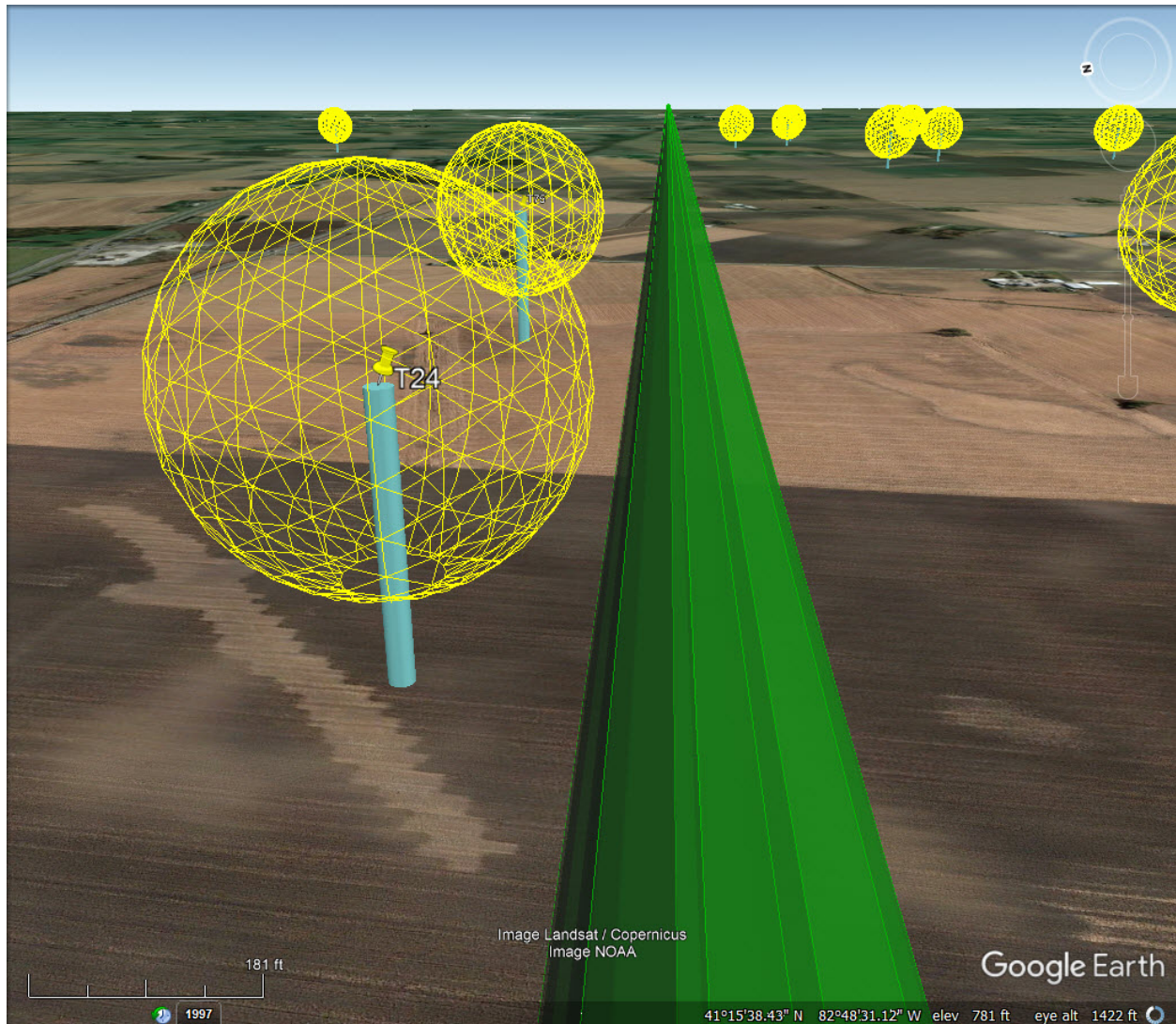
The January 2019 report determined that five turbine sites from the current layout are close to microwave paths (within about 125 meters from the center of the path). Figures 1 through 5 of the instant report are Google Earth images showing each of the five turbines along with the WCFZ of the microwave path nearest the turbine. As can be seen in these images, the incremental increase in the turbine sizes will have no obstruction impact on the microwave WCFZs.



**Figure 1 – Turbine 5 close to Microwave Path WQRW547/WQRW848**

As can be seen in the image above, Turbine 5 would not penetrate the WCFZ of the microwave link.





**Figure 2 – Turbines 24 close to Microwave Path WQTQ663/WQTZ737**

As can be seen in the image above, Turbines 24 would not penetrate the WCFZ of the microwave link.



**Figure 3 – Turbine 34 close to Microwave Path WPOQ355/WQVW473**

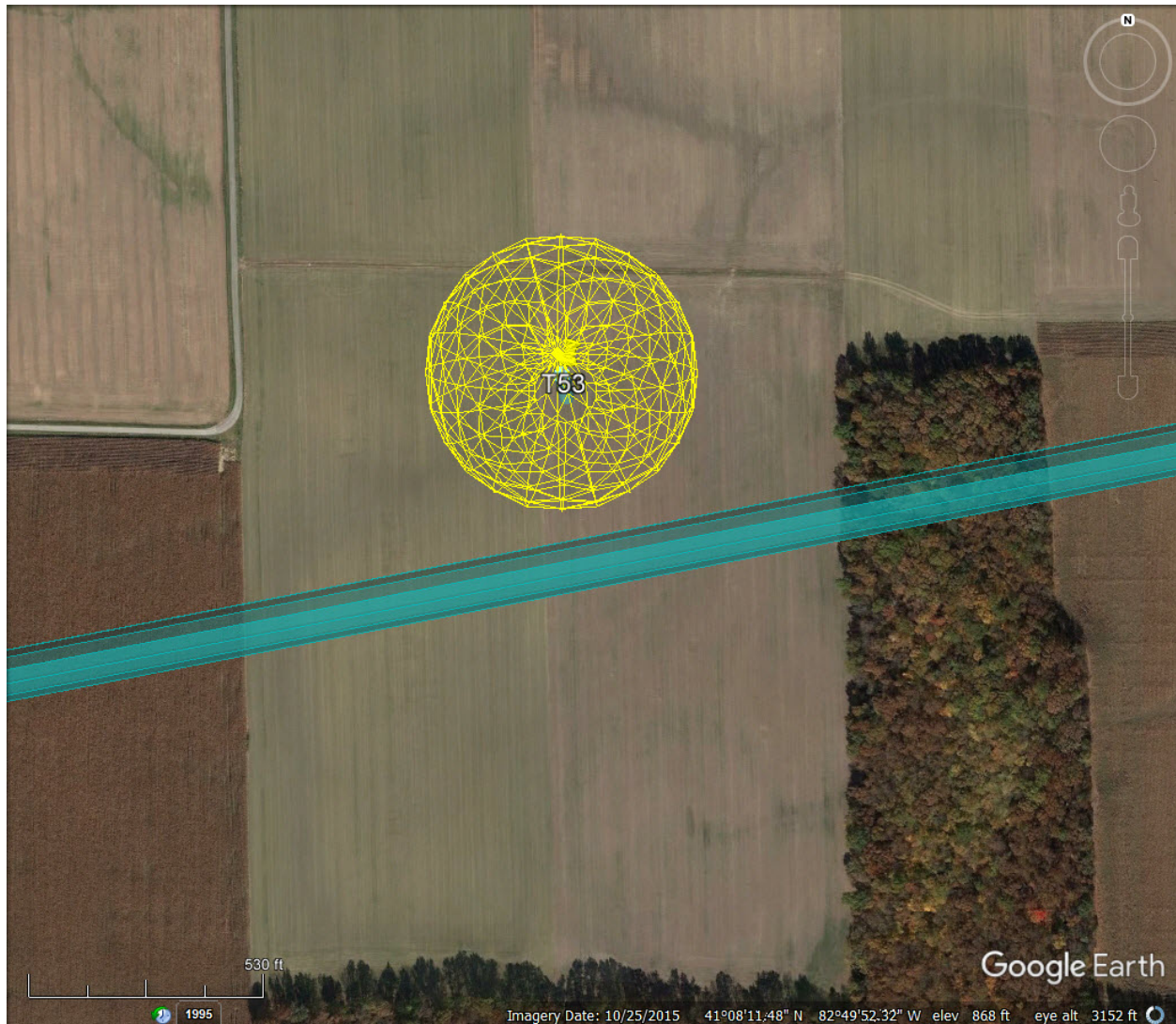
As can be seen in the image above, Turbine 34 would not penetrate the WCFZ of the microwave link.





**Figure 4 – Turbine 35 close to Microwave Path WQPB813/WQPB814**

As can be seen in the image above, Turbine 35 would not penetrate the WCFZ of the microwave link.



**Figure 15 – Turbine 53 close to Proposed Microwave Path WQQX778  
(ASR1234443 to Republic ATC)**

As can be seen in the image above, Turbine 53 would not penetrate the WCFZ of the microwave link.



### **III. ANALYSIS OF FIXED RADIO FACILITIES**

#### **3.1 Land Mobile & Public Safety Facilities**

A search of the FCC's land mobile/public safety radio database that was done for the January 2019 report revealed many land mobile transmitter stations within the project area boundary. These land mobile stations are mapped in Figures 17 through 22 of that report.

Multi-directional transmitting facilities, including land mobile stations, which are within 425 meters of a turbine site customarily should be further evaluated for the possibility of transmitter interference caused by wind turbines. The January report determined that there are no land mobile stations within 425 meters of any turbine sites and thus, no land mobile stations are expected to be operationally affected. The slight increase in rotor diameter proposed for most of the planned turbines will not change this determination.

#### **3.2 Other Communications Sites**

For the January 2019 report, a search through the FCC registered antenna structures database revealed many FCC-registered communications towers located within the project area boundary, which are mapped in Figures 25 through 28 of that report. As mentioned in the report, multi-directional transmitting facilities within 425 meters of a planned turbine customarily should be further evaluated for the possibility of turbine-related transmitter interference. Based on the current turbine layout, and as demonstrated in the January report, there are no registered towers within 425 meters of any turbine sites, thus, no impact is expected to any multidirectional RF transmitting facilities, including cellular, that may exist on the towers. The slight increase in rotor diameter proposed for most of the planned turbines will not change this determination.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "B. Benjamin Evans", is written over a light blue horizontal line.

B. Benjamin Evans  
RF Impact Consultant

November 22, 2019



**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

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**in**

**Case No(s). 18-1607-EL-BGN**

Summary: Response to Third Data Request from the Staff of the Ohio Power Siting Board electronically filed by Christine M.T. Pirik on behalf of Firelands Wind, LLC