

Application for Third Amendment to
Siting Certificate for Hog Creek Wind Farm LLC
Hardin County, Ohio

Hog Creek I Wind Farm

Case No. 16-1422-EL-BGA

AND

Application for Second Amendment to
Siting Certificate for Hog Creek Wind Farm LLC
Hardin County, Ohio

Hog Creek II Wind Farm

Case No. 16-1423-EL-BGA

**JOINT EXHIBITS
PART 2**

For submittal to

Ohio Power Siting Board
Columbus, Ohio
June 22, 2016

CASE NO. 16-1422-EL-BGA
and
CASE NO. 16-1423-EL-BGA

JOINT EXHIBIT 8
TELECOMMUNICATIONS STUDIES AND
NTIA COORDINATION

Wind Power GeoPlanner™

Microwave Study

Hog Creek Wind Project



Prepared on Behalf of
Hog Creek Wind Project,
LLC

May 17, 2016



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1. Introduction

Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. These systems are the telecommunication backbone of the country, providing long-distance and local telephone service, backhaul for cellular and personal communication service, data interconnects for mainframe computers and the Internet, network controls for utilities and railroads, and various video services. This report focuses on the potential impact of wind turbines on licensed, proposed and applied non-federal government microwave systems.

2. Project Overview

Project Information

Name: Hog Creek Wind

County: Hardin

State: Ohio

Number of Turbines: TBD

Blade Diameter: 126 meters

Hub Height: 95 meters

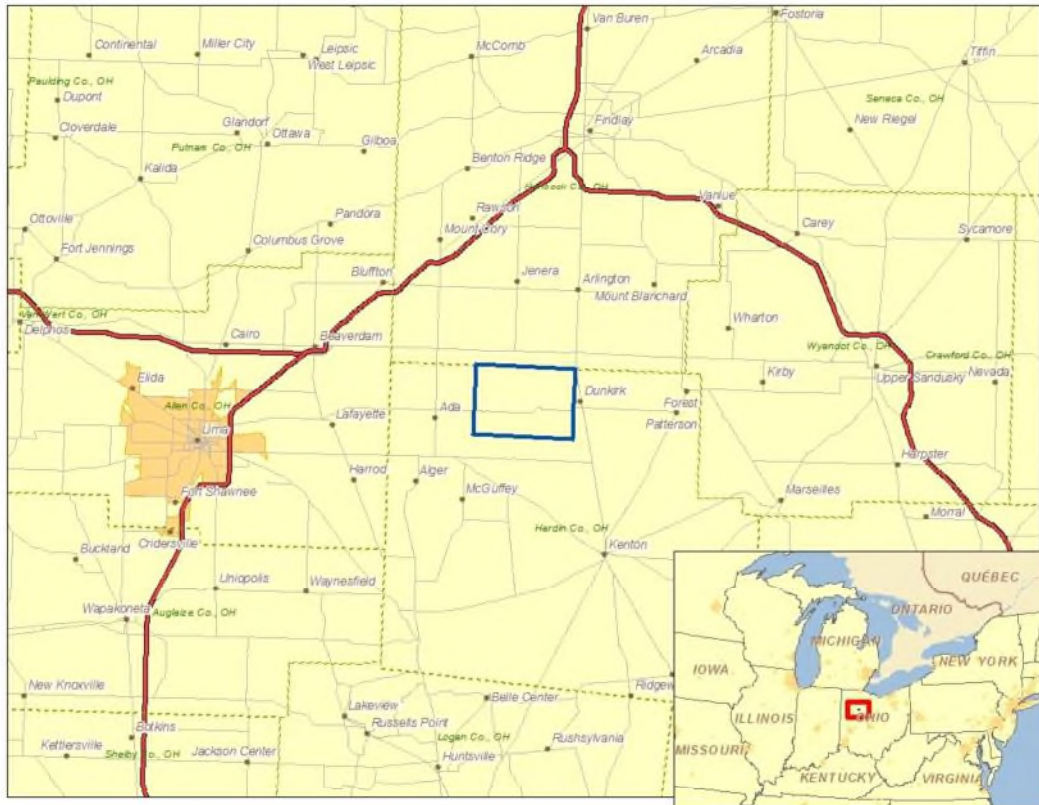


Figure 1: Area of Interest

3. Fresnel Zone Analysis

Methodology

Our obstruction analysis was performed using Comsearch's proprietary microwave database, which contains all non-government licensed, proposed and applied paths from 0.9 - 23 GHz¹. First, we determined all microwave paths that intersect the area of interest² and listed them in Table 1. These paths and the area of interest that encompasses the planned turbine locations are shown in Figure 2.

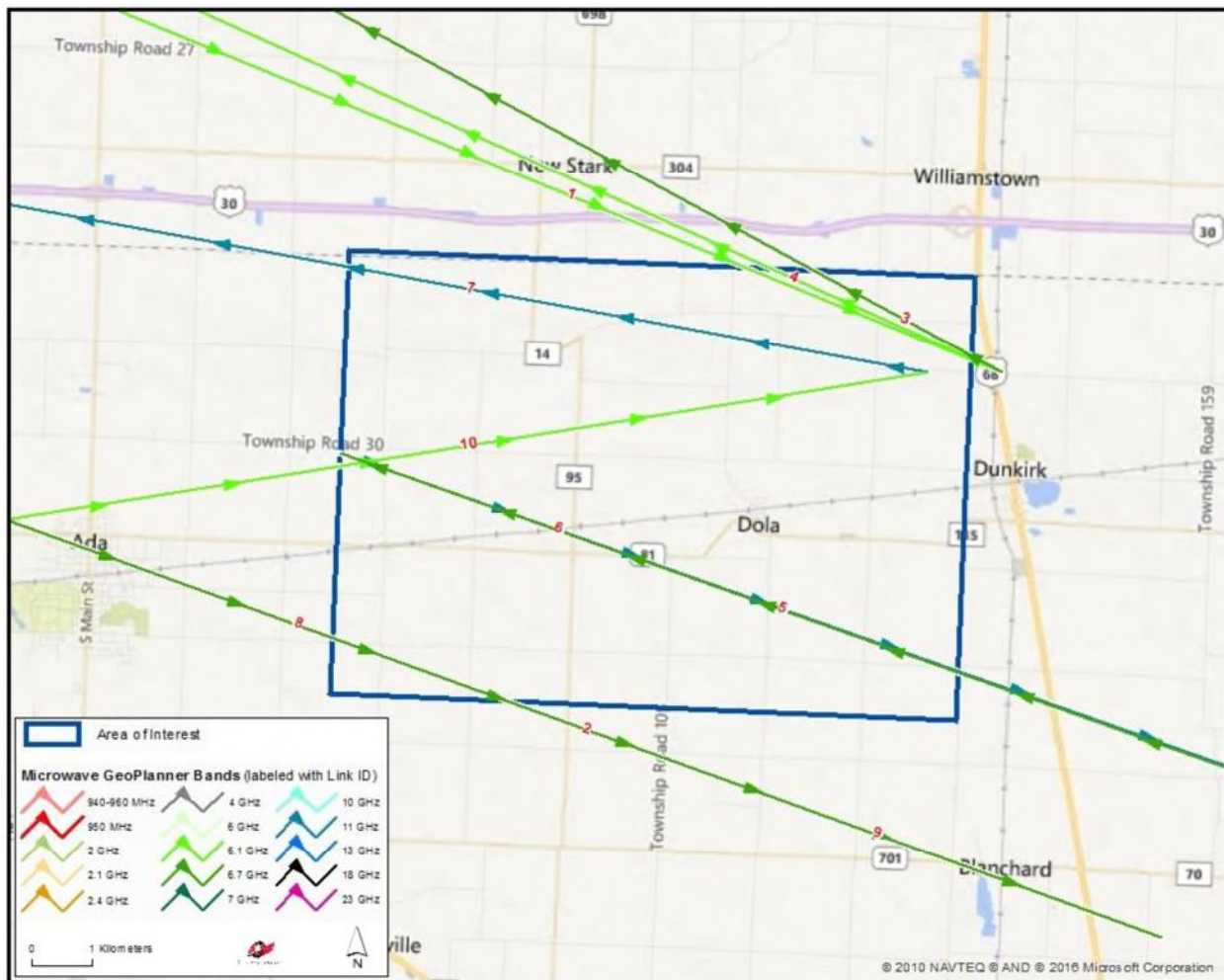


Figure 2: Microwave Paths that Intersect the Area of Interest

¹ Please note that this analysis does not include unlicensed microwave paths or federal government paths that are not registered with the FCC.

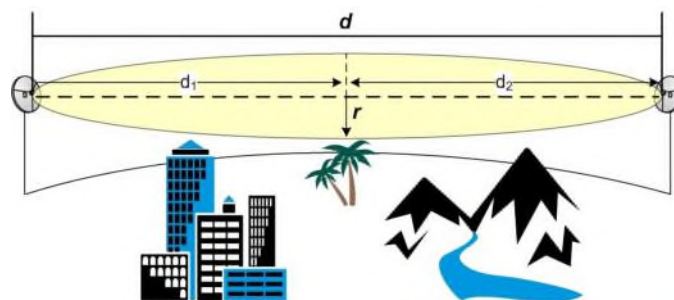
² We use FCC-licensed coordinates to determine which paths intersect the area of interest. It is possible that as-built coordinates may differ slightly from those on the FCC license.

ID	Status	Callsign 1	Callsign 2	Band	Path Length (km)	Licensee
1	Proposed	1288757	1252218	6.1 GHz	34.87	Fort Wayne Communications Group Co
2	Proposed	50783	WQUL809	11 GHz	34.82	Torellco LLC
3	Licensed	WQFC690	WQFC687	6.7 GHz	38.31	American Electric Power Service Co
4	Licensed	WQON256	WQON255	6.1 GHz	44.30	Ohio Networks
5	Licensed	WQOV230	WQOV246	6.7 GHz	57.69	World Class Wireless, LLC
6	Licensed	WQSA732	WQSA742	11 GHz	34.99	Argos Engineering, LLC
7	Licensed	WQTB519	WQRX795	11 GHz	25.82	Sprint Spectrum L.P.
8	Licensed	WQUU821	WQUL809	6.7 GHz	34.82	Torellco LLC
9	Licensed	WQUU821	WQUL809	6.7 GHz	34.82	Torellco LLC
10	Licensed	WQWN387	WQWN391	6.1 GHz	18.88	Verizon Wireless (VAW) LLC - Ohio

Table 1: Summary of Microwave Paths that Intersect the Area of Interest

(See enclosed *mw_geopl.xlsx* for more information and
GP_dict_matrix_description.xls for detailed field descriptions)

Next, we calculated a Fresnel Zone for each path based on the following formula:

$$r \cong 17.3 \sqrt{\frac{n}{F_{GHz}} \left(\frac{d_1 d_2}{d_1 + d_2} \right)}$$


Where,

- r = Fresnel Zone radius at a specific point in the microwave path, meters
- n = Fresnel Zone number, 1
- F_{GHz} = Frequency of microwave system, GHz
- d_1 = Distance from antenna 1 to a specific point in the microwave path, kilometers
- d_2 = Distance from antenna 2 to a specific point in the microwave path, kilometers

The calculated Fresnel Zone shows the narrow area of signal swath and is calculated for each microwave path in the project area. In general, this is the area where the planned wind turbines should be avoided, if possible. A depiction of the individual Fresnel Zones is shown in Figure 3, and is also included in the shapefiles^{3,4}.

³ The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 17 projected coordinate system.

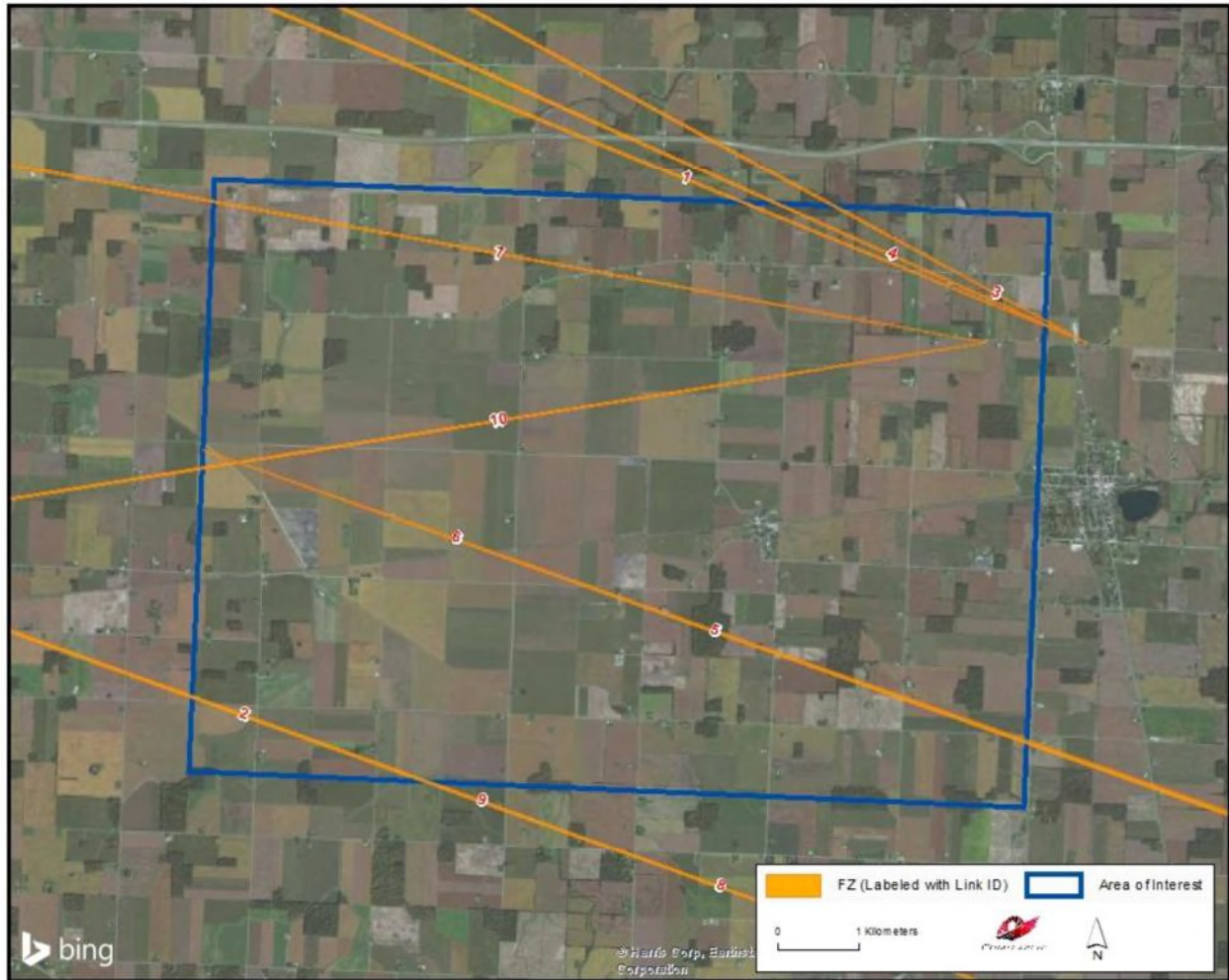


Figure 3: Fresnel Zones in the Area of Interest

⁴ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data provided in this report is governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

Discussion of Potential Obstructions

Total Microwave Paths	Paths with Affected Fresnel Zones	Total Turbines	Turbines intersecting Fresnel Zones
10	N/A	N/A	N/A

For this project, turbine locations were not provided; thus we could not determine if any potential obstructions exist between the planned wind turbines and the incumbent microwave paths. If the latitude and longitude values for turbine locations are provided, Comsearch can identify where a potential conflict might exist.

4. Conclusion

Our study identified 10 microwave paths intersecting the Hog Creek Wind project area. The Fresnel Zones for these microwave paths were calculated and mapped. We recommend that all turbines be sited in locations that will not obstruct the Fresnel Zones.

5. Contact

For questions or information regarding the Microwave Study, please contact:

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Wind Power GeoPlanner™

AM and FM Radio Report

Hog Creek Wind



Prepared on Behalf of
Hog Creek Wind Project,
LLC

May 16, 2016





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1. Introduction

Comsearch analyzed AM and FM radio broadcast stations whose service could potentially be affected by the proposed Hog Creek Wind project in Hardin County, Ohio.

2. Summary of Results

AM Radio Analysis

Comsearch found six database records¹ for AM stations within approximately 30 kilometers of the project, as shown in Table 1 and Figure 1. These records represent station WFIN, which broadcasts out of Findlay, Ohio, to the north of the project area of interest (AOI), and stations WCIT and WIMA in Lima, Ohio, to the southwest. All of these stations are licensed separately for daytime and nighttime operations, generally with a higher transmit power permitted during daytime hours.

ID	Call Sign	Status ²	Frequency (kHz)	Transmit ERP ³ (kW)	Operation Time	Latitude (NAD 27)	Longitude (NAD 27)	Required Separation Distance ⁴ (km)	Distance to Project AOI (km)
1	WFIN	LIC	1330	1.0	Daytime	41.008333	-83.635278	0.23	20.93
2	WFIN	LIC	1330	0.079	Nighttime	41.008333	-83.635278	0.23	20.93
3	WCIT	LIC	940	0.25	Daytime	40.722500	-84.084444	3.00	26.41
4	WCIT	LIC	940	0.006	Nighttime	40.722500	-84.084444	3.00	26.41
5	WIMA	LIC	1150	1.0	Daytime	40.679722	-84.109444	2.61	29.47
6	WIMA	LIC	1150	1.0	Nighttime	40.679722	-84.109444	2.61	29.47

Table 1: AM Radio Stations within 30 Kilometers of Project Area

¹ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the AM/FM station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

² LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

³ ERP = Transmit Effective Radiated Power.

⁴ The required separation distance is based on the lesser of 10 wavelengths or 3 kilometers for directional antennas and 1 wavelength for non-directional antennas.

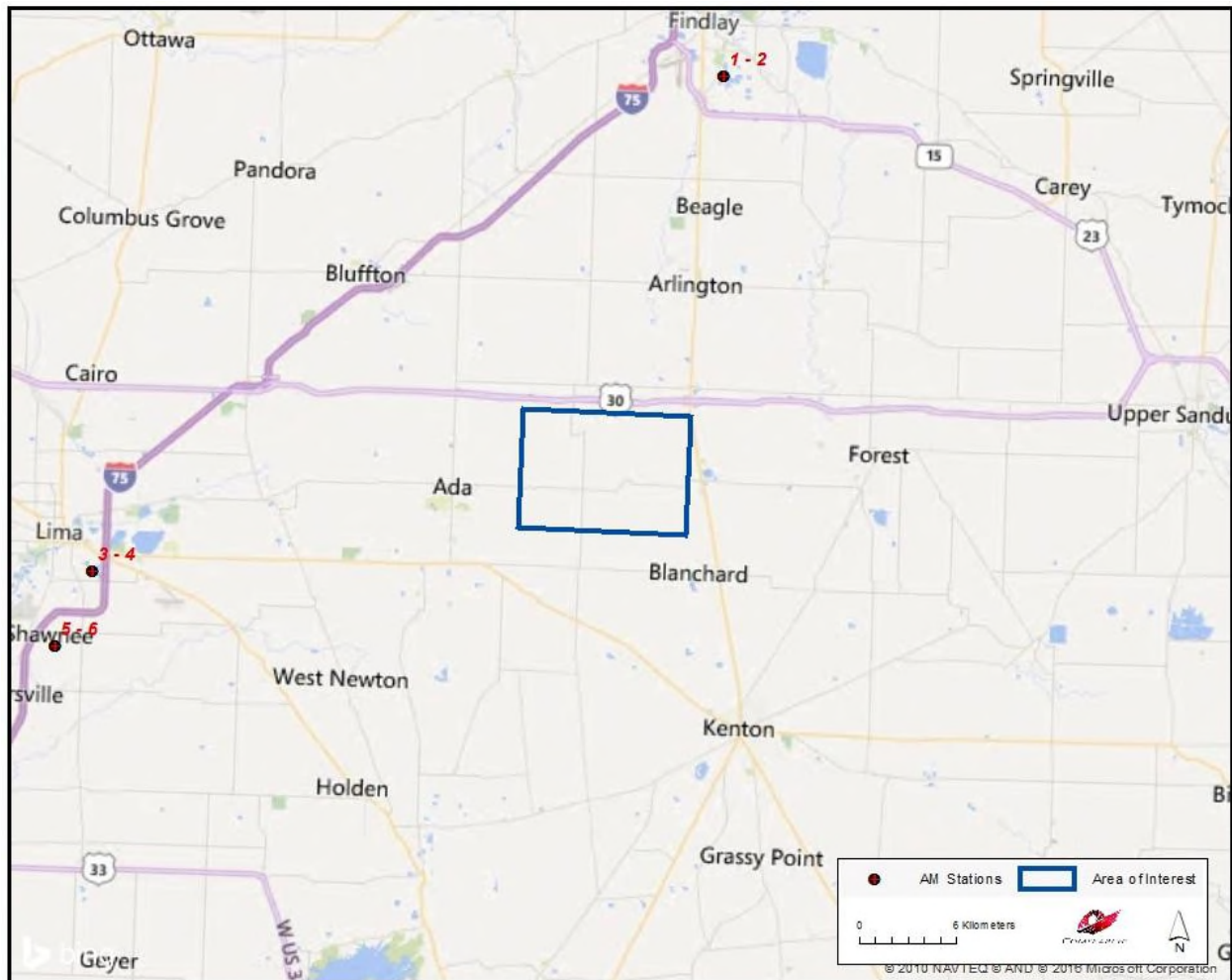


Figure 1: AM Radio Stations within 30 Kilometers of Project Area

FM Radio Analysis

Comsearch determined that there were twenty database records for FM stations within a 30-kilometer radius of the Hog Creek Wind project, as shown in Table 2 and Figure 2. Only seventeen of these stations are currently licensed and operating, seven of which are low-power or translator stations that broadcast with limited range.

ID	Call Sign	Status ⁵	Service ⁶	Frequency (MHz)	Transmit ERP ⁷ (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Project AOI (km)
1	WONB	LIC	FM	94.9	3.0	40.766111	-83.837222	5.30
2	WKEN	LIC	FM	88.5	0.65	40.673611	-83.608889	9.62
3	WKXA-FM	LIC	FS	100.5	20.0	40.916611	-83.595903	11.73
4	WKXA-FM	LIC	FM	100.5	20.0	40.916667	-83.595833	11.74
5	W286AB	LIC	FX	105.1	0.05	40.642500	-83.585833	13.57
6	WKTN	LIC	FM	95.3	3.5	40.644722	-83.566389	14.12
7	WBWH-LP	LIC	FL	96.1	0.066	40.896944	-83.902778	13.77
8	W256CJ	CP	FX	99.1	0.002	40.999389	-83.615333	20.14
9	WBUK	LIC	FM	106.3	1.4	40.955833	-83.911667	18.98
10	W231AJ	LIC	FX	94.1	0.05	41.023056	-83.656389	22.51
11	W258CE	CP	FX	99.5	0.25	41.035556	-83.643056	23.91
12	WTKC	LIC	FM	89.7	0.2	41.053056	-83.653611	25.84
13	W254CD	LIC	FX	98.7	0.049	41.071667	-83.660833	27.91
14	WEGE	LIC	FM	104.9	3.0	40.722500	-84.084444	26.41
15	W219DS	LIC	FX	91.7	0.027	41.069444	-83.627222	27.75
16	W248BT	LIC	FX	97.5	0.038	41.069444	-83.627222	27.75
17	WIMT	LIC	FS	102.1	13.0	40.663889	-84.085278	28.09
18	WZRX-FM	LIC	FM	107.5	1.35	40.663889	-84.085278	28.09
19	WTTT-LP	LIC	FL	101.1	0.1	40.751111	-84.120278	29.21
20	WVLO	CP MOD	FM	99.3	3.0	40.719611	-84.113972	28.93

Table 2: FM Radio Stations within 30 Kilometers of Project Area

⁵ LIC = Licensed and operational station; APP = Application for construction permit; CP=Construction permit granted; CP MOD = Modification of construction permit.

⁶ FM = FM broadcast station; FX = FM translator station; FL = Low-power FM station; FS = FM auxiliary (backup) station; FB = FM booster station.

⁷ ERP = Transmit Effective Radiated Power.

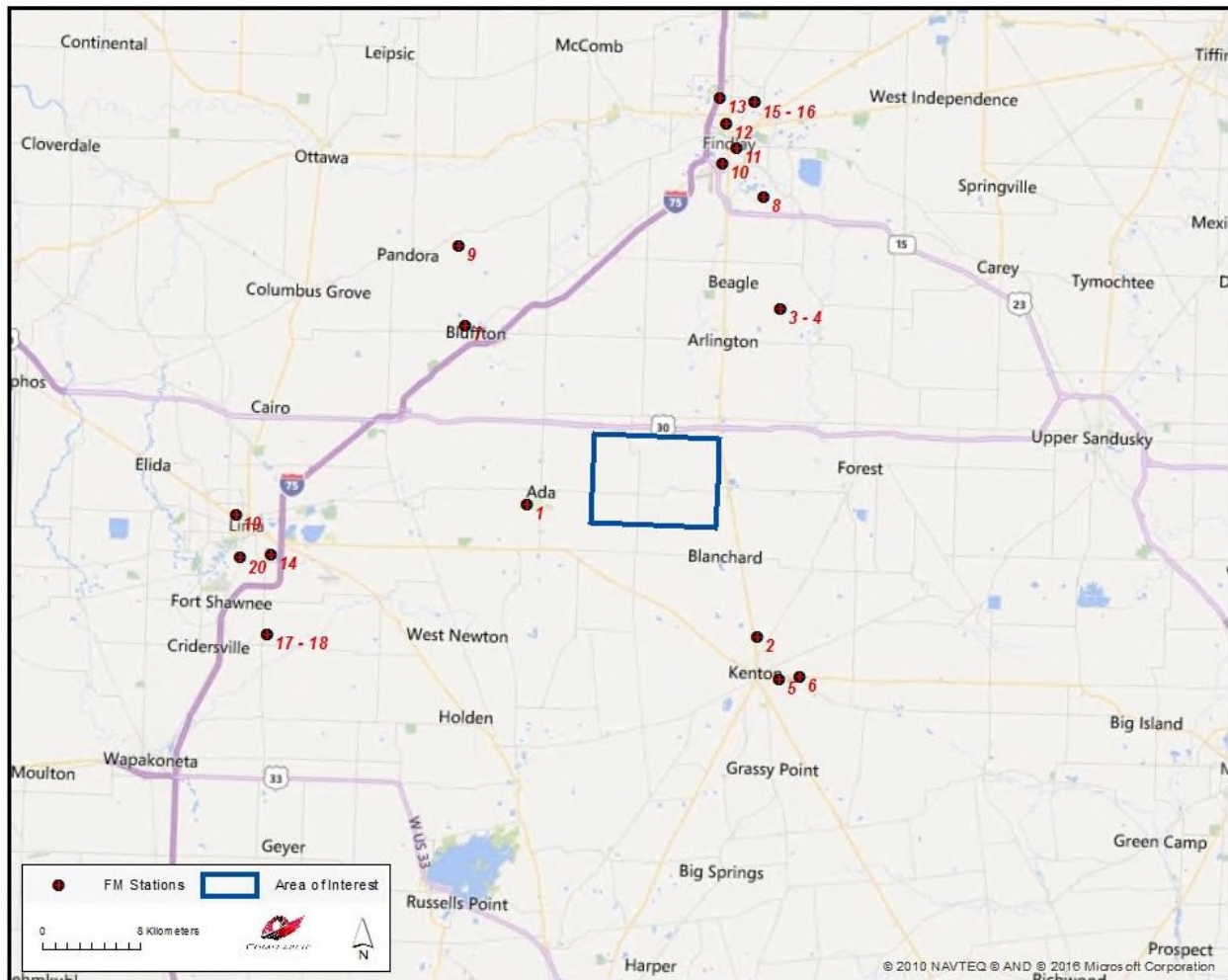


Figure 2: FM Radio Stations within 30 Kilometers of Project Area

3. Impact Assessment

The exclusion distance for AM broadcast stations varies as a function of the antenna type and broadcast frequency. For directional antennas, the exclusion distance is calculated by taking the lesser of 10 wavelengths or 3 kilometers. For non-directional antennas, the exclusion distance is simply equal to 1 wavelength. Potential problems with AM broadcast coverage are only anticipated when AM broadcast stations are located within their respective exclusion distance limit from wind turbine towers. The closest AM station to the Hog Creek Wind project, WFIN, is slightly more than 20.9 kilometers from the limit of the project area. As there were no stations found within 3 kilometers of the project, which is the maximum possible exclusion distance based on a directional AM antenna broadcasting at 1000 KHz or less, the project should not impact the coverage of local AM stations.

The coverage of FM stations is generally not susceptible to interference caused by wind turbines, especially when large objects, such as wind turbines, are sited in the *far field* region of the radiating FM antenna in order to avoid the risk of distorting the antenna's radiation pattern. The closest operational FM station to the Hog Creek Wind project, WONB, is more than 5.3 kilometers from the project. At this distance, there should be adequate separation to avoid radiation pattern distortion.

4. Recommendations

Since no impact on the licensed and operational AM or FM broadcast stations was identified in our analysis, no recommendations or mitigation techniques are required for this project.

5. Contact

For questions or information regarding the AM and FM Radio Report, please contact:

Contact person:	Denise Finney
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Wind Power GeoPlanner™

Land Mobile & Emergency Services Report

Hog Creek Wind



Prepared on Behalf of
Hog Creek Wind Project,
LLC

May 16, 2016





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1. Introduction

An assessment of the emergency services in the Hog Creek Wind project area was performed by Comsearch to identify potential impact from the planned turbines. We evaluated the registered frequencies for the following types of first responder entities: police, fire, emergency medical services, emergency management, hospitals, public works, transportation and other state, county, and municipal agencies. We also identified all industrial and business land mobile radio (LMR) systems and commercial E911 operators within the proposed wind energy facility boundaries. This information is useful in the planning stages of the wind energy facility because the data can be used in support of facility communications needs and to evaluate any potential impact on the emergency services provided in that region. An overview of the project area, which is located in Hardin County, Ohio, appears in Figure 1.

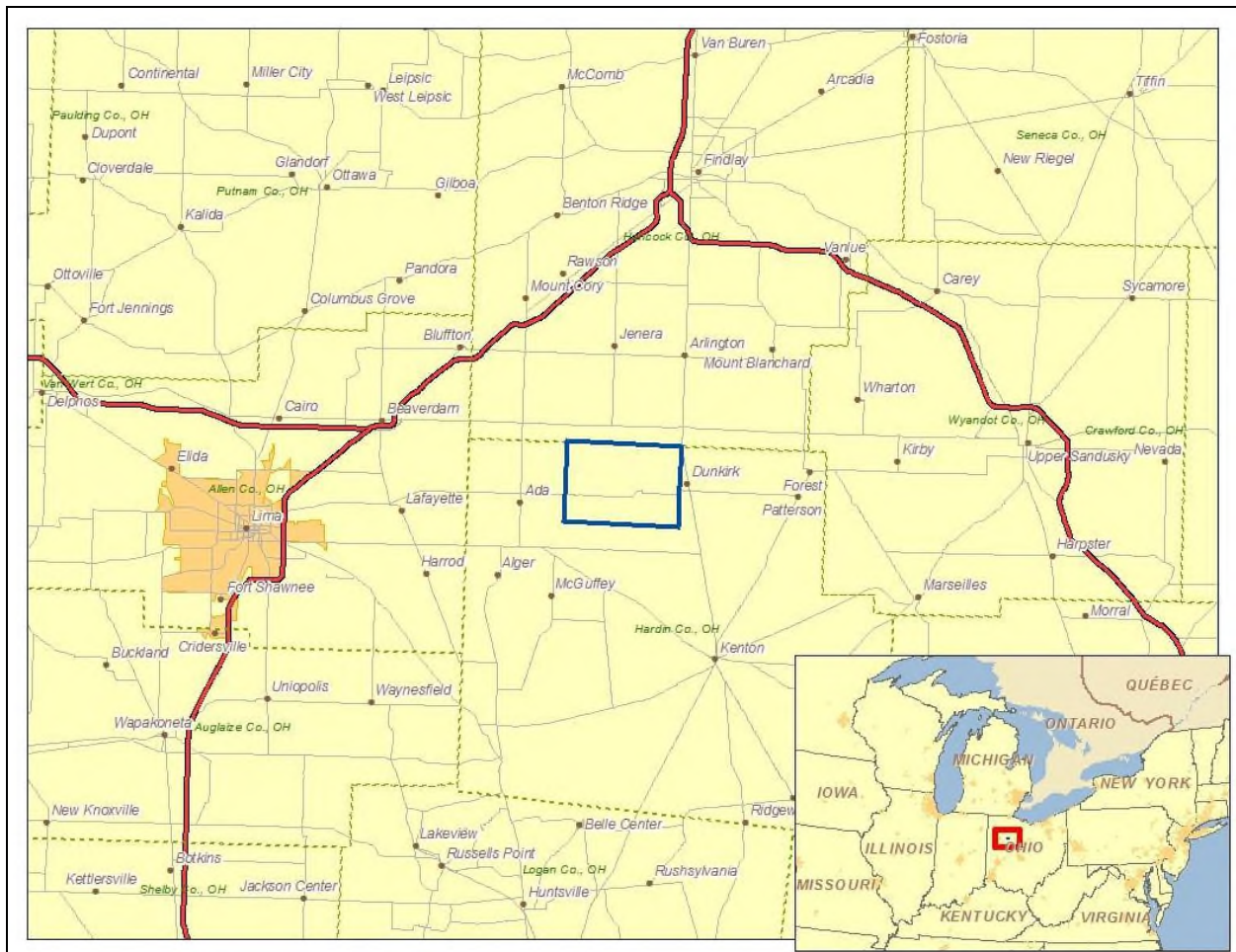


Figure 1: Area of Interest (AOI)

2. Summary of Results

Our land mobile and emergency services incumbent data¹ was derived from the FCC's Universal Licensing System (ULS) and the FCC's Public Safety & Homeland Security bureau. We identified both site-based licenses as well as regional area-wide licenses designated for public safety use.

Site-Based Licenses

The site-based licenses were imported into GIS software and geographically mapped relative to the wind energy project area of interest as defined by the customer. Each site on the map was given an ID number and associated with site information in a data table. A depiction of the fixed-site licenses in and around the project area appears in Figure 2.

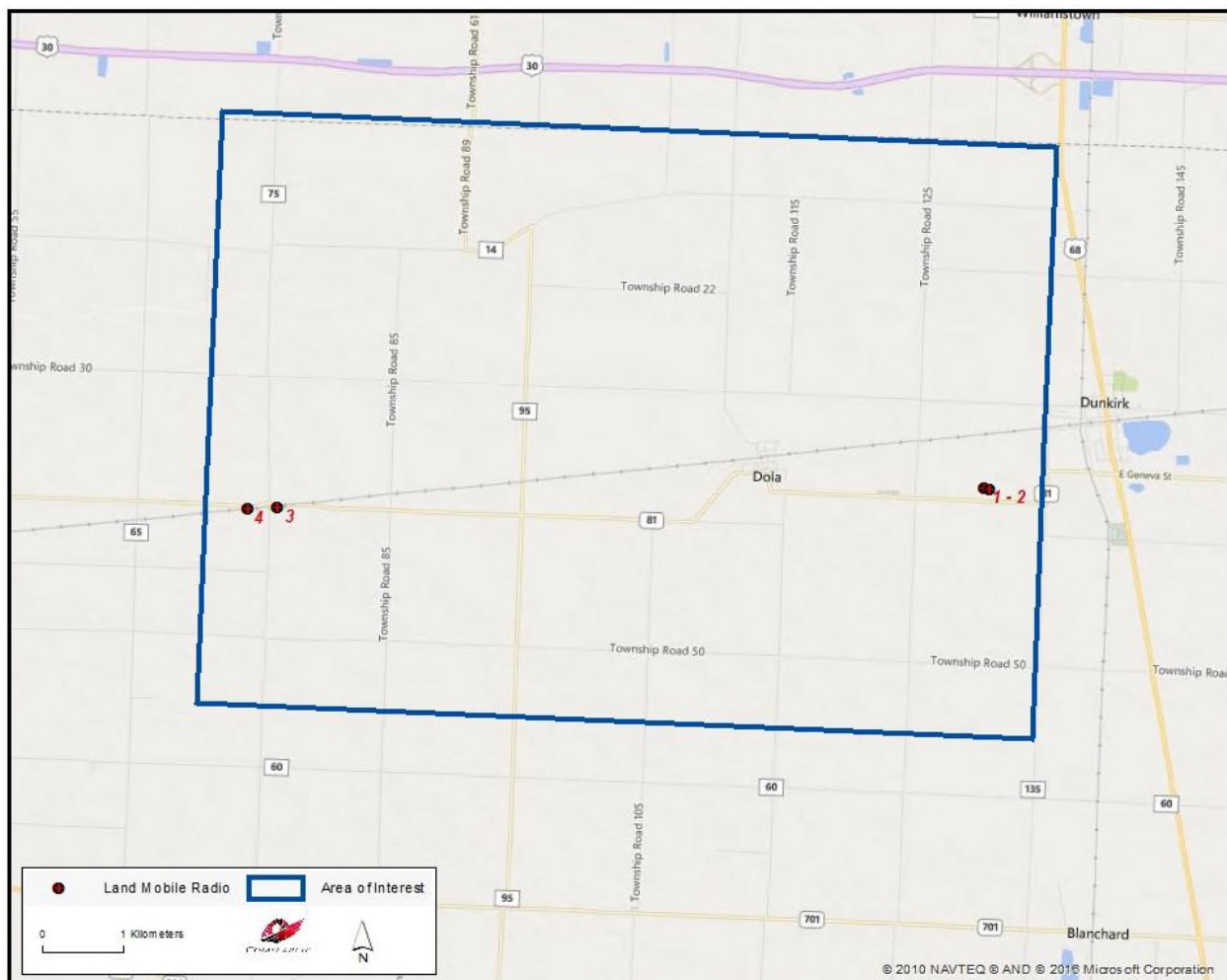


Figure 2: Land Mobile & Emergency Service Sites in Area of Interest

¹ Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report. The data presented in this report is derived from the land mobile station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf

Figure 2 identifies four site-based licenses in the Hog Creek Wind project area of interest. Specific information about these sites is provided in Table 1.

ID	Call Sign	Frequency Band (MHz)	Licensee	Antenna Height AGL (m)	Latitude (NAD83)	Longitude (NAD83)	Distance to Center of Project (km)
1	WQNP432	450-470	Hardin Northern Schools	30.5	40.781000	-83.661000	4.35
2	WPKY337	150-174	Ohio, State of	5.0	40.780889	-83.660222	4.42
3	WQPQ348	150-174	Chicago Fort Wayne & Eastern Railroad	4.1	40.776389	-83.764444	4.52
4	WNYJ593	150-174	CSX Transportation, Inc.	4.0	40.776167	-83.768833	4.88

Table 1: Land Mobile & Emergency Service Sites in Area of Interest

Area-Wide Licenses

The regional area-wide licenses are compiled from FCC data sources and identified for each county in the wind project area. The Hog Creek Wind project is located in Hardin County, Ohio, part of Public Safety Region #33, which contains all of the counties in the State of Ohio. The regional public safety operation is overseen by the entity listed below.

Paul M. Mayer
Chairperson
2022 Charmingfare Street
Columbus, OH 43228-9686
phone: 614-312-1199
email: region33.rpc@gmail.com

The chairperson for Region #33 is a representative for all public safety entities in the region and is responsible for coordinating current and future public safety use in the wireless spectrum. In the bands licensed by the FCC for area-wide first responders, which include 220 MHz, 700 MHz, 800 MHz and 4.9 GHz, as well as the traditional Part 90 public safety pool of frequencies, twenty licenses were found for the State of Ohio and three for the County of Hardin (see Table 3). These area-wide licenses are designated for mobile use only.

ID	Licensee	Area of Operation	Frequency Band (MHz)
1	Ada-Liberty Joint Ambulance Board	Countywide: Hardin	150-174, 450-470
2	American National Red Cross	Statewide: Ohio	25-50, 150-174, 450-470
3	Athens, County of	Statewide: Ohio	0-10
4	Barberton, City of	Statewide: Ohio	800/900
5	Columbus Division of Support Services	Statewide: Ohio	0-10, 800/900, 2450-2500
6	Delaware, County of	Statewide: Ohio	0-10
7	Delaware County 911	Statewide: Ohio	800/900
8	Greene, County of	Statewide: Ohio	450-470, 800/900
9	Guernsey, County of	Statewide: Ohio	150-174
10	Hardin, County of	Countywide: Hardin	150-174, 450-470
11	Liberty, Township of	Countywide: Hardin	150-174, 450-470
12	Midwest K9 Search Unit	Statewide: Ohio	150-174
13	National Ski Patrol System, Inc.	Statewide: Ohio	150-174
14	Northern Indiana Search & Rescue	Statewide: Ohio	150-174
15	Ohio, State of	Statewide: Ohio	0-10, 25-50, 150-174, 421-430, 450-470, 769-775/799-805, 800/900, 4940-4990
16	Ohio Department of Natural Resources	Statewide: Ohio	150-174, 4940-4990
17	Ohio Department of Transportation	Statewide: Ohio	0-10
18	Ohio Organized Crime Investigations Commission	Statewide: Ohio	2450-2500
19	Ohio State Highway Patrol	Statewide: Ohio	25-50, 150-174, 450-470, 2450-2500
20	Parma Fire Department	Statewide: Ohio	769-775/799-805, 800/900
21	Parma Heights, City of	Statewide: Ohio	150-174, 800/900
22	Saint Marys, Township of	Statewide: Ohio	800/900
23	Westlake, City of	Statewide: Ohio	150-174, 450-470

Table 3: Regional Licenses

E911 Operators

Wireless operators are granted area-wide licenses from the FCC to deploy their cellular networks, which often include handsets with E911 capabilities. Since mobile phone market boundaries differ from service to service, we disaggregated the carriers' licensed areas down to the county level. We have identified the type of service for each carrier in Hardin County in Table 4.

Mobile Phone Carrier	Service ²
AT&T	AWS, Cellular, PCS, WCS, 700 MHz
Cavalier Wireless	700 MHz
DISH Network	AWS, 700 MHz
Northstar Wireless	AWS
Sprint	PCS
T-Mobile	AWS, PCS
Verizon	AWS, Cellular, PCS, 700 MHz

Table 4: Mobile Phone Carriers in Area of Interest with E911 Service in Hardin County

² AWS: Advanced Wireless Service at 1.7/2.1 GHz
CELL: Cellular Service at 800 MHz
PCS: Personal Communication Service at 1.9 GHz
WCS: Wireless Communications Service at 2.3 GHz
700 MHz: Lower 700 MHz Service

3. Impact Assessment

The first responder, industrial/business land mobile sites, area-wide public safety, and commercial E-911 communications as described in this report are typically unaffected by the presence of wind turbines, and we would not generally anticipate any significant harmful effect to these services in the Hog Creek Wind project area. Although these networks operate in different frequency ranges and have various applications, including voice, video and data, there is commonality among them with regard to the impact of wind turbines on their service. Each of these networks is designed to operate reliably in a non-line-of-sight (NLOS) environment. Many land mobile systems are designed with multiple base transmitter stations covering a large geographic area with overlap between adjacent transmitter sites in order to provide handoff between cells. Therefore, any signal blockage caused by the wind turbines does not materially degrade the reception because the end user is likely receiving signals from multiple transmitter locations. Additionally, the frequencies of operation for these services have characteristics that allow the signal to propagate through wind turbines. As a result very little, if any, change in their coverage should occur when the wind turbines are installed.

When planning the wind energy turbine locations in the area of interest, a conservative approach would dictate not locating any turbines within 77.5 meters of land mobile fixed-base stations to avoid any possible impact to the communications services provided by these stations. This distance is based on FCC interference emissions from electrical devices in the land mobile frequency bands. As long as the turbines are located more than 77.5 meters from the land mobile stations, they will meet the setback distance criteria for FCC interference emissions in the land mobile bands.

4. Recommendations

In the event that a public safety entity believes its coverage has been compromised by the presence of the wind energy facility, it has many options to improve its signal coverage to the area through optimization of a nearby base station or even adding a repeater site. Utility towers, meteorological towers or even the turbine towers within the wind project area can serve as the platform for a base station or repeater site.



5. Contact

For questions or information regarding the Land Mobile & Emergency Services Report, please contact:

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Wind Power GeoPlanner™

Off-Air TV Analysis

Hog Creek Wind



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Off-air television stations broadcast signals from terrestrially-based facilities directly to television receivers. Comsearch identified those off-air stations whose service could potentially be affected by the proposed Hog Creek Wind project in Hardin County, Ohio. Comsearch then examined the coverage of the stations and the communities in the area that could potentially have degraded television reception due to the location of the proposed wind turbines.

The proposed wind energy project area and local communities are depicted in Figure 1, below.



To begin the analysis, Comsearch compiled all off-air television stations¹ within 150 kilometers of the center of the project area of interest (AOI). Appendix A contains a tabular summary of these stations. A plot depicting their locations appears in Figure 2, below.

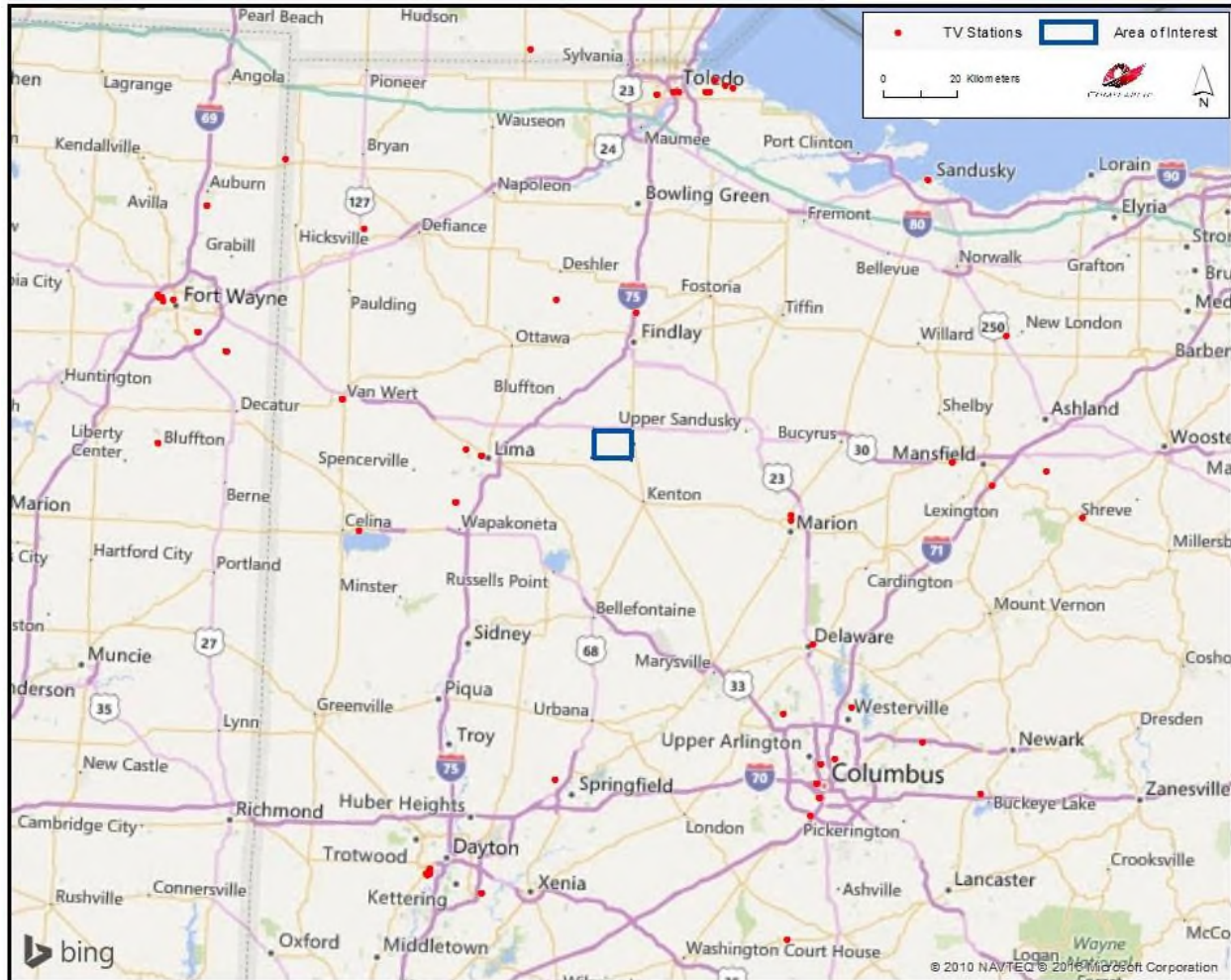


Figure 2: Plot of Off-Air TV Stations within 150 Kilometers of Project Area

TV stations at a distance of 75 kilometers or less are the most likely to provide off-air coverage to the project area and neighboring communities. These stations are listed in Table 1, below, and a plot depicting their locations is provided in Figure 3. There are a total of nineteen database records for stations within approximately 75 kilometers of the limits of the project AOI. Of these stations, only twelve are currently licensed and operating, nine of which are low-power stations or translators. Translator stations are low-power stations that receive signals from

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distant broadcasters and retransmit the signal to a local audience. These stations serve local audiences and have limited range, which is a function of their transmit power and the height of their transmit antenna. The three remaining records in Table 1 represent stations WLIO, WTLV, and WBGU-TV, which broadcast at full power.

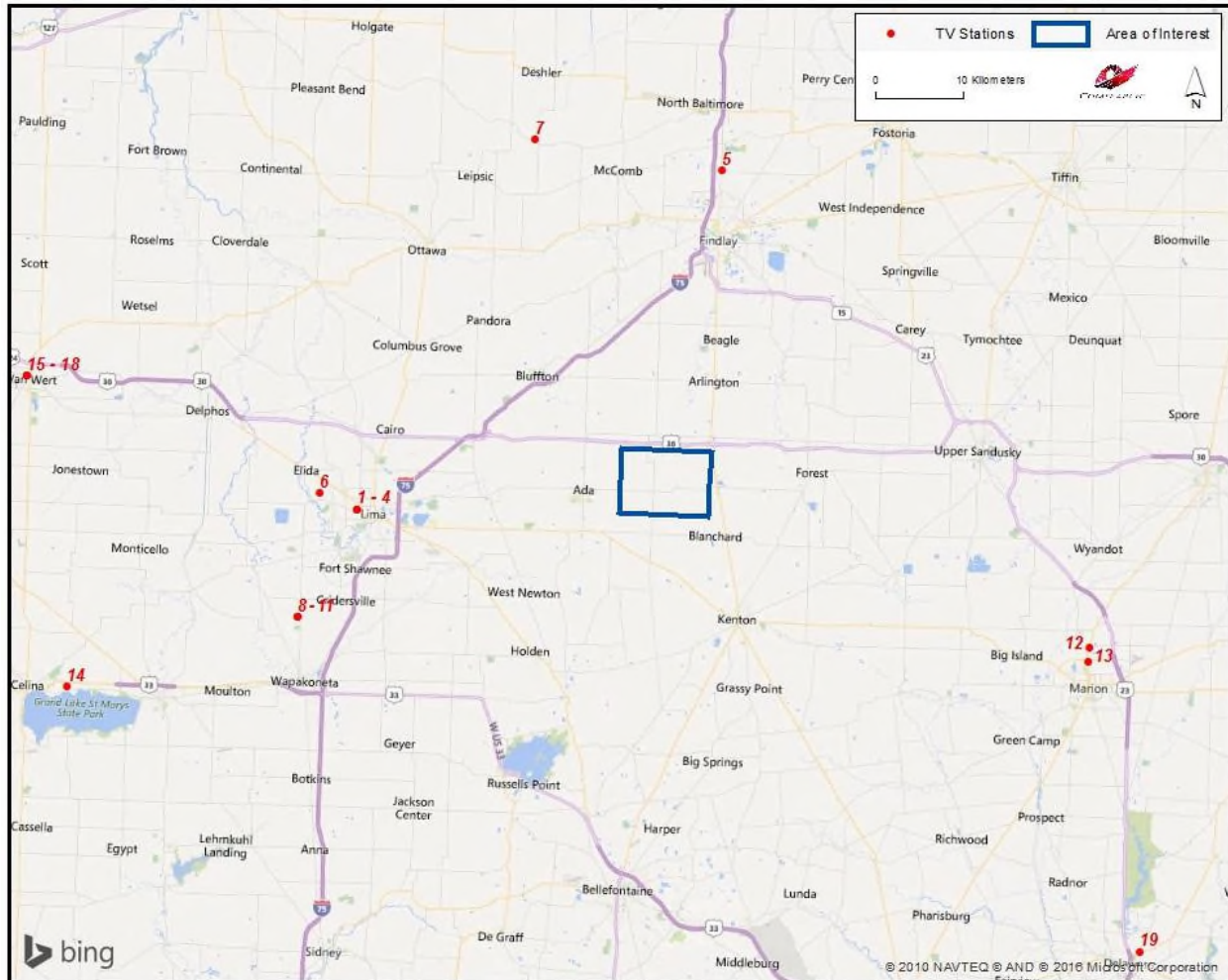


Figure 3: Plot of Off-Air TV Stations within 75 Kilometers of Project Area

ID	Call Sign	Status	Service ²	Channel	Transmit ERP ³ (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
1	WLIO	LIC	DT	8	27.5	40.747500	-84.131806	35.67
2	WLQP-LP	CP	LD	45	15.0	40.747500	-84.131806	35.67
3	WLMO-LP	CP	LD	47	15.0	40.747500	-84.131806	35.67
4	WOHL-CD	LIC	DC	35	9.0	40.747500	-84.131944	35.68
5	WFND-LD	LIC	LD	22	15.0	41.111111	-83.648333	36.59
6	WTLW	LIC	DT	44	165.0	40.763056	-84.183056	39.82
7	WBGU-TV	LIC	DT	27	153.0	41.136667	-83.906667	42.32
8	WLQP-LP	LIC	TX	18	7.7	40.634167	-84.208056	45.13
9	W23DE-D	LIC	LD	23	3.0	40.634167	-84.208056	45.13
10	WLMO-LP	LIC	TX	38	15.0	40.634167	-84.208056	45.13
11	W23DE-D	CP	LD	43	7.85	40.634167	-84.208056	45.13
12	WMNO-CD	LIC	DC	28	7.5	40.627500	-83.130000	52.24
13	WXCBCD	LIC	DC	45	15.0	40.612778	-83.130000	52.81
14	W32DS-D	LIC	LD	32	6.8	40.552861	-84.517306	72.80
15	W16DM-D	CP	LD	16	0.5	40.872778	-84.588056	74.51
16	W29EL-D	CP	LD	29	0.5	40.872778	-84.588056	74.51
17	W42EP-D	CP	LD	42	0.5	40.872778	-84.588056	74.51
18	W49EM-D	CP	LD	49	0.5	40.872778	-84.588056	74.51
19	WOCB-CD	LIC	DC	39	2.4	40.313056	-83.051111	76.72

Table 1: Off-Air TV Stations within 75 Kilometers of Project Area

3. Impact Assessment

The three licensed full-power digital stations, WLIO, WTLV, and WBGU-TV, may have their reception disrupted in and around the Hog Creek Wind project. The areas primarily affected would include TV service locations within 10 kilometers of the wind energy project that have clear line-of-sight (LOS) to a proposed wind turbine but not to the respective station. After the wind turbines are installed, communities and homes in these locations may have degraded reception of these stations. This is due to multipath interference caused by signal scattering as TV signals are reflected by the rotating wind turbine blades and mast.

² Definitions of service and status codes:

DT – Digital television broadcast station

LD – Low power digital television broadcast station

TX – Translator station

LIC – Licensed and operational station

CP – Construction permit granted

CP MOD – Modification of construction permit

APP – Application for construction permit, not yet operational

³ ERP = Transmit Effective Radiated Power

The service contours of Class A station WOHL-CD and low-power stations WFND-LD and W23DE-D also overlap with the Hog Creek Wind project area. Disruption of these stations would occur under similar LOS conditions as above.

However, based on the low number of full-power TV channels available in the immediate vicinity of the project area, it is unlikely that off-air television stations are the primary mode of television service for the local communities. TV cable service, where available, and direct broadcast satellite service (DBS) are more likely the dominant modes of service delivery.

4. Recommendations

While TV signals are reflected by wind turbines, which can cause multipath interference to the TV receiver, modern digital TV receivers have undergone significant improvements to mitigate the effects of signal scattering. When used in combination with a directional antenna, it becomes even less likely that signal scattering from wind farms will cause interference to digital TV reception.

Nevertheless, signal scattering could still impact certain areas currently served by the TV stations mentioned above, especially those that would have line-of-sight to at least one wind turbine but not to a respective station antenna. In the unlikely event that interference is observed in any of the TV service areas, it is recommended that a high-gain directional antenna be used, preferably outdoors, and oriented towards the signal origin in order to mitigate the interference.

Both cable service and direct broadcast satellite service will be unaffected by the presence of the wind turbine facility and may be offered to those residents who can show that their off-air TV reception has been disrupted by the presence of the wind turbines after they are installed.

5. Contact

For questions or information regarding the Off-Air TV Analysis, please contact:

Contact person:	Denise Finney
Title:	Account Manager
Company:	Comsearch
Address:	19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone:	703-726-5650
Fax:	703-726-5595
Email:	dfinney@comsearch.com
Web site:	www.comsearch.com

Appendix A

ID	Call Sign	Status	Service ⁴	Channel	Transmit ERP ⁵ (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
1	WLIO	LIC	DT	8	27.5	40.747500	-84.131806	35.67
2	WLQP-LP	CP	LD	45	15.0	40.747500	-84.131806	35.67
3	WLMO-LP	CP	LD	47	15.0	40.747500	-84.131806	35.67
4	WOHL-CD	LIC	DC	35	9.0	40.747500	-84.131944	35.68
5	WFND-LD	LIC	LD	22	15.0	41.111111	-83.648333	36.59
6	WTLW	LIC	DT	44	165.0	40.763056	-84.183056	39.82
7	WBGU-TV	LIC	DT	27	153.0	41.136667	-83.906667	42.32
8	WLQP-LP	LIC	TX	18	7.7	40.634167	-84.208056	45.13
9	W23DE-D	LIC	LD	23	3.0	40.634167	-84.208056	45.13
10	WLMO-LP	LIC	TX	38	15.0	40.634167	-84.208056	45.13
11	W23DE-D	CP	LD	43	7.85	40.634167	-84.208056	45.13
12	WMNO-CD	LIC	DC	28	7.5	40.627500	-83.130000	52.24
13	WXCB-CD	LIC	DC	45	15.0	40.612778	-83.130000	52.81
14	W32DS-D	LIC	LD	32	6.8	40.552861	-84.517306	72.80
15	W16DM-D	CP	LD	16	0.5	40.872778	-84.588056	74.51
16	W29EL-D	CP	LD	29	0.5	40.872778	-84.588056	74.51
17	W42EP-D	CP	LD	42	0.5	40.872778	-84.588056	74.51
18	W49EM-D	CP	LD	49	0.5	40.872778	-84.588056	74.51
19	WOCB-CD	LIC	DC	39	2.4	40.313056	-83.051111	76.72
20	-	CP	TX	3	0.03	40.140472	-83.141194	86.45
21	WDFM-LP	LIC	TX	26	7.5	41.291389	-84.537500	89.30
22	WLWD-LP	LIC	TX	20	8.7	39.962222	-83.863611	92.29
23	WMFD-TV	LIC	DT	12	14.0	40.763889	-82.617778	92.44
24	WOHZ-CD	LIC	DC	41	15.0	40.763889	-82.617778	92.44
25	W38DH	CP	LD	23	8.0	41.646944	-83.605000	96.12
26	W38DH	LIC	TX	38	8.2	41.646944	-83.605000	96.12
27	WOSU-TV	LIC	DT	38	503.0	40.159167	-82.923056	96.51

⁴ Definitions of service and status codes :

TV – Analog television broadcast station

DT – Digital television broadcast station

DS – Digital special temporary authority (STA)

LP – Low power analog television broadcast station

LD – Low power digital television broadcast station

CA – Class A analog television broadcast station

DC – Class A digital television broadcast station

DX – Digital auxiliary (backup) facility

TX – Translator station

LIC – Licensed and operational station

CP – Construction permit granted

CP MOD – Modification of construction permit

APP – Application for construction permit, not yet operational

STA – Special transmit authorization, usually granted by FCC for temporary operation

⁵ ERP = Transmit Effective Radiated Power

ID	Call Sign	Status	Service ⁴	Channel	Transmit ERP ⁵ (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
28	WDTJ-LD	LIC	LD	18	4.0	41.653333	-83.548056	97.38
29	WDTJ-LP	LIC	TX	68	6.6	41.653333	-83.548056	97.38
30	WMNT-CD	LIC	DC	48	15.0	41.653583	-83.530250	97.63
31	WUPW	LIC	DT	46	110.0	41.656111	-83.444722	99.28
32	WUPW	CP	DT	46	200.0	41.656111	-83.444722	99.28
33	WGTE-TV	LIC	DT	29	49.5	41.657222	-83.431944	99.65
34	WNWO-TV	LIC	DT	49	105.0	41.667500	-83.356111	102.43
35	WTOL	LIC	DT	11	16.9	41.672778	-83.379722	102.43
36	WTVG	LIC	DT	13	16.7	41.683333	-83.413611	102.83
37	WCPX-LP	CP	LD	25	9.5	40.017222	-83.019722	103.59
38	WCSN-LD	LIC	LD	33	15.0	40.017222	-83.019722	103.59
39	WCPX-LP	LIC	TX	48	150.0	40.017222	-83.019722	103.59
40	W43CZ-D	LIC	LD	43	11.0	40.709167	-82.486389	103.89
41	WGCT-CD	LIC	DC	8	0.19	40.031111	-82.974889	104.55
42	WCMH-TV	LIC	DT	14	902.0	39.971111	-83.027778	107.48
43	WDEM-CD	LIC	DC	17	1.05	39.971111	-83.027778	107.48
44	WCLL-CD	LIC	DC	19	15.0	39.971111	-83.027778	107.48
45	WBNS-TV	LIC	DT	21	1000.0	39.971111	-83.027778	107.48
46	W44DC-D	LIC	LD	44	15.0	39.971111	-83.027778	107.48
47	W16CU-D	LIC	LD	16	5.0	40.977194	-84.966083	107.81
48	W41DS-D	LIC	LD	41	6.0	40.977194	-84.966083	107.81
49	NEW	APP	LD	4	3.0	40.977222	-84.966111	107.81
50	W16CU-D	CP MOD	LD	16	5.0	40.977222	-84.966111	107.81
51	WEDX-LD	CP MOD	LD	29	2.5	40.977222	-84.966111	107.81
52	W41DS-D	CP MOD	LD	41	6.0	40.977222	-84.966111	107.81
53	W43DI-D	CP MOD	LD	43	10.0	40.977222	-84.966111	107.81
54	WODP-LD	CP MOD	LD	49	7.0	40.977222	-84.966111	107.81
55	WEDX-LD	CP MOD	LD	29	6.0	40.977167	-84.966139	107.81
56	W43DI-D	LIC	LD	43	6.0	40.977167	-84.966139	107.81
57	WODP-LD	LIC	LD	49	6.0	40.977167	-84.966139	107.81
58	WLMB	LIC	DT	5	10.0	41.744722	-84.018333	109.60
59	WTTE	LIC	DT	36	1000.0	39.937222	-83.021111	110.97
60	WWHO	APP	DT	46	1000.0	39.937222	-83.021111	110.97
61	WSYX	LIC	DT	48	1000.0	39.937222	-83.021111	110.97
62	WGGN-TV	LIC	DT	42	450.0	41.075000	-82.451389	110.97
63	W41AP	LIC	TX	41	10.0	41.455278	-82.713611	112.13
64	W23BZ-D	LIC	LD	23	15.0	39.891944	-83.045556	114.23
65	WSFJ-TV	LIC	DT	24	1000.0	40.078889	-82.695000	116.64
66	W16CU-D	CP	LD	16	15.0	41.023889	-85.064139	116.95
67	W20DG-D	CP MOD	LD	20	15.0	41.023889	-85.064139	116.95
68	W41DS-D	CP	LD	41	15.0	41.023889	-85.064139	116.95
69	W43DI-D	CP	LD	43	15.0	41.023889	-85.064139	116.95

ID	Call Sign	Status	Service ⁴	Channel	Transmit ERP ⁵ (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
70	WODP-LD	CP	LD	49	5.0	41.023889	-85.064139	116.95
71	W14DS-D	CP	LD	14	15.0	41.023889	-85.064167	116.95
72	W19DT-D	CP	LD	19	15.0	41.023889	-85.064167	116.95
73	W20DG-D	CP MOD	LD	20	6.0	41.023889	-85.064167	116.95
74	W21DJ-D	CP	LD	21	15.0	41.023889	-85.064167	116.95
75	W33DC-D	CP	LD	33	15.0	41.023889	-85.064167	116.95
76	NEW	APP	LD	35	15.0	41.023889	-85.064167	116.95
77	W51EQ-D	CP	LD	51	12.5	41.023889	-85.064167	116.95
78	WINM	LIC	DT	12	16.5	41.454167	-84.802778	117.92
79	W33BW	LIC	TX	33	30.0	40.747222	-82.315000	118.06
80	W22DV-D	CP MOD	LD	22	10.0	40.746306	-85.173250	123.43
81	WHIO-TV	LIC	DT	41	1000.0	39.733889	-84.248056	125.32
82	WLWD-LP	CP	LD	20	5.0	39.724444	-84.255000	126.52
83	WBDT	LIC	DT	26	770.0	39.724444	-84.255000	126.52
84	WRGT-TV	LIC	DT	30	498.0	39.724444	-84.255000	126.52
85	WRCX-LP	LIC	TX	40	34.0	39.724444	-84.255000	126.52
86	WRCX-LP	CP	LD	40	0.32	39.724444	-84.255000	126.52
87	WKEF	LIC	DT	51	515.0	39.724444	-84.255000	126.52
88	WKEF	APP	DT	18	525.0	39.724361	-84.255056	126.53
89	WRCX-LP	APP	LD	40	15.0	39.724361	-84.255056	126.53
90	WPTD	LIC	DT	16	163.0	39.721111	-84.250000	126.71
91	W22DE	LIC	TX	22	54.0	39.720833	-84.260833	127.07
92	WDTN	LIC	DT	50	1000.0	39.718611	-84.256111	127.15
93	WFWC-CD	LIC	DC	45	1.62	41.099083	-85.145028	125.58
94	WWRD-LP	LIC	TX	32	13.0	39.680000	-84.082222	126.70
95	WWRD-LP	CP	LD	42	15.0	39.680000	-84.082222	126.70
96	W07CL	LIC	TX	7	0.032	41.333611	-85.052222	128.04
97	W26DH-D	LIC	LD	26	6.0	41.333611	-85.052222	128.04
98	WANE-TV	LIC	DT	31	1000.0	41.093889	-85.180000	128.27
99	WISE-TV	LIC	DT	18	320.0	41.102194	-85.184694	128.89
100	WPTA	LIC	DT	24	335.0	41.102194	-85.184694	128.89
101	WEIJ-LD	LIC	LD	38	15.0	41.103611	-85.191111	129.45
102	WFWA	LIC	DT	40	152.8	41.103611	-85.191111	129.45
103	WFFT-TV	LIC	DT	36	1000.0	41.109167	-85.195000	129.93
104	WIVX-LD	LIC	LD	51	1.1	40.632994	-82.196231	129.23
105	W29EG-D	CP	LD	29	15.0	39.952222	-82.506944	137.98
106	WWHO	LIC	DT	46	1000.0	39.588889	-83.112222	142.33

Table A: Off-Air TV Stations within 150 Kilometers of Project Area

Date: May 17, 2016

Type of Notification: New

Project: Hog Creek Wind

County: Hardin

State: Ohio

Project Sponsor: Hog Creek Wind Project, LLC– Frank O'Brien <fobrien@comsearch.com>

Turbine Description:

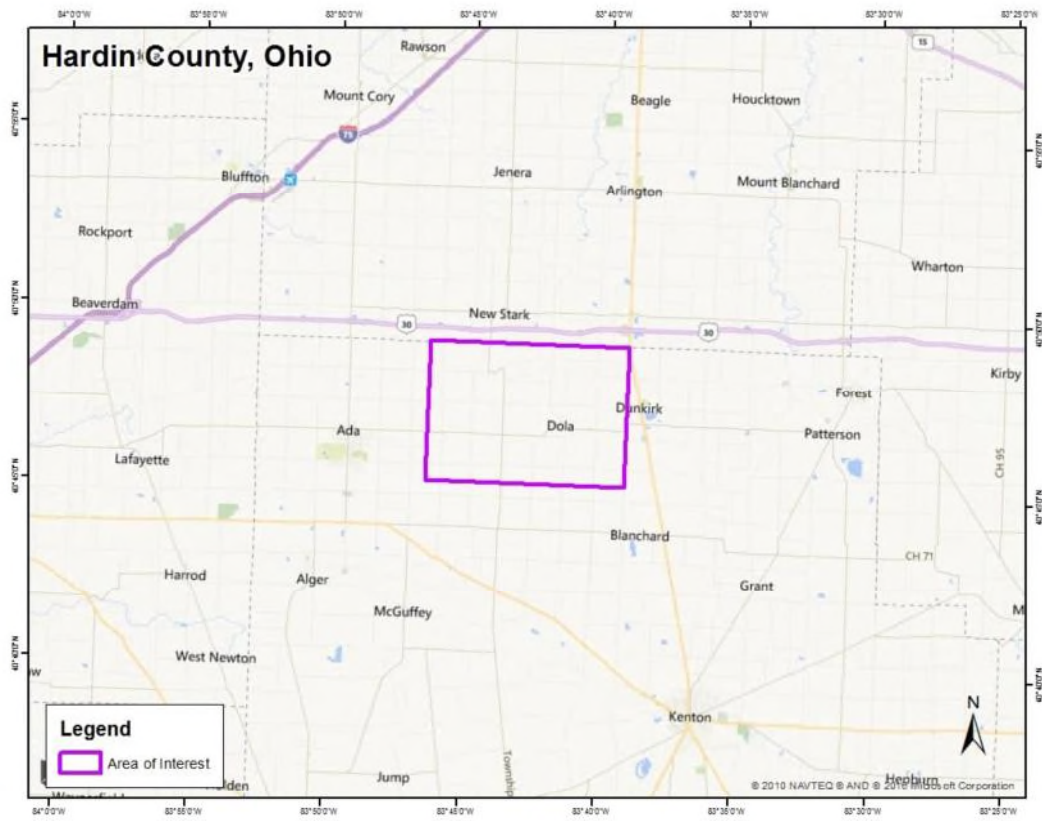
Number of Turbines: N/A
Turbine Hub Height AGL (meters): 95
Turbine Blade Diameter (meters): 126
Maximum Blade Tip Height AGL (meters): 158

Turbine Locations: N/A

Wind Farm Boundary Points:

Identifier	Latitude	Longitude
Pt1	40:49:08.870	083:39:07.022
Pt2	40:49:08.870	083:46:31.364
Pt3	40:45:16.554	083:46:31.364
Pt4	40:45:16.554	083:39:07.022

Maps:



CASE NO. 16-1422-EL-BGA
and
CASE NO. 16-1423-EL-BGA

JOINT EXHIBIT 9
DOD PRELIMINARY SCREENING TOOL



DoD Preliminary Screening Tool

DoD Preliminary Screening Tool - Desk Reference Guide V. 2014.2.0

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100% optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
 - Air Defense and Homeland Security radars(Long Range Radar)
 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Geometry Type:

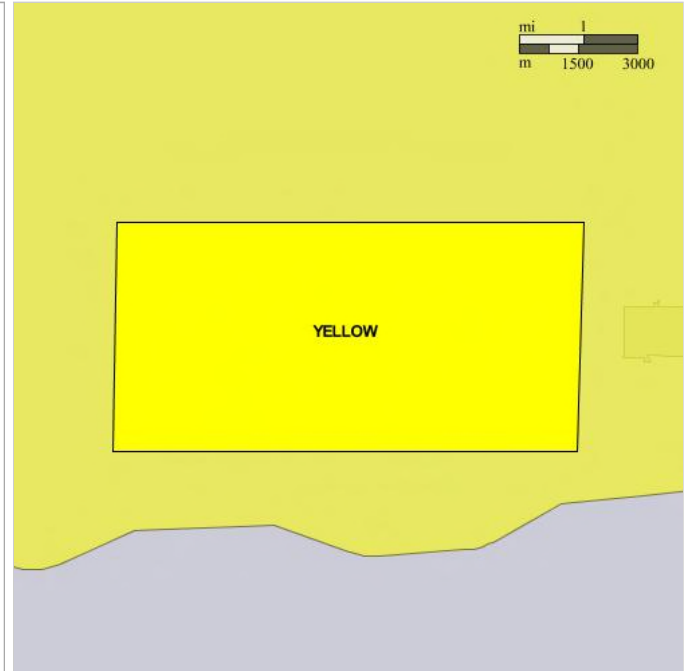
Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	<input type="text" value="40"/>	<input type="text" value="48"/>	<input type="text" value="46.32"/>	<input type="text" value="N"/>	<input type="text" value="83"/>	<input type="text" value="45"/>	<input type="text" value="54.99"/>	<input type="text" value="W"/>
2	<input type="text" value="40"/>	<input type="text" value="48"/>	<input type="text" value="45.82"/>	<input type="text" value="N"/>	<input type="text" value="83"/>	<input type="text" value="39"/>	<input type="text" value="38.97"/>	<input type="text" value="W"/>
3	<input type="text" value="40"/>	<input type="text" value="45"/>	<input type="text" value="41.79"/>	<input type="text" value="N"/>	<input type="text" value="83"/>	<input type="text" value="39"/>	<input type="text" value="43.83"/>	<input type="text" value="W"/>
4	<input type="text" value="40"/>	<input type="text" value="45"/>	<input type="text" value="41.27"/>	<input type="text" value="N"/>	<input type="text" value="83"/>	<input type="text" value="45"/>	<input type="text" value="57.82"/>	<input type="text" value="W"/>

Horizontal Datum:

Map Legend:

- Green:** No anticipated impact to Air Defense and Homeland Security radars. Aeronautical study required.
- Yellow:** Impact likely to Air Defense and Homeland Security radars. Aeronautical study required.
- Red:** Impact highly likely to Air Defense and Homeland Security radars. Aeronautical study required.

Note: Map colors will show as depicted in the map legend when using the 'Polygon' Geometry Type; map colors will be subdued when using the 'Single Point' Geometry Type.





DoD Preliminary Screening Tool

DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100% optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
 - Air Defense and Homeland Security radars(Long Range Radar)
 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Geometry Type:

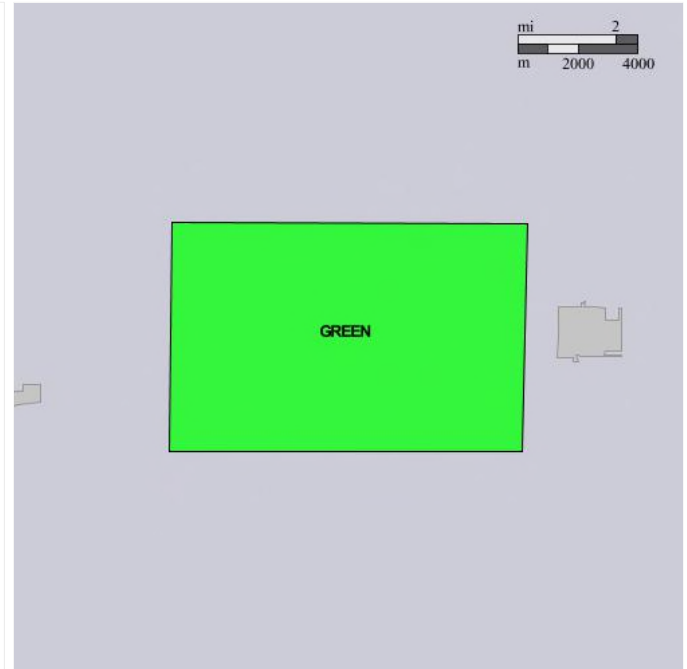
Point	Latitude				Longitude			
	Deg	Min	Sec	Dir	Deg	Min	Sec	Dir
1	40	48	46.32	<input type="text" value="N"/>	83	45	54.99	<input type="text" value="W"/>
2	40	48	45.82	<input type="text" value="N"/>	83	39	38.97	<input type="text" value="W"/>
3	40	45	41.79	<input type="text" value="N"/>	83	39	43.83	<input type="text" value="W"/>
4	40	45	41.27	<input type="text" value="N"/>	83	45	57.82	<input type="text" value="W"/>

Horizontal Datum:

Map Legend:

- Green: No Impact Zone.** Impacts not likely. NOAA will not perform a detailed analysis, but would still like to know about the project.
- Dk Green: Notification Zone.** Some impacts possible. Consultation with NOAA is optional, but NOAA would still like to know about the project.
- Yellow: Consultation Zone.** Significant impacts possible. NOAA requests consultation to discuss project details and to perform a detailed impact analysis. NOAA may request mitigation of significant impacts.
- Orange: Mitigation Zone.** Significant impacts likely. NOAA will likely request mitigation if a detailed analysis indicates that the project will cause significant impacts.
- Red: No-Build Zone.** Severe impacts likely. NOAA requests developers not build wind turbines within 3 km of the NEXRAD. Detailed impact analysis required.

Note: Map colors will show as depicted in the map legend when using the 'Polygon' Geometry Type; map colors will be subdued when using the 'Single Point' Geometry Type.



Because the NEXRAD can detect wind turbines occasionally at great distance, NOAA would like to know the location of all wind farm projects so that corrupted radar data can be flagged. Send project information directly to NOAA at wind.energy.matters@noaa.gov or through the National Telecommunications & Information Administration (NTIA) in the Dept. of Commerce. NOAA protects all wind project information as proprietary and sensitive.

DoD Preliminary Screening Tool

DoD Preliminary Screening Tool - Desk Reference Guide V_2014.2.0

Disclaimer:

- The DoD Preliminary Screening Tool enables developers to obtain a preliminary review of potential impacts to Long-Range and Weather Radar(s), Military Training Route(s) and Special Airspace(s) prior to official OE/AAA filing. This tool will produce a map relating the structure to any of the DoD/DHS and NOAA resources listed above. The use of this tool is **100% optional** and will provide a first level of feedback and single points of contact within the DoD/DHS and NOAA to discuss impacts/mitigation efforts on the military training mission and NEXRAD Weather Radars. **The use of this tool does not in any way replace the official FAA processes/procedures.**

Instructions:

- Select a screening type for your initial evaluation. Currently the system supports pre-screening on:
 - Air Defense and Homeland Security radars(Long Range Radar)
 - Weather Surveillance Radar-1988 Doppler radars(NEXRAD)
 - Military Operations
- Enter either a single point or a polygon and click submit to generate a long range radar analysis map.
- Military Operations is only available for a single point.
- At least three points are required for a polygon, with an optional fourth point.
- The largest polygon allowed has a maximum perimeter of 100 miles.

Screening Type: Military Operations Geometry Type: Single Point

Point	Latitude			Dir	Longitude			Dir
	Deg	Min	Sec		Deg	Min	Sec	
1	40	47	08.51	N	83	42	26.95	W

Horizontal Datum: NAD83

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact Dr. Thomas (Thom) H. Rennie at the USAF Regional Environmental Coordinator at (214)767-4678 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USN Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact LTC Owen B. Castlemain at the USA Regional Environmental Coordinator at (817) 222-5921 for confirmation and documentation.

The preliminary review of your proposal does not return any likely impacts to military airspace. Please contact the US Navy Representative, FAA Central Service Area at the USMC Regional Environmental Coordinator at (817) 222-5930 for confirmation and documentation.

This is a preliminary review of your proposal and does not preclude official FAA processes.

Your search data is not retained and the privacy of all your searches is assured.



Any questions interpreting the map, please email Steve Sample with your question/s and phone number at steven.sample@pentagon.af.mil

CASE NO. 16-1422-EL-BGA
and
CASE NO. 16-1423-EL-BGA

JOINT EXHIBIT 10
OBSTRUCTION EVALUATION ANALYSIS

Obstruction Evaluation Analysis

Hog Creek Wind Project

Hardin County, Ohio

Prepared on behalf of RES Americas

April 22, 2016

Capitol Airspace Group
capitolairspace.com
(703) 256-2485



Summary

Capitol Airspace conducted an airspace and obstruction evaluation analysis for the Hog Creek wind project in Hardin County, Ohio. The purpose for this analysis was to identify obstacle clearance surfaces established by the Federal Aviation Administration (FAA) that could limit 499 or 657 foot above ground level (AGL) wind turbines. At the time of this analysis, individual wind turbine locations had not been provided. This analysis assessed height constraints overlying an approximately 29 square mile study area to aid in identifying optimal wind turbine locations.

The FAA requires that all structures exceeding 200 feet AGL be submitted to the FAA so that an aeronautical study can be conducted. The FAA's objective in conducting aeronautical studies is to ensure that proposed structures do not have an effect on the safety of air navigation and the efficient utilization of navigable airspace by aircraft. The end result of an aeronautical study is the issuance of a determination of 'hazard' or 'no hazard' that can be used by the proponent to obtain necessary local construction permits. It should be noted that the FAA has no control over land use in the United States and cannot enforce the findings of its studies.

Height constraints overlying the Hog Creek wind project range from 1,500 to 1,949 feet above mean sea level (AMSL) and are associated with instrument approach procedures and minimum vectoring altitude sectors. Proposed wind turbines that exceed these surfaces would require an increase to instrument approach procedure minimum altitudes and minimum vectoring altitudes. If the FAA determines one or the sum of these impacts to constitute a substantial adverse effect, it could be used as the basis for determinations of hazard. USGS elevation data indicates that these surfaces should not limit 499 foot AGL wind turbines within the defined study area. However, USGS elevation data indicates that instrument approach procedure obstacle clearance surfaces could limit 657 foot AGL wind turbines along the northern edge and southeastern quadrant of the study area.

At 657 feet AGL, wind turbines located in the northern half of the Hog Creek wind project would be within radar line of sight of a radar surveillance system. Impact on radar systems can result in the issuance of determinations of hazard regardless of the lack of impact on the other surfaces described in this report.

This analysis did not consider electromagnetic interference on communications or navigation systems.

Capitol Airspace applies FAA defined rules and regulations applicable to obstacle evaluation, instrument procedures assessment and visual flight rules (VFR) operations to the best of its ability and with the intent to provide the most accurate representation of limiting airspace surfaces as possible. Capitol Airspace maintains datasets obtained from the FAA which are updated on a 56 day cycle. The results of this analysis/map are based on the most recent data available as of the date of this report. Limiting airspace surfaces depicted in this report are subject to change due to FAA rule changes and regular procedure amendments. Therefore, it is of the utmost importance to obtain FAA determinations of no hazard prior to making substantial financial investments in this project.



Methodology

Capitol Airspace studied the proposed project based upon location information provided by RES Americas. Using this information, Capitol Airspace generated graphical overlays to determine proximity to airports (Figure 1), published instrument procedures, enroute airways, civil minimum vectoring altitude charts, special use airspace, and military training routes.

Capitol Airspace evaluated all 14 CFR Part 77 imaginary surfaces, published instrument approach and departure procedures, visual flight rules operations, civil minimum vectoring altitudes, and enroute airways. All formulas, headings, altitudes, bearings and coordinates used during this study were derived from the following documents and data sources:

- 14 CFR Part 77 Safe, Efficient Use, and Preservation of the Navigable Airspace
- FAA Order 7400.2K Procedures for Handling Airspace Matters
- FAA Order 8260.3C United States Standard for Terminal Instrument Approach Procedures
- FAA Order 8260.58 United States Standard for Performance Based Navigational (PBN) Instrument Procedure Design
- United States Government Flight Information Publication, US Terminal Procedures
- National Airspace System Resource Aeronautical Data

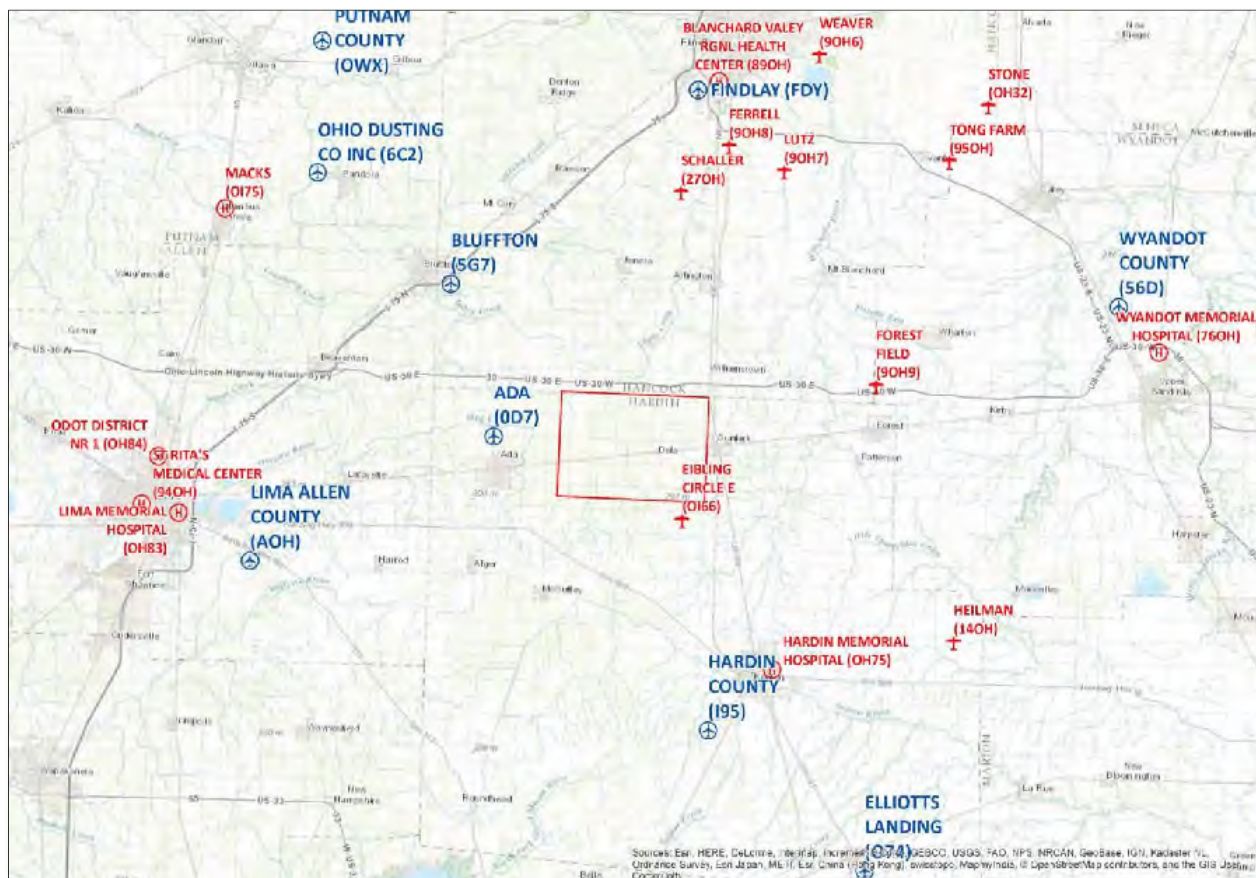


Figure 1: Public-use (blue) and private-use (red) airports in proximity to the Hog Creek wind project



Study Findings

14 CFR Part 77 Imaginary Surfaces

The FAA uses level and sloping imaginary surfaces to determine if a proposed structure is an obstruction to air navigation. Structures that are identified as obstructions are then subject to a full aeronautical study and increased scrutiny. Structures that are not identified as obstructions are, in most cases, automatically issued favorable determinations.

The Bluffton Airport (5G7) 14 CFR Part 77.17(a)(2) imaginary surface (dashed blue, [Figure 2](#)) overlies the Hog Creek wind project. At 499 feet AGL, proposed wind turbines would exceed this surface and be identified as an obstruction. At 657 feet AGL, proposed wind turbines would exceed 14 CFR Part 77.17(a)(1) - a height of 499 feet AGL at the site of the object - and would automatically be identified as obstructions regardless of their location.

Exceeding a Part 77 imaginary surface does not automatically result in the issuance of a determination of hazard. Proposed structures must have airspace impacts that constitute a substantial adverse effect in order to warrant the issuance of determinations of hazard.

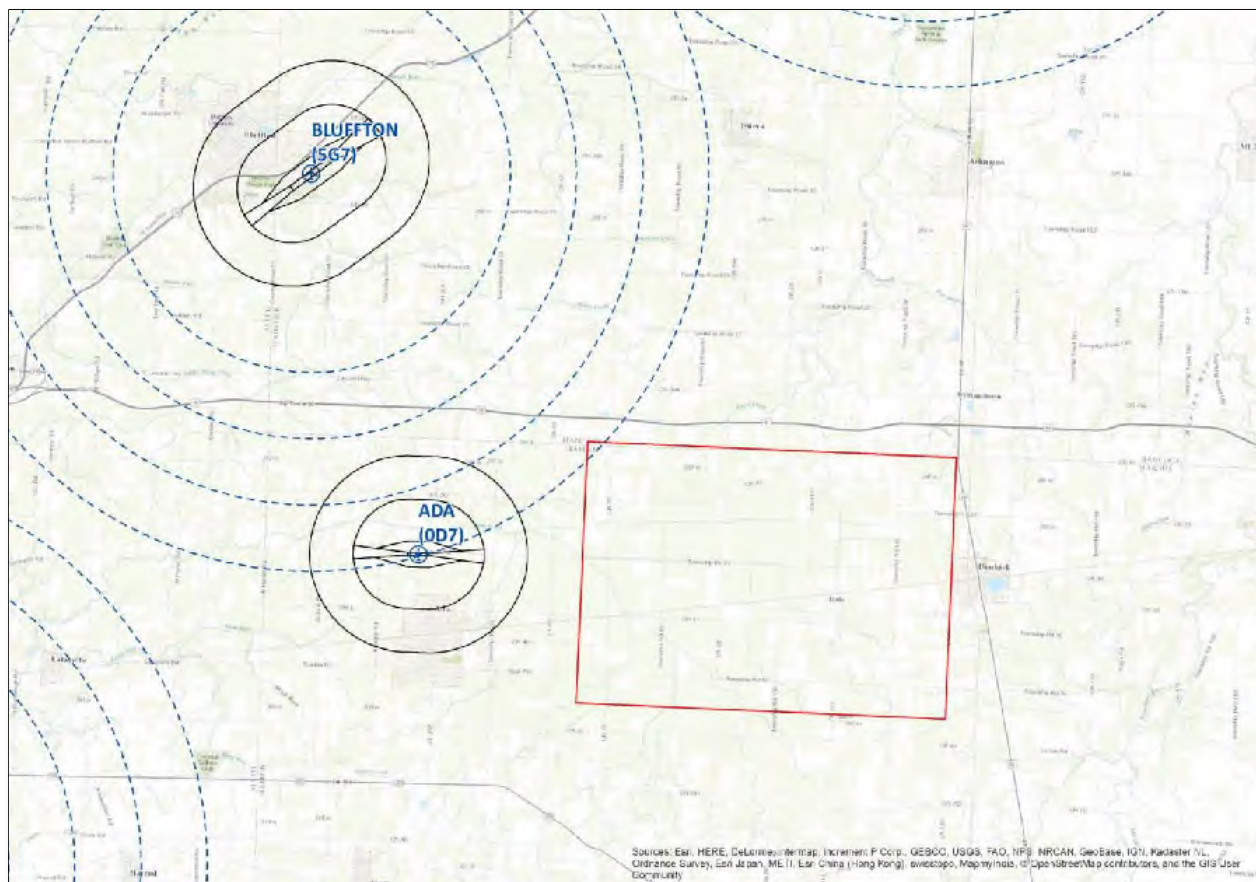


Figure 2: 14 CFR Part 77.17(a)(2) (dashed blue) and 77.19 (solid black) imaginary surfaces in proximity to the Hog Creek wind project



Visual Flight Rules (VFR) Traffic Pattern Airspace

VFR traffic pattern airspace is used by pilots operating during visual meteorological conditions. The airspace dimensions are based upon the category of aircraft which, in turn, is based upon the approach speed of the aircraft. The obstacle clearance surface for these traffic patterns is tied directly to the height of imaginary surfaces defined by 14 CFR Part 77.17(a)(2) and 77.19 as applied to a visual runway.

Ada Airport (0D7) Runway 09/27 VFR traffic pattern airspace (dashed gray, [Figure 3](#)) overlies the Hog Creek wind project. However, considering the runway's physical characteristics (turf surface, 1,955 x 111 feet) it is not likely that the FAA would apply any larger than Category B VFR traffic pattern airspace (solid blue, [Figure 3](#)). As a result, VFR traffic pattern airspace should not limit wind development within the defined study area.

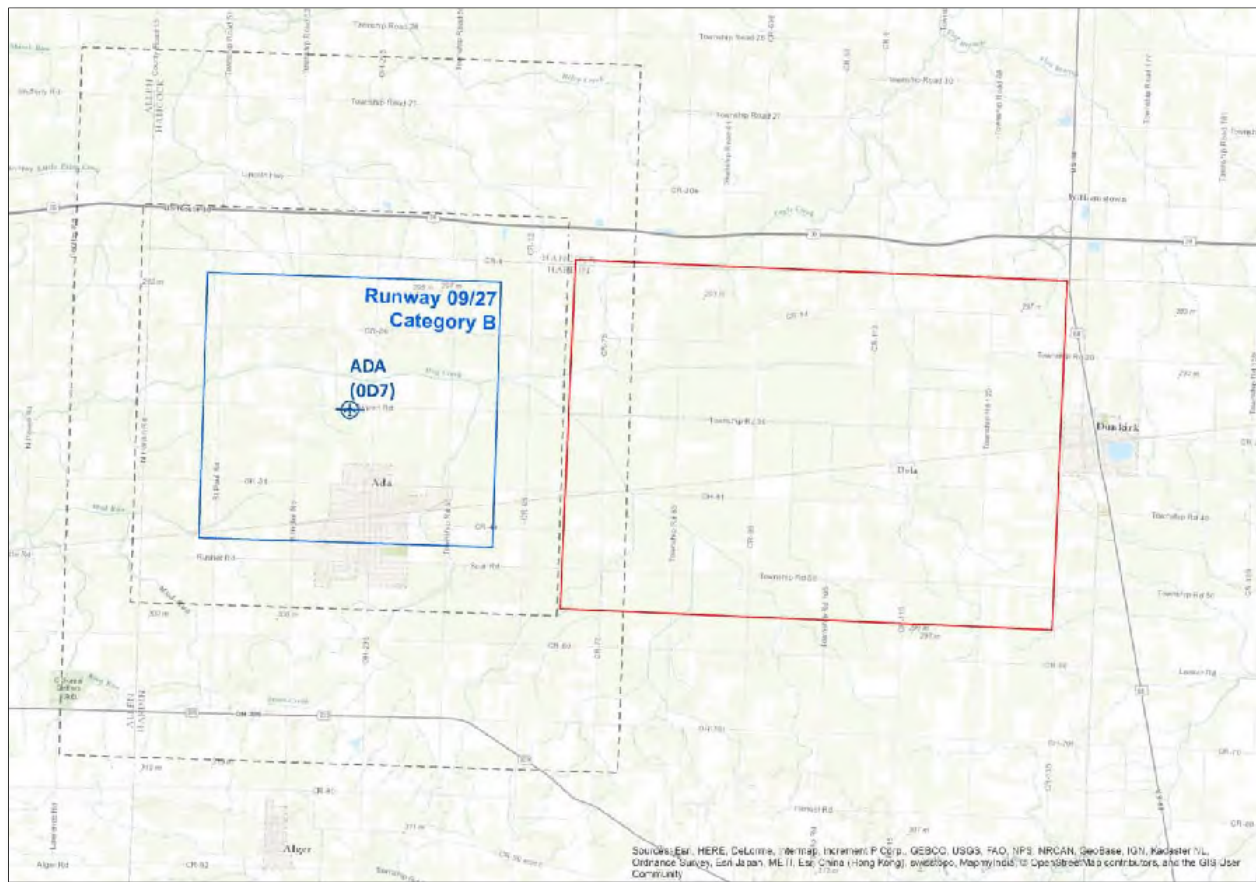


Figure 3: Ada Airport (0D7) VFR traffic pattern airspace and the Hog Creek wind project



Visual Flight Rules (VFR) Routes

During periods of marginal Visual Meteorological Conditions (VMC) – low cloud ceilings and one statute mile visibility – pilots often operate below the floor of controlled airspace. Operating under these weather conditions requires pilots to remain within one statute mile of recognizable land marks such as roads, rivers, and railroad tracks. The FAA protects for known and regularly used VFR routes by limiting structure heights within two statute miles of these routes to no greater than 14 CFR Part 77.17(a)(1) – height of 499 feet AGL at the site of the object.

The Hog Creek wind project is located in proximity to multiple highways, transmission lines, and railroad tracks that may be used as a VFR routes ([Figure 4](#)). However, operational data describing the usage of these potential routes is not available. If the FAA determines that these potential VFR routes are flown regularly, it could limit wind development in excess of 499 feet AGL and within two statute miles of these routes (hatched orange, [Figure 4](#)).

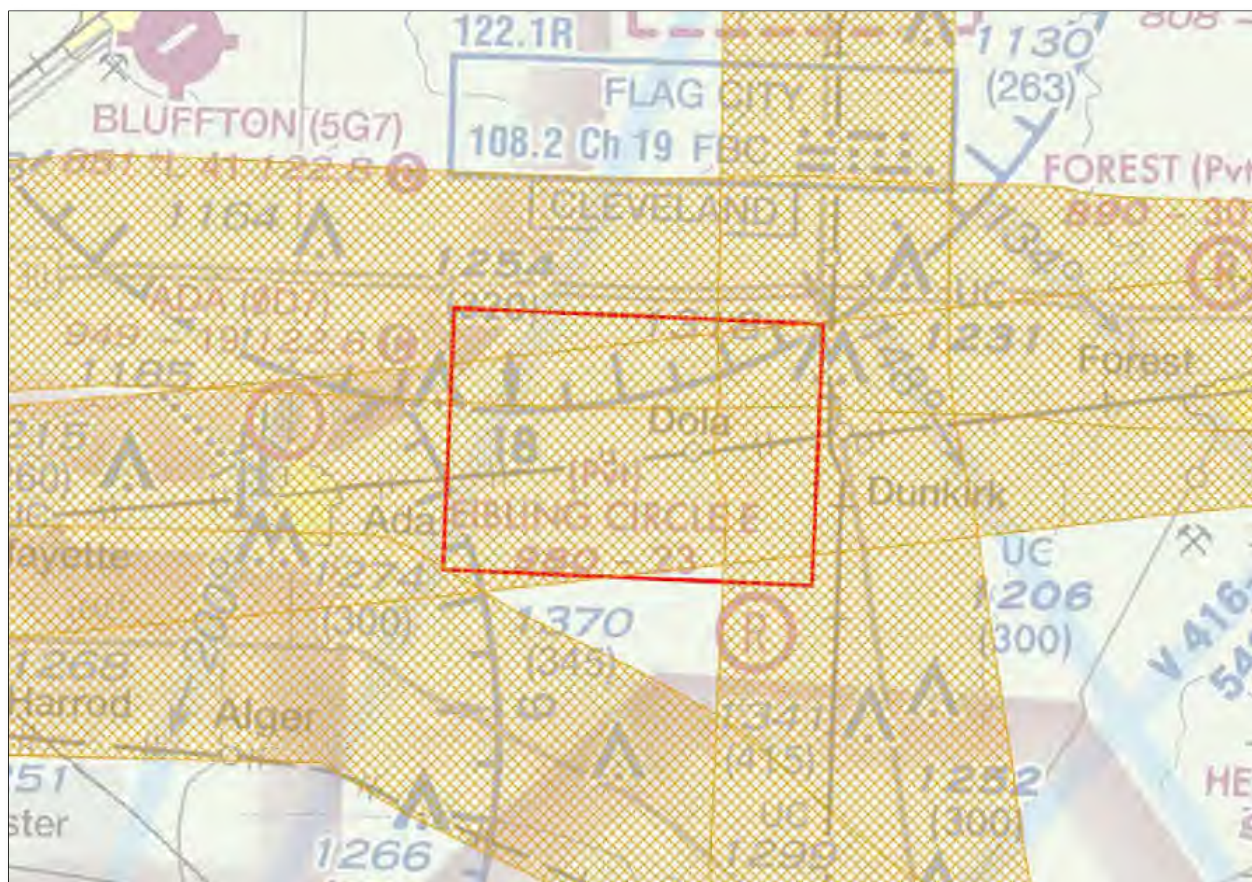


Figure 4: Potential VFR routes in proximity to the Hog Creek wind project





Instrument Approaches

Pilots operating during periods of reduced visibility and low cloud ceilings rely on terrestrial and satellite based navigational aids (NAVAIDS) in order to navigate from one point to another and to locate runways. The FAA publishes instrument approach procedures that provide course guidance to on-board avionics that aid the pilot in locating the runway. Capitol Airspace assessed a total of 20 published instrument approach procedures at seven airports in proximity to the Hog Creek wind project.

The Findlay Airport (FDY) VOR Approach to Runway 07 ([Figure 6](#)) overlies the study area. The procedure turn completion altitude is 2,500 feet AMSL; the associated obstacle clearance surface is 1,500 feet AMSL and is the lowest surface overlying the northwestern corner of the Hog Creek wind project.

The Findlay Airport RNAV (GPS) Approach to Runway 18 and RNAV (GPS) Approach to Runway 36 ([Figure 7](#)) overlie the study area. The minimum altitude published for the segments overlying the study area is 2,600 feet AMSL. The associated obstacle clearance surfaces are 1,600 feet AMSL and are the lowest surfaces overlying the majority of the study Hog Creek wind project.

The Lima Allen County Airport (AOH) ILS or Localizer Approach to Runway 28 overlies the study area. The minimum altitudes published for the segments overlying the study area are 2,200 and 2,700 feet AMSL. The associated obstacle clearance surfaces are 1,700 feet AMSL and are the lowest surfaces overlying the western edge of the Hog Creek wind project.

Proposed wind turbines that exceed these surfaces would require an increase to instrument approach procedure minimum altitudes. If the FAA determines this impact to constitute a substantial adverse effect it could be used as the basis for determinations of hazard. USGS elevation data indicates that these surfaces should not limit 499 foot AGL wind turbines within the defined study area. However, USGS elevation data indicates that Findlay Airport approach procedures could limit 657 foot AGL wind turbines along the northern edge and southeastern quadrant of the study area (red, [Figure 6](#) & [Figure 7](#)).

Instrument procedures assessed:

Wyandot County (56D)

VOR-A Circling Approach

Bluffton (5G7)

RNAV (GPS) Approach to Runway 23

VOR Approach to Runway 23

Lima Allen County (AOH)

ILS or LOC Approach to Runway 28

RNAV (GPS) Approach to Runway 10

RNAV (GPS) Approach to Runway 28

Bellefontaine Regional (EDJ)

RNAV (GPS) Approach to Runway 07

RNAV (GPS) Approach to Runway 25

VOR/DME Approach to Runway 07

VOR/DME Approach to Runway 25

Findlay (FDY)

RNAV (GPS) Approach to Runway 07

RNAV (GPS) Approach to Runway 18

RNAV (GPS) Approach to Runway 25

RNAV (GPS) Approach to Runway 36

VOR Approach to Runway 07

Hardin County (I95)

RNAV (GPS) Approach to Runway 04

RNAV (GPS) Approach to Runway 22

Putnam County (OWX)

RNAV (GPS) Approach to Runway 09

RNAV (GPS) Approach to Runway 27

VOR Approach to Runway 27

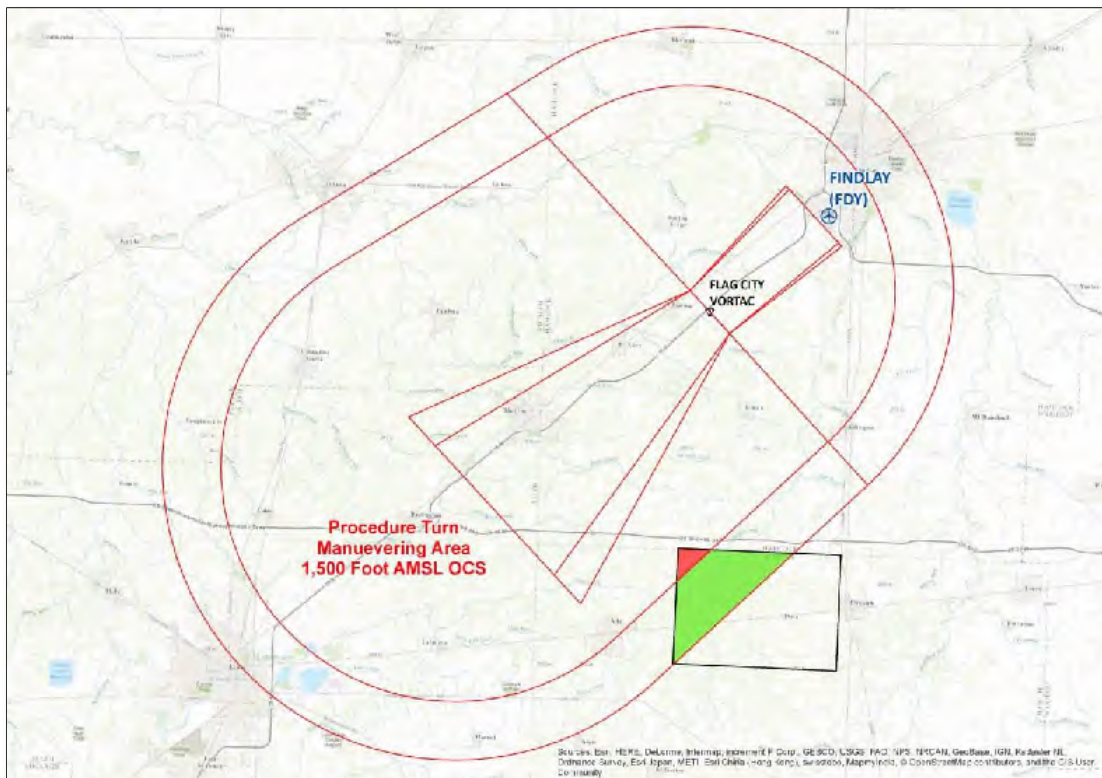


Figure 6: Findlay Airport (FDY) VOR Approach to Runway 07

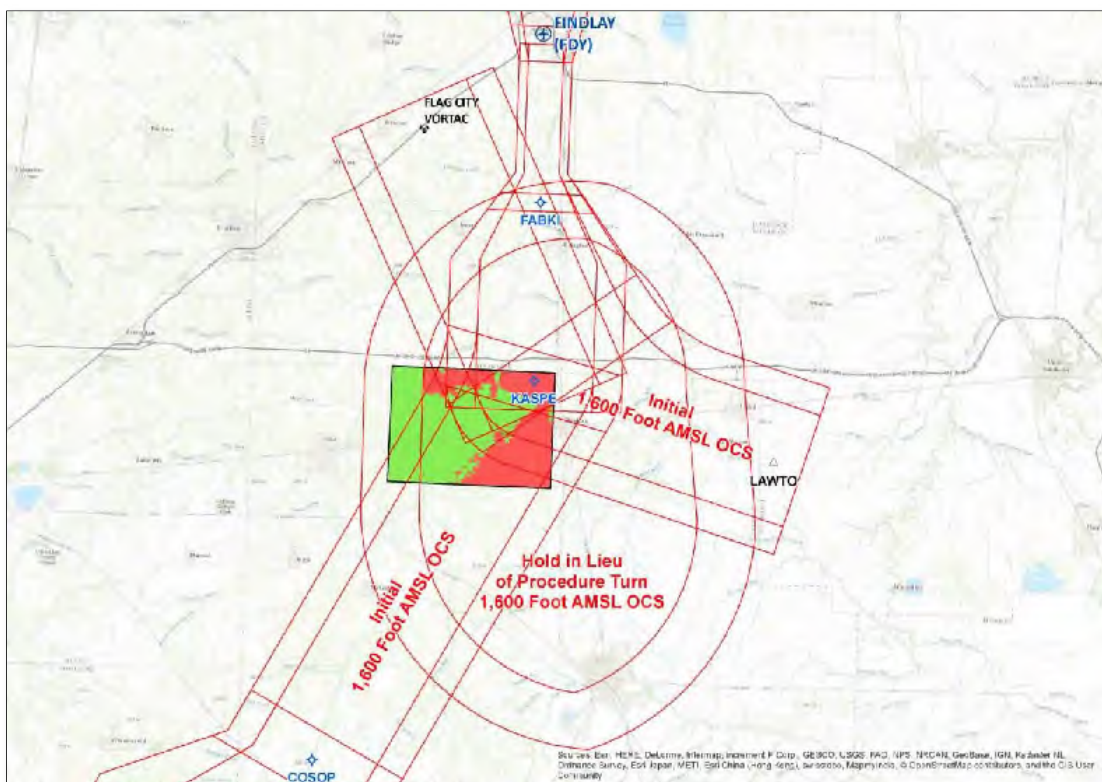


Figure 7: Findlay Airport (FDY) RNAV (GPS) Approach to Runway 36



Enroute Airways

Enroute airways provide pilots a means of navigation when flying from airport to airport and are defined by radials between VHF omni-directional ranges (VORs). The FAA publishes minimum altitudes for airways to ensure clearance from obstacles and terrain. The FAA requires that each airway have a minimum of 1,000 feet of obstacle clearance in non-mountainous areas and normally 2,000 feet in mountainous areas.

Multiple low altitude enroute airways overlie the Hog Creek wind project ([Figure 8](#)). However, their associated obstacle clearance surfaces are in excess of other lower surfaces and should not limit 499 or 657 foot AGL wind turbines within the defined study area.

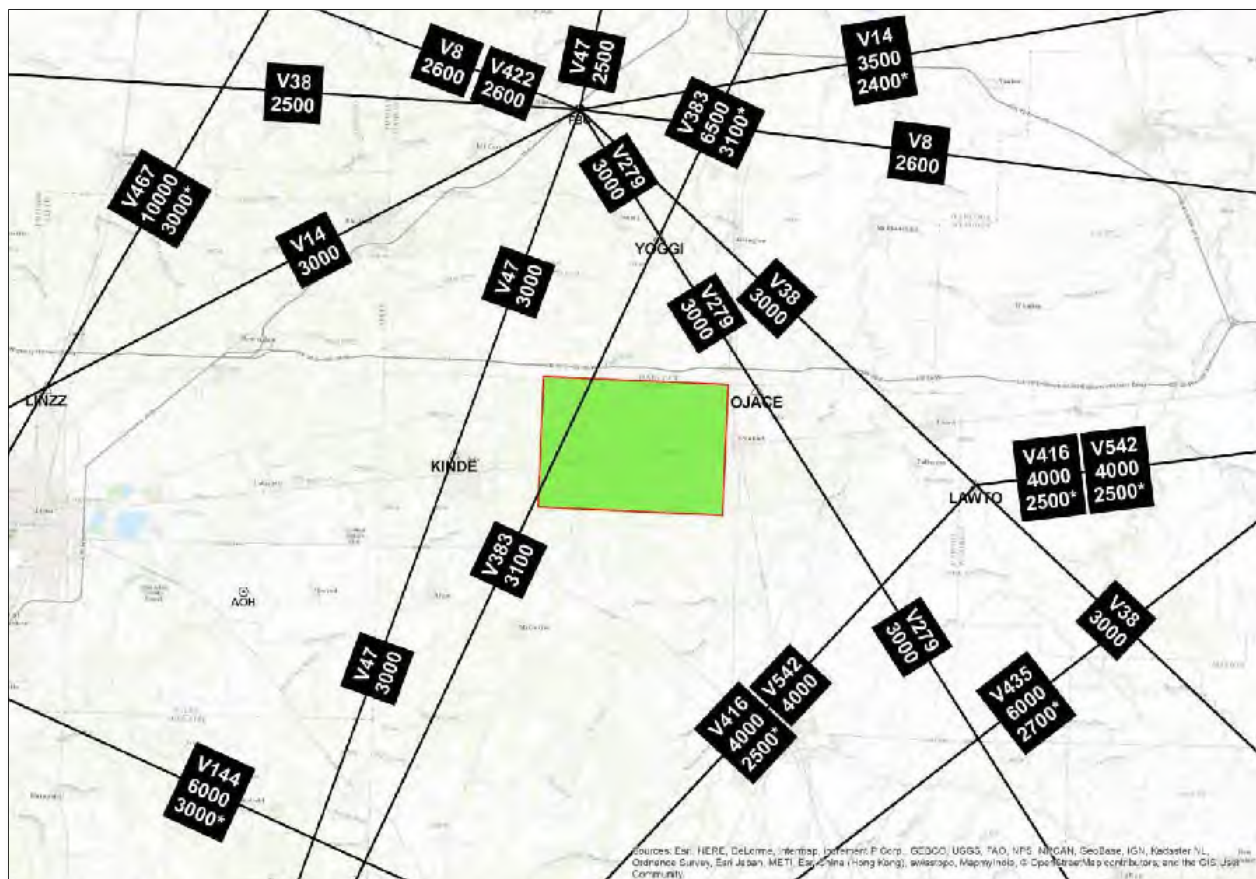


Figure 8: Low altitude enroute airways and the Hog Creek wind project



Minimum Vectoring/IFR Altitudes

The FAA has created minimum vectoring altitude and minimum instrument flight rules (IFR) altitude charts that define sectors with the lowest altitudes at which air traffic controllers can issue radar vectors aircraft based on obstacle clearance. The FAA requires that sectors have a minimum of 1,000 feet of obstacle clearance in non-mountainous areas and normally 2,000 feet in mountainous areas.

Columbus (CMH) Terminal Radar Approach Control (TRACON) minimum vectoring altitude Sector A overlies the entire Hog Creek wind project (Figure 9). The Sector A minimum vectoring altitude is 2,900 feet AMSL. The associated obstacle clearance surface is 1,949 feet AMSL and is the lowest height constraint overlying a small northwestern section of the study area.

Proposed wind turbines that exceed this surface would require an increase to minimum vectoring altitudes. If the FAA determines this impact to affect a significant volume of operations, it could be used as the basis for determinations of hazard. However, USGS elevation data indicates that minimum vectoring altitude obstacle clearance surfaces should not limit 499 or 657 foot AGL wind turbines within the defined study area.

At the time of this analysis, the Cleveland (ZOB) Air Route Traffic Control Center (ARTCC) minimum IFR altitude chart was not publicly available and could not be assessed. It is possible that the associated obstacle clearance surfaces could be lower than the other airspace surfaces described in this report.

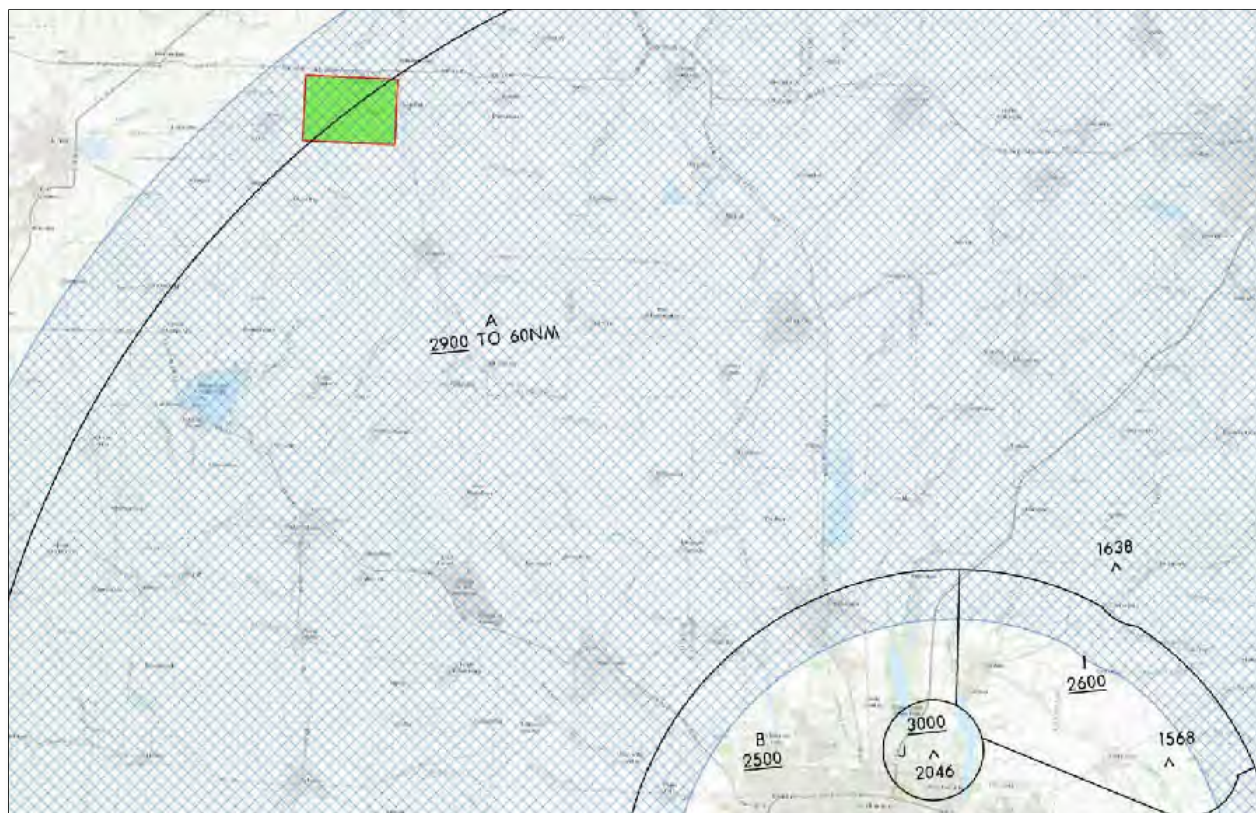


Figure 9: Columbus (CMH) TRACON minimum vectoring altitude sectors (black) with Sector A obstacle evaluation area (hatched blue)



Military Airspace and Training Routes

Since the FAA does not protect for military airspace or training routes, impact on their operations cannot result in a determination of hazard. However, the FAA will notify the military of proposed wind turbines located within these segments of airspace. If the planned development area is located on federal land, impact on military airspace or training routes may result in the denial of permits by the Bureau of Land Management.

Military airspace and training routes do not overlie the study area. Therefore, proximity to these segments of airspace should not result in military objections to proposed wind development.

Radar Surveillance Systems

Various radar systems support air traffic control operations as well as weather detection. Proposed wind turbines that are within radar line of sight (RLoS) are “visible” to radars and could create unwanted clutter resulting in false radar returns and a decrease in radar sensitivity. If the FAA determines that these radar effects would impact air traffic control operations, the FAA may conduct additional analysis and convene a Safety Risk Management Panel (SRMP) to identify potential safety hazards and the associated risks to the National Airspace System. The additional analysis and SRMP may add up to six months to the FAA’s review of proposed wind turbines.

Capitol Airspace assessed the following radar surveillance systems:

- Toledo Airport Surveillance Radar Model-9 (ASR-9)
- Dayton ASR-9
- Columbus ASR-9
- Mansfield ASR-8
- London Common Air Route Surveillance Radar (CARSR)

The preliminary RLoS analysis results indicate that 499 foot AGL wind turbines would not be visible to any radar systems. However, 657 foot AGL wind turbines located in the northern half of the Hog Creek wind project would be visible to the Toledo ASR-9 (orange, [Figure 10](#)).

As a result of these findings, Capitol Airspace recommends that a Radar Effects and Mitigation Study be conducted for the Toledo ASR-9. This study would provide, but is not limited to, a detailed RLoS analysis, identification of potential radar effects, and would consider possible technical mitigation options.

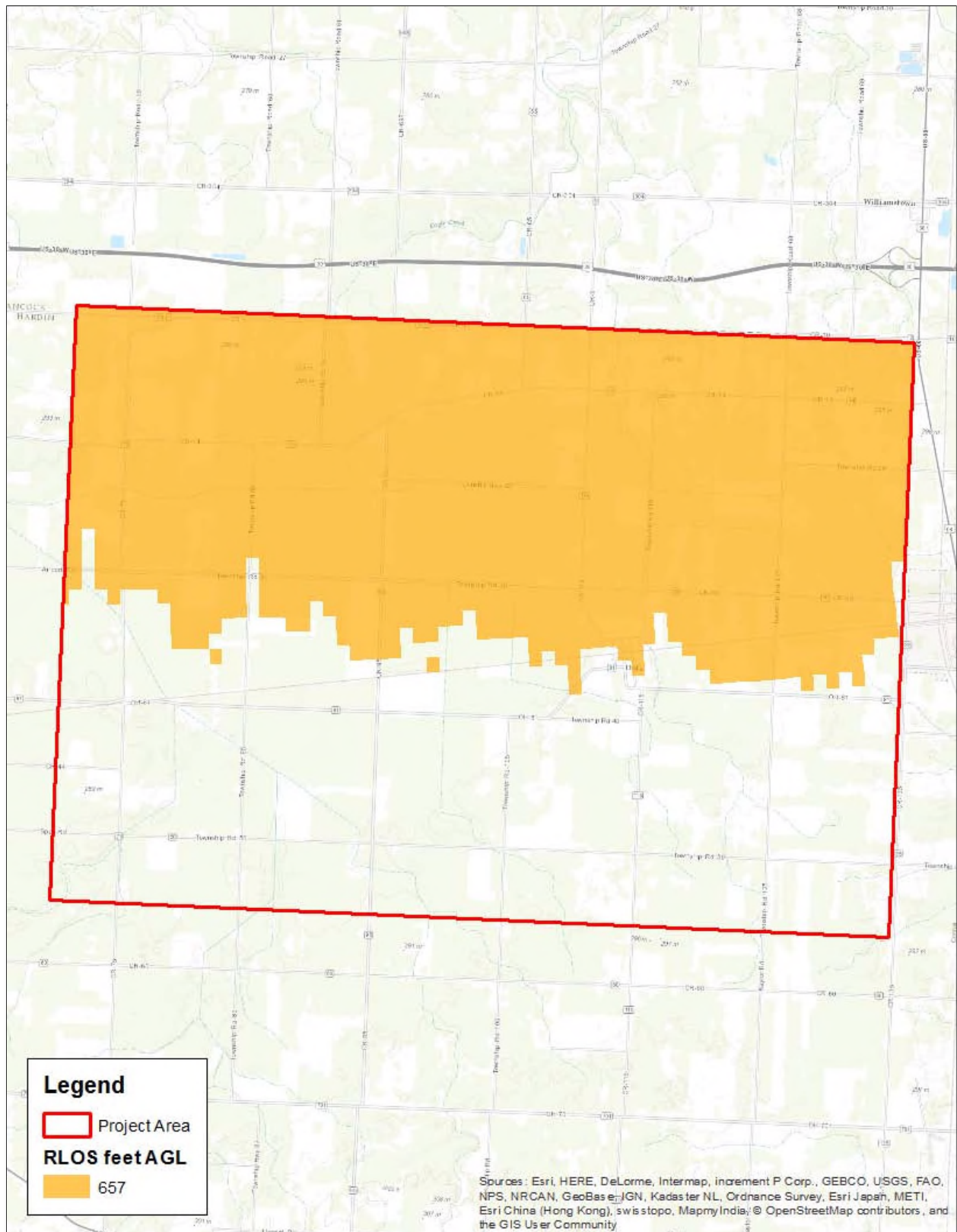


Figure 10: Toledo ASR-9 radar line of sight results for 657 foot AGL wind turbines



Conclusion

At 499 feet AGL, proposed wind turbines in the northwestern corner of the study area would exceed the Bluffton Airport 14 CFR Part 77.17(a)(2) imaginary surface ([Figure 2](#)) and be identified as obstructions. At 657 feet AGL, proposed wind turbines would exceed 14 CFR Part 77.17(a)(1) - a height of 499 feet AGL at the site of the object - and would automatically be identified as obstructions regardless of their location. However, heights in excess of these surfaces are feasible provided proposed wind turbines do not exceed FAA obstacle clearance surfaces.

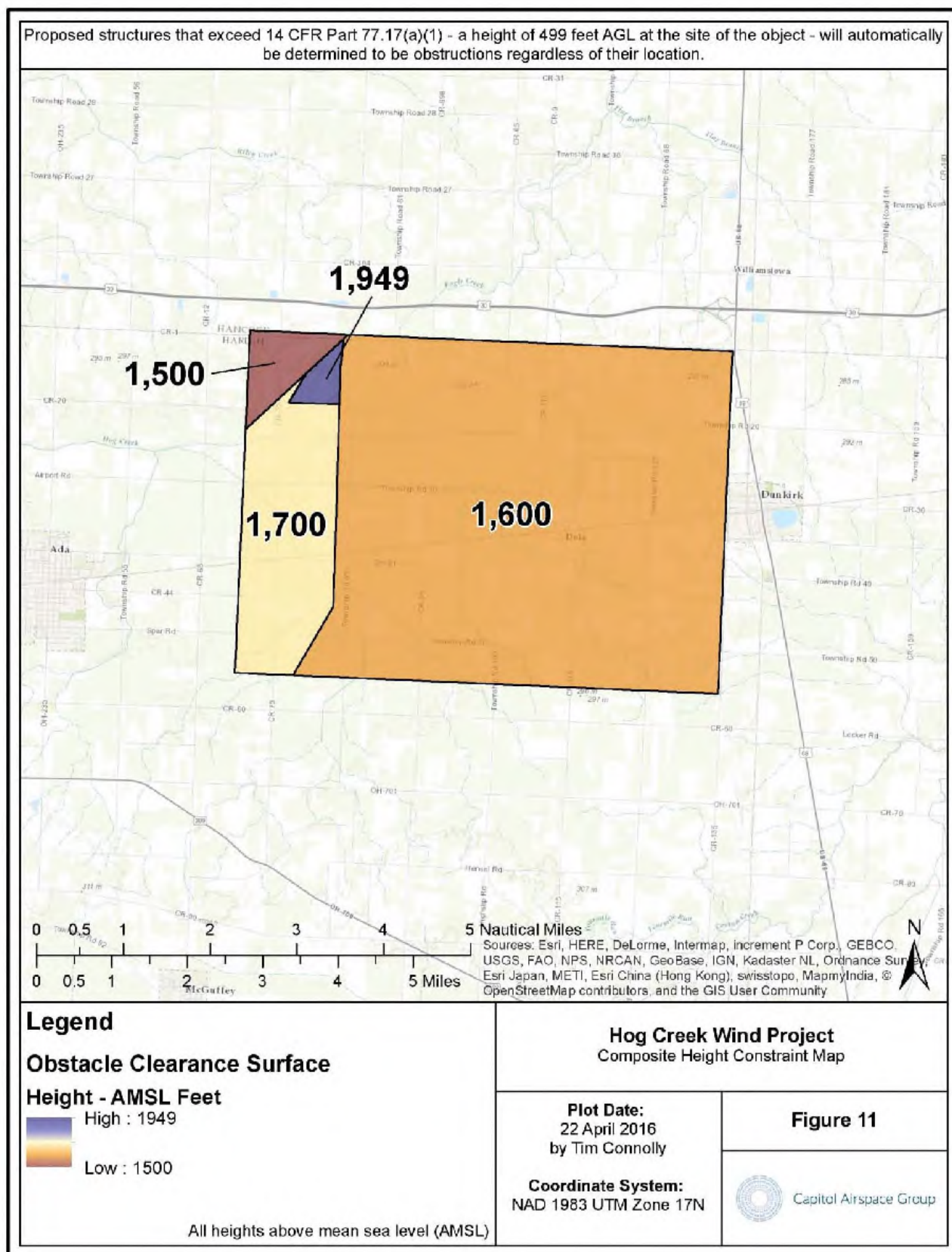
Obstacle clearance surfaces overlying the Hog Creek wind project range from 1,500 to 1,949 feet AMSL ([Figure 11](#)) and are associated with Findlay Airport ([Figure 6](#) & [Figure 7](#)) and Lima Allen County Airport instrument approach procedures as well as Columbus (CMH) TRACON minimum vectoring altitude sectors ([Figure 9](#)).

Proposed wind turbines that exceed these surfaces would require an increase to instrument approach procedure minimum altitudes and/or minimum vectoring altitudes. If the FAA determines one or the sum of these impacts to constitute a substantial adverse effect it could be used as the basis for determinations of hazard. USGS elevation data indicates that these surfaces should not limit 499 foot AGL wind turbines within the defined study area ([Figure 12](#)). However, USGS elevation data indicates that Findlay Airport instrument approach procedure obstacle clearance surfaces could limit 657 foot AGL wind turbines along the northern edge and southeastern quadrant of the study area ([Figure 12](#)).

At 657 feet AGL, wind turbines located in the northern half ([Figure 10](#)) of the Hog Creek wind project would be visible to the Toledo ASR-9. Proposed wind turbines that create unwanted clutter resulting in false radar returns and a decrease in radar sensitivity could impact air traffic control operations. The FAA may conduct additional analysis and convene a Safety Risk Management Panel (SRMP) to identify potential safety hazards and the associated risks to the National Airspace System. The additional analysis and SRMP may add up to six months to the FAA's review of proposed wind turbines and could ultimately result in the issuance of determinations of hazard.

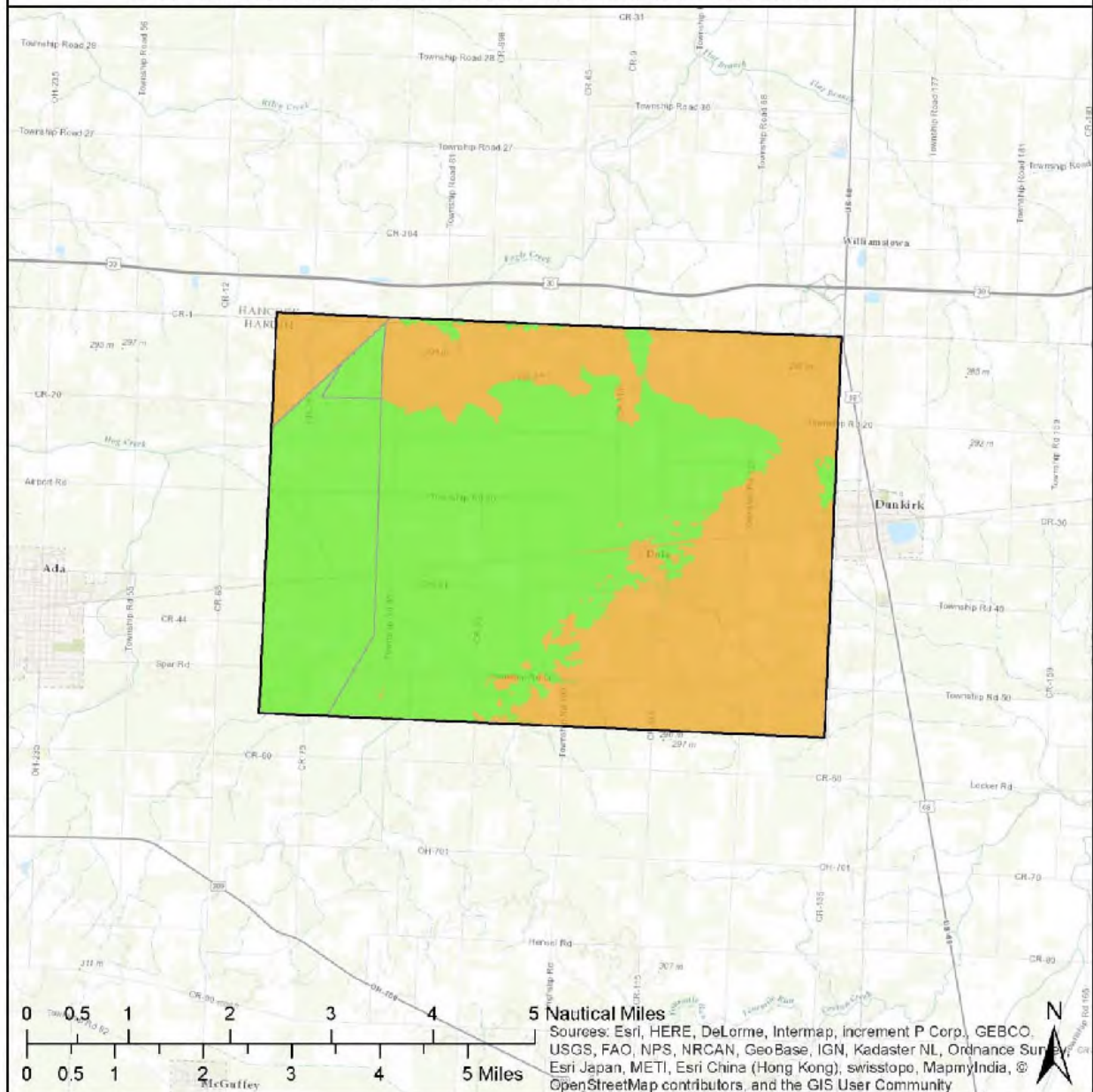
The AGL Clearance Map ([Figure 12](#)) is based on USGS National Elevation Dataset (NED) 1/3 Arc Second data which has a vertical accuracy of generally +/- 7 meters. Therefore, the AGL Clearance Map should only be used for general planning purposes and not exact wind turbine siting. In order to avoid the likelihood of a determination of hazard, proposed wind turbine heights must adhere to the height constraints depicted in the Composite Map ([Figure 11](#)).

If you have any questions regarding the findings of this study, please contact [Rick Coles](#) or [Tim Connolly](#) at (703) 256-2485.





The USGS 1/3 Arc Second Digital Elevation Model (DEM) data used to create this map has a vertical accuracy of +/- 7 meters. This map should only be used for general planning purposes and not exact structure siting.



Legend

Clearance

AGL Feet

- < 499 (does not occur within study area)
- ≥ 499 - 657
- ≥ 657

Hog Creek Wind Project Above Ground Level (AGL) Clearance Map

Plot Date:
22 April 2016
by Tim Connolly

Coordinate System:
NAD 1983 UTM Zone 17N

Figure 12



Capitol Airspace Group

**CASE NO. 16-1422-EL-BGA
and
CASE NO. 16-1423-EL-BGA**

**JOINT EXHIBIT 11
ROAD USE AGREEMENT**

**AGREEMENT FOR USE, REPAIR, AND IMPROVEMENT OF ROADS
AND REPAIR OF DRAINAGE FACILITIES**

THIS AGREEMENT FOR USE, REPAIR AND IMPROVEMENT OF ROADS AND REPAIR OF DRAINAGE FACILITIES ("Agreement") is made and entered into this 15 day of Dec., 2011, by and between HARDIN COUNTY, OHIO ("County"), acting by and through its Board of Commissioners, respective Townships and Hog Creek Wind Farm, LLC ("Hog Creek"), the County and Hog Creek being referred to herein, collectively, as the "Parties" and, individually, as a "Party";

WITNESSETH:

A. WHEREAS, Hog Creek is developing a wind-powered electric generating facility to be located in Hardin County, Ohio (the "Project Site"), consisting of wind turbines, underground electrical systems, access roads, lay-down and staging yards, and construction and related facilities, in what are expected to be (totaling approximately 65 megawatts) of generating capacity, and will consist of between Twenty Six (26) to Forty-One (41) wind turbines (the "Project" which is comprised of the Hog Creek I and Hog Creek II projects);


B. WHEREAS, in connection with the development, construction, operation, or maintenance of the Project, it may be necessary for Hog Creek and its contractors and subcontractors and each of their respective agents, employees, representatives, and permitted assigns (Hog Creek and, while in the performance of work for Hog Creek, such other persons, collectively, the "Hog Creek Parties") to; (i) transport heavy and/or oversized equipment and materials over designated haul routes on roads located in the County, which may in certain cases be in excess of the design limits of such roads; (ii) transport certain locally sourced materials, such as concrete and gravel, on such roads; (iii) widen such roads and make certain modifications and improvements (both temporary and permanent) to such roads (including to certain culverts, bridges, road shoulders, crest corrections, and other related fixtures) to permit such equipment and materials to pass; and (iv) place certain electrical and/or communication cables for the Project over, adjacent to or under certain roads for the purposes of carrying electrical current to, from, between and among various parts of the Project in drains, open drains, or title drains regulated by the County and (v) encroach within the County's maintenance right-of-way established; and

C. WHEREAS, Hog Creek acknowledges that it may not conduct the above activities without the express consent and permission of the County, which has exclusive authority and control over County and authority over township roads, evidenced by attached Township signatures, bridges, culverts, drains, and other County property; and

D. WHEREAS, the County will permit the Hog Creek Parties to perform the above activities in connection with the Project on County and township roads, culverts, bridges, and to intersect or pass over or through said County drains, pursuant to the terms and conditions as set forth in this Agreement.

E. Any reference to County Roads in this document shall include Township Roads.

County Initials MS


Hog Creek Initials 

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

ARTICLE I
APPLICABILITY OF AGREEMENT;
ESTABLISHMENT OF PRE-CONSTRUCTION CONDITIONS

Section 1.1 Roadway Conditions. With respect to any County or Township road that is identified on Appendix A hereto (together with appurtenant bridges, culverts, road shoulders, intersections, and all other County or Township-owned or controlled property, each a "Designated Road" and, collectively, the "Designated Roads"), Hog Creek will, at its expense, be required to determine the load capacity that will be required to accommodate any increased traffic by the proposed improvements on any County and Township road that will be effected. They will then be required to core the existing pavement at reasonable intervals determined by the County Engineers' Office and determine the existing load capacity. If the existing load capacity is less than Eighty Percent (80%) of the needed load capacity, Hog Creek must determine appropriate mitigations to be carried out prior to the start of construction of the proposed wind farm. If the existing load capacity is greater than or equal to Eighty Percent (80%) of the needed load capacity, then no mitigation is necessary. All calculations and designs shall be stamped by a Professional Engineer of the State of Ohio and approved by the Hardin County Engineer's Office prior to commencement of work. Failure to do so will result with no overload permits issued. Additionally, Hog Creek shall hire an independent third-party professional camera crew and videographer and will create a detailed video record and textual narrative of the pre-existing condition of such Designated Road (the "Road Condition Report"). Hog Creek shall deliver the Road Condition Report to the County prior to the earlier of (i) Hog Creek's commencement of any improvement to such Designated Road or (ii) any use by a Hog Creek Party of such Designated Road for the operation of a motor vehicle or other equipment weighing more than five (5) tons. The Hardin County Engineer, hereafter "County Engineer", or his designee may participate reasonably in production of the Road Condition Report; *provided*, that such participation shall not unreasonably delay the production of the Road Condition Report. The County Engineer shall have twelve (12) working days after delivery to review the Road Condition Report. The County Engineer shall be deemed to have accepted the Road Condition Report except to the extent that, and only with respect to specifically stated objections on particular Designated Roads as to which, the County Engineer reasonably determines that the Road Condition Report is not a complete and accurate depiction of the pre-existing condition of the Designated Roads. If the County Engineer makes such a determination, the County Engineer shall, within such twelve (12) working day period, provide Hog Creek in writing its specific objections to portions of the Road Condition Report detailing such determination, whereupon Hog Creek may provide reasonable further documentation of the condition of the Designated Roads. If Hog Creek disagrees with the County Engineer's determination, the Parties shall promptly meet to confer and attempt to reach agreement; *provided further*, that failure of Hog Creek and the County Engineer to reach agreement with respect to the condition of the portion of the Designated Roads to which the County Engineer has specifically objected shall not prevent Hog Creek from using other Designated Roads or portions thereof for which the Road Condition Report has been accepted by the County Engineer or delay the County's or the County Engineer's granting of any further permits, authorizations, or consents, except to the extent that construction of the Project

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Hog Creek Initials 

would produce an immediate, material and adverse effect on any portions of the Designated Roads for which the Road Condition Report has not been accepted by the County Engineer. If the County Engineer does not give written notice of any objection to the completeness and accuracy of the Road Condition Report within such twelve (12) working days, the Road Condition Report shall be deemed accepted by the County Engineer.

Section 1.2 Drainage System Conditions. Using such records and maps of county-regulated open and tile drains, including lateral drains connecting directly thereto, as may be timely provided to Hog Creek by the County, Hog Creek shall, at Hog Creek's expense, (i) determine which such drains lie under, or within one hundred feet (100') of, any point on any Designated Road upon which any Hog Creek Party may conduct any Project construction activity or operate a motor vehicle or other equipment weighing more than five (5) tons (the "Affected Drains") and (ii) prepare one or more maps depicting all Affected Drains and all points of intersection with such construction activity (collectively, the "Drain Location Map"). No later than fifteen (15) working days prior to the commencement of work on the Designated Roads, Hog Creek shall deliver the Drain Location Map to the County Engineer and the Hardin County Inspector. Hog Creek shall pay all hourly cost associated with inspections performed by the Hardin County Inspector to the County Engineer. The County Engineer shall have fifteen (15) working days after such delivery to review the Drain Location Map and, if the County Engineer reasonably determines that the Drain Location Map is not a complete and accurate depiction of the location of all Affected Drains, to provide Hog Creek with written objection to the Drain Location Map detailing such determination, whereupon Hog Creek may revise the Drain Location Map or provide reasonable further documentation of the location of and effects of Project construction upon Affected Drains. If Hog Creek disagrees with the County Engineer's determination, the Parties shall promptly meet to confer and attempt to reach agreement; *provided*, that failure to reach agreement with respect to the condition of a portion of the Designated Roads shall not prevent Hog Creek from conducting any Project construction activity or using Designated Roads in areas depicted on the portion of the Drain Location Map which the County Engineer has determined is complete and accurate or delay the County's or the County Engineer's granting of any further permits, authorizations, or consents with respect to areas depicted on the portion of the Drain Location Map which the County Engineer has determined is complete and accurate. If the County Engineer does not give written notice of any objection to the completeness and accuracy of the Drainage Location Map within such fifteen (15) working days, the Drainage Location Map shall be deemed accepted by the County Engineer.

Section 1.3 County Use of Drain Location Map. The County understands and acknowledges that Hog Creek will create the Drain Location Map for its own use and will provide the Drain Location Map to the County only for the County's convenience. Hog Creek shall not warrant the accuracy or completeness of the Drain Location Map. The County shall not use the Drain Location Map as an official County document or otherwise rely on the Drain Location Map, except with respect to this Agreement, and is responsible for confirming all information on the Drain Location Map.

Section 1.4 Working days shall be Monday thru Thursday, April 1 to October 1 from 6:30 am to 4:30 pm eastern standard time and from October 1 to April 1, Monday thru Friday from 7:30 to 4:00 pm.

County Initials MS

Hog Creek Initials 

ARTICLE II USE OF DESIGNATED ROADS BY HOG CREEK

Section 2.1 Use of Designated Roads by Hog Creek. In connection with the development, construction, operation, and maintenance of the Project, the County hereby acknowledges and agrees that the Hog Creek Parties may use the Designated Roads at any time, seven (7) days a week, 365 days a year, beginning _____, 2011 and for the duration of the development, construction, operation, and maintenance of the Project. Such use may include the movement and transportation of overweight and oversized vehicles, equipment, loads and other necessary equipment and materials to and from the Project. In addition to identifying the Designated Roads, Appendix A identifies the routes over the Designated Roads that will be used for: (i) transportation and delivery of wind turbine equipment and components and other materials and equipment to be used in connection with the Project; (ii) truck transportation leaving the Project site following delivery of equipment and materials; (iii) movement of the assembled cranes across Designated Roads, the route for which is set forth on Appendix A-1; and (iv) transportation and delivery of locally sourced materials, including concrete and gravel. If Hog Creek desires to include additional roads or portions thereof as Designated Roads or revise crane routes, Hog Creek shall (A) submit an updated version of Appendix A (specifically, Appendix A-1 in the case of revised crane routes) to the County that includes such additional roads and (B) to the extent appropriate, revise or supplement (1) the Road Condition Report in order to report on the pre-existing conditions of such additional roads or portions thereof as required by Section 1.1 and (2) the Drain Location Map in order to report the locations of any additional Affected Drains as required by Section 1.2 (such updated Appendix A and any such supplemental report being an "Appendix A update"). With respect to any change to Appendix A or the Road Condition Report, the County Engineer shall have five (5) working days, and with respect to any revised or supplemental Drain Location Map, the County Engineer shall have five (5) working days, after such delivery to review an Appendix A Update. The County Engineer shall approve the Appendix A Update except to the extent that, and only with respect to particular Designated Roads as to which, the County Engineer reasonably determines that (I) the Appendix A Update proposes a usage of such Designated Roads that would differ substantially and materially from usage already approved by the County, or (II) any revised or supplemented report or Drain Location Map submitted with the Appendix A Update is not complete and accurate (as provided for the original report or map, respectively, in Section 1.1 or Section 1.2). If the County Engineer makes such a determination, the County Engineer shall, within such five (5) working day period (with respect to any change to Appendix A or the Road Condition Report) or five (5) working day period (with respect to any revised or supplemented Drain Location Map), provide Hog Creek with written objection to the Appendix A Update detailing such determination, whereupon Hog Creek may provide reasonable further documentation in support of the Appendix A Update. If Hog Creek disagrees with the County Engineer's determination, the Parties shall promptly meet to confer and attempt to reach agreement; *provided*, that failure to reach agreement shall not prevent Hog Creek from conducting any Project construction activity or using Designated Roads located in areas depicted on the portion of the Drain Location Map which the County Engineer has determined is complete and accurate and for which the County Engineer has approved a Road Condition Report, and or delay the County's or the County Engineer's granting of any further permits, authorizations, or consents with respect to areas depicted on the portion of the Drain Location Map which the County Engineer has determined is complete and accurate and Designated Roads for which the

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Highway Supervisor has approved a Road Condition Report. If the County Engineer does not give written notice of any objection to the completeness and accuracy of the Appendix A Update within the applicable time period, the Appendix A Update shall be deemed accepted by the County Engineer, as applicable.

Section 2.2 Construction Period Meetings. Beginning with commencement of construction of the Project, Hog Creek and a representative from the County (a "Designee") shall meet from time to time upon the reasonable request of a Party to discuss the expected use of the Designated Roads, including the construction schedule and the haul routes to be used. The Designee shall have authority to act on behalf of the County. To the extent necessary, the Designee and Hog Creek may invite certain landowners to attend the meetings if their property is near or adjacent to the areas of use. Within ten (10) days after the execution of this Agreement by the Parties, the County shall provide the name and contact information for its Designee. For purposes of this Section 2.2, commencement of construction of the Project shall mean commencement of construction of access roads, wind turbines, and associated facilities on the Project Site and shall not include testing and surveying (including geotechnical drilling and meteorological testing) by Hog Creek to determine the adequacy of the Project Site for construction.

ARTICLE III SAFETY RESPONSIBILITIES; ROAD CLOSURES

Section 3.1 Speed Limits. All vehicles driven by the Hog Creek Parties shall abide by all local, state, and federal speed limits as posted or, if not posted, as otherwise applicable.

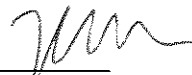
Section 3.2 Signage. During construction of the Project, Hog Creek shall be responsible for placing and maintaining signage in compliance with applicable provisions of the then-current Ohio Manual on Uniform Traffic Control Devices.

Section 3.3 Notice to School Corporations and Emergency Agencies. Hog Creek shall provide, to the School Corporation, the Hardin County Sheriff's Office, and the Hardin County 911 Communications Office, Fire Department, Ambulance District, and Post Offices, and any other agency or office reasonably designated by the County, (i) notice of Designated Road closures (including time and expected duration) by fax and e-mail and (ii) current maps of the Designated Roads. Upon request, the County will provide all necessary contact information of such entities to Hog Creek. All contact information for an office, including those above, designated by the County to receive notice shall be provided to Hog Creek Within fifteen (15) days of approval of Appendix A.

Section 3.4 Transportation Coordinator: Notice of Road Closures. Hog Creek shall monitor the Designated Roads for damage, appropriateness of signage, and other safety issues. Hog Creek shall designate a person to coordinate the transportation-related activities of the Hog Creek Parties during construction of the Project (the "Transportation Coordinator"). In the event that Hog Creek plans a proposed road closure or limited access to a Designated Road or right-of-way that may affect public safety or convenience, the Transportation Coordinator shall notify the County Engineer at least forty-eight (48) hours prior thereto; provided the County acknowledges that although Hog Creek can advise that a road closure or limited access is imminent, the exact timing of such closures

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can vary due to various construction and environmental factors, and the County agrees to work with Hog Creek in a reasonable manner to accommodate such variability. If, within eight (8) business hours after receipt of such notice, the County objects to such closure or limited access on grounds public safety or substantial public inconvenience, the Parties shall cooperate reasonably to find an alternative to the planned closure or limited access or otherwise minimize disruption to County road traffic and Hog Creek's construction activities and schedule. If the County does not so object within such time, the County shall be deemed to have no objection to such planned closure. In the event that the County plans a proposed road closure or limited access to a County or Township road or right-of-way that could be reasonably anticipated to affect construction, maintenance, and operations activities related to the Project, the County shall notify Hog Creek at least forty-eight (48) hours prior thereto. For purposes of this Section 3.4, a fax or e-mail shall suffice as written notice if properly addressed (directed to a fax number or e-mail address, as the case may be, provided for such purpose by the Party receiving notice.

Section 3.5 Use of Designated Roads. Vehicles used by the Hog Creek Parties weighing more than five (5) ton shall travel only on Designated Roads.


Section 3.6 Dust Control.

- a. During construction of the Project, Hog Creek shall use a commercially recognized dust palliative to control airborne dust created or contributed to by the Hog Creek Parties on gravel Designated Roads, after Hog Creek completes the improvements and modifications required under Article IV herein but prior to any traffic used for construction, operation and maintenance of the project as permitted herein. Watering alone shall not be considered a sufficient dust control measure, unless agreed in advance by the County Engineer. The County Engineer or his designee may provide written request for additional dust control measures.
- b. Dust control measures required by this Agreement and requested by the County Engineer will be applied within twenty-four (24) hours of written notification.

**ARTICLE IV
IMPROVEMENT AND MODIFICATIONS TO DESIGNATED ROADS**

Section 4.1 Improvements and Modifications to Designated Roads. Prior to Hog Creek's use of a Designated Road as permitted in Article II herein, Hog Creek shall be required to determine the load capacity that will be required to accommodate any increased traffic by the proposed improvements on any County and Township road that will be affected. They will then be required to core the existing pavement at intervals determined by The Hardin County Engineers Office and determine the existing load capacity. If the existing load capacity is less than Eighty Percent (80%) of the needed load capacity, Hog Creek must determine appropriate mitigations to be carried out prior to the start of construction of the proposed wind farm. If the existing load capacity is greater than or equal to Eighty Percent (80%) of the needed load capacity, then no mitigation is necessary. All calculations and designs shall be stamped by a Professional Engineer of the State of Ohio and approved by the Hardin County Engineers Office prior to commencement of work. Failure to do so will result with no overload permits issued. The County hereby acknowledges and agrees and

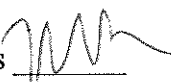
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consents to Hog Creek's completion of, such modifications and permanent improvements to such Designated Road as are reasonably necessary to accommodate the then-anticipated use of such Designated Road by the Hog Creek Parties. Such modifications and permanent improvements may include the widening of certain roads, the strengthening and/or spanning of existing culverts and bridges, and other improvements and modifications reasonably necessary to accommodate the heavy equipment and materials to be transported on the Designated Roads. Hog Creek agrees that any contractor used to complete necessary modifications and improvements shall be pre-approved by the County. Further Hog Creek agrees that for any modification or permanent improvement needed over a distance greater than one-quarter mile within any section of a Designated Road between the point of repair and the next closest intersection (a "Large Repair") it shall either (1) repair using material consistent with the surfacing material of road of which the Large Repair is a part or (2) resurface the entire section using a either hot-mix or cold-mix in Developer's discretion provided however that Developer shall not be required to resurface any distance greater than one and one-half (1.5) miles. For any modification or permanent improvement needed over a distance less than or equal to one-quarter mile within any section of a Designated Road Hog Creek shall be permitted to use either hot-mix or cold-mix in Developer's discretion as the resurfacing material. The County agrees that Hog Creek is not liable for any future road surface repairs required due to settling, cracking, or any other disrepair of the unused portion of the Designated Road caused by Hog Creek's use of a different surface type material than existed prior to the modification or permanent improvement. Should Developer wish to use a material other than hot-mix or cold-mix for resurfacing Developer shall be required to get prior written approval of such material from the County Engineer

Section 4.2 Compliance with Standards and Designs. Hog Creek agrees that all modifications and improvements to Designated Roads, including any temporary turning radius, corner or intersection wide-out, intersection or corner improvement, or driveway or entrance onto a Designated Road, shall comply with all applicable engineering standards and stamped engineering drawings that are submitted by Hog Creek to the County prior to the commencement of the modifications and improvements. Hog Creek may install driveways and entrances for ingress and egress to and from Designated Roads at locations shown on attached Appendix C, at Hog Creek's cost. If Hog Creek desires to update Appendix C, Hog Creek shall (A) submit an updated version of Appendix C to the County and (B) to the extent appropriate, revise or supplement the Drain Location Map in order to report the locations of any additional Affected Drains as required by Section 1.2 (such updated Appendix C and any such revised or supplemented Drain Location Map being an "Appendix C Update"). With respect to any change to Appendix C, the County Engineer shall have five (5) working days, and with respect to any revised or supplemented Drain Location Map, the County Engineer shall have five (5) working days, after such delivery to review the Appendix C Update. The County Engineer shall approve the Appendix C Update except to the extent that the County Engineer reasonably determines that the Appendix C Update proposes an Installation that would differ substantially and materially from the Installation already approved by the County, or the County Engineer determines that any revised or supplemented Drain Location Map submitted with the Appendix C Update is not complete and accurate (pursuant to Section 1.2). If the County Engineer makes such a determination, the County Engineer shall, within such five (5) working day period (with respect to any change to Appendix C) or five (5) working day period (with respect to any revised or supplemented Drain Location Map), provide Hog Creek with written objection requesting it to further provide reasonable documentation in support of the Appendix C Update. If

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Hog Creek disagrees with the County Engineer's determination, the Parties shall promptly meet to confer and attempt to reach agreement; *provided*, that failure to reach agreement shall not prevent Hog Creek from conducting Project construction activities or using Designated Roads that are not affected by the County Engineer's determinations, or delay the County or the County Engineer's granting of any further permits, authorizations, or consents with respect to Project construction activities in areas which are not described in the County Engineer's objections. If the County Engineer does not give written notice of any objection to the Appendix C Update within the applicable time period, the Appendix C Update shall be deemed accepted by the County Engineer.

Section 4.3 Removal of Temporary Improvements. Upon completion of the portion of the Project requiring any temporary improvements, all such temporary improvements shall be removed by Hog Creek. However, upon written request from the County prior to removal, any such temporary improvement may permanently remain as property of the County, or as a part of a County right-of-way.

Section 4.4 Collection System Cabling and Communication Cabling. The County acknowledges that Hog Creek intends to install certain (i) wires, cables, conduits, and/or lines (and their associated equipment) related to the transmission of electricity at a voltage of up to 34.5 kV from the Project and (ii) communication wires, cables, and/or lines relating to the Project (collectively, the "Installation") and may desire to route portions of the Installation below ground, either by boring or by cutting a trench, at locations adjacent to or under (including across) the Designated Roads or under (including attached to or suspended from) bridges on Designated Roads (such locations being identified on Appendix B). In connection with the Installation, the County hereby grants to Hog Creek all such authorizations and approvals from the County as are necessary to complete the Installation, subject only to Hog Creek's obtaining such private land rights as are necessary to permit Hog Creek to complete the Installation and make the modifications and improvements to the Designated Roads contemplated by this Agreement, including obtaining all necessary land rights from private landowners adjacent to the Designated Roads. Each trench cut across a County road shall be backfilled, compacted, and otherwise repaired as reasonably required to restore the County road to its structural condition prior to such cut. If Hog Creek desires to update Appendix B, Hog Creek shall (A) submit an updated version of Appendix B to the County and (B) to the extent appropriate, revise or supplement the Drain Location Map in order to report the locations of any additional Affected Drains as required by Section 1.2 (such updated Appendix B and any such revised or supplemented Drainage Report being an "Appendix B Update"). With respect to any change to Appendix B, the County Engineer shall have five (5) working days, and with respect to any revised or supplemented Drain Location Map, the County Engineer shall have five (5) working days, after such delivery to review the Appendix B Update. The County Engineer shall approve the Appendix B Update except to the extent that the County Engineer determines that the Appendix B Update proposes an Installation that would differ substantially and materially from the Installation already approved by the County, or the County Engineer determines that any revised or supplemented Drain Location Map submitted with the Appendix B Update is not complete and accurate (pursuant to Section 1.2). If the County Engineer makes such a determination, the County Engineer shall, within such five (5) working day period (with respect to any change to Appendix C) or five (5) working day period (with respect to any revised or supplemented Drain Location Map), provide Hog Creek with written objection to the Appendix B Update detailing such determination, whereupon Hog Creek may provide reasonable further documentation in support of the Appendix B

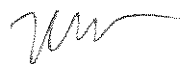
Update. If Hog Creek disagrees with the County Engineer's determination, the Parties shall promptly meet to confer and attempt to reach agreement; *provided*, that failure to reach agreement shall not prevent Hog Creek from conducting Project construction activities or using Designated Roads that are not affected by the County Engineer's determinations, or delay the County or the County Engineer's granting of any further permits, authorizations, or consents with respect to Project construction activities in areas which are not described in the County Engineer's objections. If the County Engineer does not give written notice of any objection to the Appendix B Update within the applicable time period, the Appendix B Update shall be deemed accepted by the County Engineer.

ARTICLE V ROAD REPAIR

Section 5.1 Obligation to Repair County and Township Roads. If any County or Township road or related appurtenances, including bridges, culverts, signage, or other road fixtures, or any County or Township-owned drainage tile or open ditch, is damaged by the Hog Creek Parties, Hog Creek shall repair (or cause to be repaired) such damage and, as near as is reasonably possible, restore the damaged road or other property to the condition it was in prior to such damage. With respect to damage to a County or Township road or related appurtenance, the Parties shall rely upon the Road Condition Report to determine whether the repair has been performed in accordance with the standard set forth in this Section 5.1. Subject to considerations of safety, the presence of emergency conditions, and the costs of such repairs, any repair and restoration shall commence and be completed promptly by Hog Creek. Following completion of such repair, the County Engineer and Hog Creek shall jointly inspect the repair to confirm that it has been completed satisfactorily. The County understands and agrees that Hog Creek is not responsible for any damage to County or Township roads, County or Township-owned drainage tile, or related appurtenances that is not caused by a Hog Creek Party. For purposes of this Section 5.1, damage to any County or Township-owned drainage tile or open ditch may also include damages occurring within the County's or Township's maintenance right-of-way, if such damage either denies, impedes, or affects the County's ability to exercise drain maintenance within its right-of-way and results in additional costs to the County. The County agrees to provide written notice to Hog Creek if the County finds damage it believes to have been caused by Hog Creek that is not repaired promptly. If there is a dispute regarding the responsible party for the damage, the Parties agree to work together in good faith to resolve any such dispute.

Section 5.2 Failure to Repair. If Hog Creek fails to repair any damage to County or Township-owned property that Hog Creek is required by this Agreement to repair, the County Engineer may request in writing that Hog Creek perform such repair. If Hog Creek fails to commence such repairs within ten (10) days and thereafter to maintain reasonable progress in the performance of such repairs, then the County may make such repairs and shall invoice Hog Creek for costs incurred in connection with the repairs. To the extent that the County makes such repairs itself (rather than engaging an outside contractor to do so), then notwithstanding anything to the contrary in this Agreement, the reimbursement of costs may include allocable, direct internal labor costs (not administrative personnel or expenses) and reimbursement for usage of powered equipment (based on commercially reasonable equipment rental rates). Hog Creek shall pay such invoiced amounts within thirty (30) days following receipt of the invoice.

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ARTICLE VI FINAL RESURFACING

Section 6.1 Approval of Road Condition Prior to Final Surfacing. The condition of a Designated Road shall be subject to the approval by the County Engineer prior to the laying of any final surface upon such Designated Road; said approval shall be conditioned upon use of like-kind material as documented by the Road Condition Report. If the County Engineer does not give written notice to Hog Creek detailing any objections to the condition of such Designated Road within three (3) working days after notification by Hog Creek that such Designated Road is ready for final surfacing, or if Hog Creek and the County agree, pursuant to Section 6.2, that the County will assume responsibility for final resurfacing, the condition of such Designated Road shall be deemed acceptable by the County Engineer.

Section 6.2 Performance of Final Resurfacing by County. Hog Creek shall provide the County with written notice of the date on which all wind turbine components (not including replacement components or spare parts) have been delivered to the installation site (the "WTG Final Delivery Date"). If the Parties mutually agree, the County shall assume responsibility for final resurfacing of any Designated Road or portion thereof that Hog Creek repaired or to which Hog Creek made temporary modifications or permanent improvements. Such agreement shall be reduced to writing and signed by an authorized representative of each Party. Such agreement shall provide that the County (i) fully and finally releases Hog Creek from any obligation to resurface such Designated Road or to further improve or modify such Designated Road and (ii) indemnifies and holds harmless Hog Creek from and against all claims and other liabilities related to or arising from or in connection with the County's resurfacing of or failure to resurface such Designated Road or the manner in which such Designated Road may be resurfaced, except to the extent such obligation arises from, or claims or liabilities relate to, a breach of the warranty set out in Article X.

ARTICLE VII HOG CREEK PERFORMANCE ASSURANCE BOND

Section 7.1 Performance Assurance Bond. Hog Creek shall post a bond to cover the costs of any damages made to the roads used by Hog Creek during construction of the Project. The amount of such bond shall not exceed \$150,000 per mile of the Designated Roads affected by Hog Creek with a cap amount of \$3,000,000.00. This cost was determined by figuring the cost of a 3" asphalt overlay including additional spot repairs. The reasonable assurance bond shall secure the performance in the amount described in Section 7.4 (the "Performance Assurance Bond") no later than the date on which Hog Creek issues to its contractor an unlimited notice to proceed with commencement of improvements and modifications to Designated Roads pursuant to Article IV herein. The Performance Assurance Bond shall be made payable to the County and may be posted in the form of a surety bond issued by a corporation licensed to do business in Ohio and approved by the County, an irrevocable letter of credit, cash deposit, or other form of financial guarantee acceptable to the County, which Performance Assurance Bond shall remain in full force and effect during Hog Creek's construction of the Project and continuing in full force and effect for two (2) years after the final completion of construction of the Project. Any Performance Assurance Bond will be in a form reasonably acceptable to the County. The Performance Assurance Bond is

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intended to provide the County with assurance that it will be paid by Hog Creek for its obligations under this Agreement, but shall not in any way limit the amount of Hog Creek's obligations or liabilities under this Agreement.

Section 7.2 Cash Deposit. If the Performance Assurance Bond is in the form of a cash deposit, it shall be held in an interest-bearing escrow account at a mutually acceptable financial institution, including national banking institutions, with any interest earned thereon payable to Hog Creek at reasonable times and intervals.

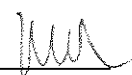
Section 7.3 Draw on Performance Assurance Bond. The County may draw upon the Performance Assurance Bond only if and to the extent that Hog Creek fails or refuses to perform repairs or to pay the cost of performing repairs under Article V of this Agreement. Draw conditions for the Performance Assurance Bond shall include the following: The County Engineer or a member of the County's Board of Commissioners shall certify that all draw conditions, which shall include the following, have been met: (i) that the County Engineer has complied with the requirements of Section 5.2, (ii) that Hog Creek has failed or refused to perform repairs or to pay the cost of performing repairs under Article V of this Agreement, (iii) that the County has performed such work (or had such work performed for it), (iv) that the County has incurred expenses for the performance of such work, and (v) the County has evidenced to Hog Creek the amount of such expenses. If the County draws upon the Performance Assurance Bond, the County Engineer shall provide a full accounting of the amount of the draw(s) and costs of repair to Hog Creek.

Section 7.4 Amount of Performance Assurance Bond. The Performance Assurance Bond, at Hog Creek's sole and exclusive election, may be decreased only after the date that is 730 days after the final completion of construction of the Project; *provided*, that Hog Creek has performed all of its then existing repair obligations hereunder. If, within seven (7) days after its receipt of such notice from Hog Creek, the County sends written notification to Hog Creek that there is then-existing damage to a County or Township road and/or drain that Hog Creek is required by this Agreement to repair, the Performance Assurance Bond may not be decreased until Hog Creek has completed such remaining repair obligations. Upon such a change in the amount of the Performance Assurance Bond, and upon expiration of the requirement for Performance Assurance Bond two (2) years after final completion of construction of the Project (i) any previous Performance Assurance Bond shall be extinguished and of no further effect and (ii) the County shall return to Hog Creek any original instrument evidencing such previous Performance Assurance Bond.

ARTICLE VIII FINES

Section 8.1 Imposition of Fines. Upon written notice to Hog Creek (given by fax and by e-mail directed to the fax number and e-mail address provided by Hog Creek for such purpose) of Hog Creek's non-compliance with certain provision of this Agreement and Hog Creek's failure or refusal to abate, correct, or otherwise remedy such non-compliance, the County may impose a fine upon Hog Creek, as indicated in Sections 8.2 and 8.3 below. Fines are imposed for each day of the same incident of non-compliance after expiration of the applicable notice/cure period.

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Section 8.2 Amount of Fines: Notice and Cure. Provisions of non-compliance that shall subject Hog Creek to fines, the amount of such fines, applicable notice/cure requirements, and other relevant conditions shall be as follows:

<u>Section Violated</u>	<u>Amount</u>	<u>Notice/Cure Period</u>
3.2	\$500	24 hours for non-custom, non-specialty signs; 72 hours for custom or specialty signs. Provided, that to the extent that a permanent sign is not available through the use of reasonable diligence, temporary signs are permissible and effective in avoidance of any fines that might otherwise be assessed.
3.5	\$1,000	No cure period
3.6.b (dust control)	\$500	24 hours
Article V (road or drain repair)	\$1,000	Reasonable notice under the circumstances, taking into account, among other factors, safety concerns, weather conditions, and nature of the repairs, but in any case no less thirty (30) days' notice.

Section 8.3 Payment of Fines. Hog Creek shall pay all fines to the County within thirty (30) days of receipt of proper notice of a fine.

ARTICLE IX COUNTY INSPECTOR

The County may retain an inspector ("County Inspector") prior to and during construction of the Project. The County Inspector shall inspect all work performed by Hog Creek within the road and ditch maintenance right-of-ways and provide written acknowledgement within five (5) days of the date of the inspection that such repairs appear to have been made in accordance with this Agreement, where such is the case or, where such is not the case, so inform Hog Creek in order to see that such repairs are brought into compliance with this Agreement. The County Inspector shall inform Hog Creek of any damage noted by the County Inspector in the performance of the County Inspector's duties. Hog Creek shall reimburse the County for all hourly cost and expenses associated with inspections performed by the Hardin County Inspector to the Hardin County Engineer that the County incurs which are related to retention of the County Inspector to perform such duties, at the then-current County Inspector rate including benefits for each day on which work is being performed.

ARTICLE X WARRANTY

All materials supplied and workmanship performed by Hog Creek Parties in the performance of Hog Creek's obligations required under this Agreement shall meet the compliance standards set forth in

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Section 4.2 of this Agreement and be free from defects for a period of two (2) years after the completion of such work. THE WARRANTIES SET FORTH IN THE FOREGOING SENTENCE ARE THE SOLE AND EXCLUSIVE WARRANTIES PROVIDED BY HOG CREEK UNDER OR IN CONNECTION WITH THIS AGREEMENT, AND HOG CREEK DISCLAIMS ANY AND ALL OTHER IMPLIED OR STATUTORY WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

ARTICLE XI INDEMNITY

Hog Creek shall indemnify, defend, and hold the County harmless for any and all claims, demands, suits, actions, proceedings, or causes of actions brought against County, its officers, Board of Commissioners, affiliates, agents, and employees and permitted assignees of any of the foregoing for any judgments, liabilities, obligations, fines, penalties, or expenses, including reasonable attorneys' fees and expenditures ("Losses"), including for personal injury or damage to third persons or property, but only to the extent that such Losses arise directly from the actions or omissions of Hog Creek, it's agents, successors, in interest or in the course of performance by Hog Creek under or in connection with this Agreement.

ARTICLE XII OTHER PERMITS

Section 12.1 Other Permits. The County hereby permits, authorizes, and consents to the Installation and to Hog Creek's use, maintenance, and upgrading of the Designated Roads, as described in this Agreement and Appendices A through C. Except for the following permits the County acknowledges and affirms that, as of the date of the Agreement, the County requires no further licenses, permits, or approvals issued or granted by the County for the Installation, or for such use, maintenance, and upgrading, of the Designated Roads, or for the construction, operation, and maintenance of the Project:

- a. Improvement location permit issued pursuant to the Zoning Ordinance's Wind Energy Conversion Systems Siting Regulations.
- b. Building permit issued pursuant to the Zoning Ordinance's Wind Energy Conversion Systems Siting Regulations.
- c. Any drainage permits issued by Hardin County.

Applications for all County permits not granted by this Agreement shall be subject to the County's customary review and permitting processes, if any, pursuant to statutory and regulatory authority, and in any case, processes applied consistently and in a fashion that treats Hog Creek in a manner similar to other industrial users of County roads under similar circumstances.

Section 12.2 Evidence of Permitting of Oversized and Overweight Loads. Promptly upon the request of Hog Creek, the County shall countersign a letter in the form of Appendix D hereto for use by the Hog Creek Parties evidencing whether the movement and transportation of overweight and oversized vehicles, equipment, loads and other necessary equipment and materials to and from the Project have been properly permitted by the County and they have been completed and the assurance performance bond has been received by the County.

ARTICLE XIII EXCLUSION OF CERTAIN DAMAGES

Except for claims arising from physical personal injury, the Parties waive all claims against each other (and against each other's parent company and Affiliates and their respective members, shareholders, officers, directors, agents and employees) for any consequential, incidental, indirect, special, exemplary or punitive damages (including loss of actual or anticipated profits, revenues or product loss by reason of shutdown or non-operation; increased expense of operation, borrowing or financing; loss of use or productivity; or increased cost of capital); and, regardless of whether any such claim arises out of breach of contract or warranty, tort, product liability, contribution, strict liability or any other legal theory.

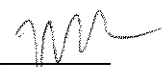
ARTICLE XIV FORCE MAJEURE EVENT

Whenever performance is required of a Party hereunder, such Party shall use all due diligence and take all necessary measures in good faith to perform; *provided, however*, that if a Party's performance of its obligations under this Agreement is prevented, delayed, or otherwise impaired at any time due to any of the following causes, then the time for performance is herein specified shall be appropriately extended by the time of the delay actually caused by such circumstances: acts of God, war, civil commotion, riots, or damage to work in progress by reason of fire or other casualty, strikes, lock outs or other labor disputes; delays in transportation; liability to secure labor or materials in the open market; war, terrorism, sabotage, civil strife or other violence; improper or unreasonable acts or failures to act of the County; the failure of any governmental authority to issue any permit, entitlement, approval or authorization within a reasonable period of time after a complete and valid application for the same has been submitted; the effect of any law, proclamation, action, demand or requirement of any government agency or utility; or litigation contesting all or any portion of the right, title and interest of the County or Hog Creek under this Agreement, or any other act or condition beyond the reasonable control of a Party hereto. If either Party experiences, or anticipates that it will experience, an event that, pursuant to this Article XIV, shall extend the time for performance by such Party of any obligation under this Agreement, then such Party shall provide prompt written notice to the other Party of the nature and the anticipated length of such delay.

ARTICLE XV MISCELLANEOUS PROVISIONS

Section 15.1 Project Termination. If Hog Creek abandons or terminates construction of the Project, Hog Creek shall provide written notice to the County of such abandonment or termination of construction. In such event, this Agreement shall terminate two (2) years thereafter, or at such

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earlier time as the Parties shall otherwise agree to *provided however*, that if prior to any abandonment or termination Hog Creek has not begun the use of the Designated Roads under this agreement, then this agreement shall terminate thirty (30) days after the date of the written notice, or at such earlier time as the Parties shall otherwise agree.

Section 15.2 Reimbursable Expenses. Except as otherwise expressly provided in this Agreement, where Hog Creek is required to reimburse the County for any expense incurred by the County, Hog Creek shall only be required to reimburse such County expenses as are reasonable, direct, reasonably documented, and which the County has incurred.

Section 15.3 Governing Law and Venue. This Agreement shall be governed by, and construed in accordance with, the laws of the State of Ohio, without regard to the conflict of laws provisions in such state. Any disputes arising under this Agreement between the Parties shall be decided by a court of competent jurisdiction in Hardin County, Ohio.

Section 15.4 Amendments and Integration. This Agreement (including Appendices) shall constitute the complete and entire agreement between the Parties with respect to the subject matter hereof. No prior statement or agreement, oral or written, shall vary or modify the written terms hereof. Except as set forth in Sections 2.1, 4.2, and 4.4, this Agreement may be amended only by a written agreement signed by the Parties.

Section 15.5 Assignment.

- (a) Except as provided in subsections (b) and (c) below, no Party to this Agreement shall assign, transfer, delegate, or encumber this Agreement or any or all of its rights, interests, or obligations under this Agreement without the prior written consent of the other Party. In those instances in which the approval of a proposed assignee or transferee is required or requested: (i) such approval shall not be unreasonably withheld, conditioned, or delayed; and (ii) in the case of the County, the County's approval may only be conditioned upon the assignee or transferee agreeing to perform the obligations of Hog Creek pursuant to this Agreement, and may not include any requirement of any additional obligations, including the payment of any sum or the performance of any additional obligation.
- (b) Hog Creek may, without the consent of the County, pledge, mortgage, grant a security interest in, or otherwise collaterally assign this Agreement or any or all of its rights, interest, and obligations under this Agreement to (i) any lender or equity investor (including any tax equity investor) providing financing for the Project as security for Hog Creek's obligations under the financing agreements (including a trustee or agent for the benefit of its lenders) and (ii) any power purchaser (each, a "Permitted Collateral Assignee"). In connection with any such collateral assignment to a Permitted Collateral Assignee, the County shall, upon the request of Hog Creek, deliver to Hog Creek and the Permitted Collateral Assignee without delay a consent agreement in a form reasonably requested by Hog Creek and the Permitted Collateral Assignee and which shall contain customary provisions. However, notwithstanding any provision herein to the contrary, Hog Creek shall, in the event of any such

collateral assignment, remain bound to the terms of this Agreement unless otherwise agreed by the Parties in writing.

- (c) Hog Creek may, without the consent of the County, assign or transfer this Agreement or any or all of its rights, interests, and obligations under this Agreement to any affiliate of Hog Creek, provided that in each case the assignee agrees in writing to be bound by the terms of this agreement.
- (d) Hog Creek will not be required to obtain consent of the County for or in connection with (i) a corporate reorganization of Hog Creek or any of its direct or indirect affiliates, or (ii) a sale or transfer of equity interest of any direct or indirect affiliate of Hog Creek.
- (e) All restrictions on assignment or transfer by Hog Creek shall expire two (2) years after the final completion of construction of the Project

Section 15.6 Notices. All notices, requests, demands and other communications required or permitted to be given by the Parties hereunder shall be in writing and shall be delivered in person or by facsimile, nationally recognized overnight delivery service, or by first class certified mail, postage and fees prepaid, to the address of the intended recipient as set forth below. Notice delivered in person shall be acknowledged in writing at the time of receipt. Notice delivered by nationally recognized overnight delivery service shall be acknowledged by proof of delivery from such service. Notice delivered by facsimile shall be acknowledged by return facsimile within twenty-four (24) hours, excluding Saturdays, Sundays, and public holidays. All such notices, requests, demands and other communications shall be deemed to have been received by the addressee, if by first class certified mail, three (3) business days following mailing; if by facsimile, immediately following transmission; if by nationally recognized overnight delivery service, the next business day, or if by personal delivery, upon such delivery. All such notices, requests, demands and other communications shall be sent to the following addresses:

To the County: Hardin County Commissioners
One Courthouse Square, Suite 100
Kenton, Ohio 43326

To Hog Creek Wind Farm, LLC
c/o juwi Wind, LLC
3090 Sterling Circle, Suite 200
Boulder, CO 80301
Attn: General Counsel

The foregoing addresses may be changed by any Party by giving written notice to the other Party as provided above.

Section 15.7 Exercise of Rights and Waiver. The failure of a Party to exercise any right under this Agreement shall not, unless otherwise provided or agreed to in writing, be deemed a

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waiver thereof; nor shall a waiver by a Party of any provisions hereof be deemed a waiver of any future compliance therewith, and such provisions shall remain in full force and effect.

Section 15.8 Independent Contractor, Relation of the Parties. The status of Hog Creek under this Agreement shall be that of an independent contractor and not that of an agent, and in accordance with such status, Hog Creek and its officers, agents, employees representatives and servants shall at all times during the term of this Agreement conduct themselves in a manner consistent with such status and shall neither hold themselves out as, nor claim to be acting in the capacity of, officers, employees, agents, representatives or servants of the County. As an independent contractor, Hog Creek shall accept full responsibility for providing to its employees all statutory coverage for worker's compensation, unemployment, disability or other coverage required by law.

Section 15.9 Severability. In the event that any clause, provision or remedy in this Agreement shall, for any reason, be deemed invalid or unenforceable, the remaining clauses and provisions shall not be affected, impaired or invalidated and shall remain in full force and effect.

Section 15.10 Headings and Construction. The section headings in this Agreement are inserted for convenience of reference only and shall in no way effect, modify, define, or be used in construing the text of the Agreement. Where the context requires, all singular words in the Agreement shall be construed to include their plural and all words of neuter gender shall be construed to include the masculine and feminine forms of such words. Notwithstanding the fact that this Agreement may have been prepared by one of the Parties, the Parties confirm that they and their respective counsel have reviewed, negotiated and adopted this Agreement as the joint agreement and understanding of the Parties. This Agreement is to be construed as a whole and any presumption that ambiguities are to be resolved against the primary drafting Party shall not apply. All Appendices referenced in this Agreement are incorporated in and form a part of this Agreement.

Section 15.11 Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same agreement.

Section 15.12 No Third-Party Beneficiary. No provisions of this Agreement shall in any way inure to the benefit of any person or third party so as to constitute any such person or third party as a third-party beneficiary under this Agreement, or of any one or more of the terms of this Agreement or otherwise give rise to any cause of action in any person not a Party hereto.

Section 15.13 Confidentiality. All data and information acquired by the County from Hog Creek (or its affiliates, representatives, agents or contractors) in connection with the performance by Hog Creek of its obligations hereunder, including information regarding the Project, shall be confidential and will not be disclosed by the County to any third party, and upon request of Hog Creek will be returned thereto, except that the County will not be obligated to return any such information contained in documents generated by the County that are stored electronically by the County. With respect to any such retained electronically stored confidential information, the County will continue to comply with the obligations of this Section 15.13. Notwithstanding the foregoing, the Parties acknowledge and agree that such confidential information may be disclosed to third

parties as may be necessary and customary for Hog Creek and the County to perform their respective obligations under this Agreement. This provision will not prevent the County from providing any confidential information or in response to the reasonable request of any government agency charged with regulating the County's affairs; *provided*, that if feasible, the County will give prior notice to Hog Creek of such disclosure and, if so requested by Hog Creek, will have used all reasonable efforts to oppose or resist the requested disclosure, as appropriate under the circumstance, or to otherwise make such disclosure pursuant to a protective order or other similar arrangement for confidentiality.

Section 15.14 Extraordinary Events. The Parties acknowledge that during the expected life of the Project, circumstances may arise under which it will be necessary or advisable for Hog Creek to replace major turbine components or make repairs to turbines beyond ordinary maintenance ("Extraordinary Events"), and that transportation of turbine components on overweight or oversized vehicles on or across the Designated Roads may be necessary. The Parties agree that it is impossible to predict the timing, nature, or extent to which the Designated Roads may be damaged beyond the normal amount of wear and tear by such transportation. The Parties agree that at any time during the life of Project, when Hog Creek determines Extraordinary Events reasonably, during any sixty (60) day period, require activities which will involve more than ten (10) movements of overweight or oversized vehicles on the Designated Roads, Hog Creek will give advance written notice of the intended movements to the County. In such event, the County may in its reasonable discretion require Hog Creek to provide an Appendix A Update, and Hog Creek agrees to reasonably coordinate such activities in substantially the same manner provided for in this Agreement. If the Extraordinary Events require activities which will involve more than twenty (20) movements of overweight and oversized vehicles during any sixty (60) day period, the County and Hog Creek will work in good faith to determine amount of any performance assurance bond to be reasonably required by the County based on the possible damage to the Designated Roads caused by such movements.

Section 15.15 Decommissioning Events. Hog Creek shall comply with Stipulation ____ of the Certificate issued by the Ohio Power Siting Board on _____, 2011.

Section 15.16 Successors and Assigns. This Agreement shall inure to the benefit of and shall be binding upon the Parties hereto, their respective successors, assignees and legal representatives.

Section 15.17 Memorandum of Agreement. Within thirty (30) days of request from Hog Creek, County agrees to execute a memorandum of this Agreement, in form reasonably acceptable to County, which Memorandum may be recorded by Hog Creek in the Real Property Records of the Hardin County Recorder's Office.

[signatures appear on following pages]
including Township Trustees

County Initials MS

Hog Creek Initials 

HARDIN COUNTY

By: _____

Name:

Title: County Commissioner

By: Edward D. Elliott

Name: EDWARD D. ELLIOTT

Title: County Commissioner

By: Bruce S. Beaman

Name: BRUCE S. BEAMAN

Title: County Commissioner

By: Randy Paul

Name: RANDY S. PAUL

Title: County Clerk

WASHINGTON TOWNSHIP

By: Dane Dirmeyer

Name: DANE DIRMAYER

Title: Township Trustee

By: Craig Stump

Name: CRAIG STUMP

Title: Township Trustee

County Initials MS

Hog Creek Initials mm

By: Lauren Eibling
Name: Lauren Eibling
Title: Township Trustee

By: Leah Driskill
Name: Leah Driskill
Title: Township Fiscal Officer

APPROVED AS TO FORM

HARDIN COUNTY PROSECUTOR

By: Bradford W. Bailey
Name: Bradford W. Bailey
Title: Hardin County Prosecutor

HARDIN COUNTY ENGINEER

By: Michael Smith
Name: Michael Smith
Title: Hardin County Engineer

HOG CREEK WIND FARM, LLC

By: Michael Rucker
Name: Michael Rucker
Title: Manager

APPENDIX A
Designated Roads

APPENDIX A-1

Crane Routes

APPENDIX B

Installation


County Initials MS

Hog Creek Initials MR

APPENDIX B-1

Installation (tabular format)

County Initials MS

Hog Creek Initials 

HOG CREEK WIND FARM
Underground Collection System – County Roads

County Road	Location Crossing County Road	Location Parallel to County Road Beginning Station	Ending Station	Offset (RT or LT)
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County Initials MS

Hog Creek Initials MR

APPENDIX B-2

Installation (map)

County Initials MS

Hog Creek Initials WV

APPENDIX C

Driveways and Entrances

County Initials MS

Hog Creek Initials MM

APPENDIX D

Form of Letter

[HOG CREEK LETTERHEAD]

[DATE]

Hardin County Highway Department
[STREET]
Kenton, Ohio 43326

Attn: , COUNTY ENGINEER

RE: Blanket Road Permit for Hog Creek

Dear Mr. :

In accordance with Section 12.2 of that certain Agreement for use, Repair, and Improvement of Roads and Repair of Drainage Facilities dated _____, 2011 by and between Hardin County, Ohio, and respective Townships and Hog Creek Wind Farm LLC ("Hog Creek"), this letter, when signed by you, will constitute a blanket road permit ("Blanket Road Permit") for Hog Creek, its contractors and subcontractors, and each of their respective agents, employees and representatives (the "Permit Grantees") to move and transport overweight and oversized vehicles, equipment, loads and other necessary equipment and material over and across certain roads within Hardin County, Ohio in connection with the construction, operation, and maintenance of the Project.

Please acknowledge and confirm the approval and granting of the Blanket Road Permit in favor of the Permit Grantees by signing this letter in the space indicated below and returning a copy of the counter-signed document to both the Project's Construction Manager, [NAME] ([EMAIL]@.COM) and to Hog Creek's Director of Project Management, _____ (email address)

If you have any questions about this matter, please do not hesitate to contact [NAME], as follows"

Direct [NUMBER]
Cell [NUMBER]
Fax [NUMBER]
E-mail [EMAIL]

[signatures on next page]

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Hog Creek Initials 

Sincerely,

Hog Creek Wind Farm

By: _____
[NAME]
Director of Project management

APPROVAL AND GRANTING OF THE BLANKET
ROAD PERMIT IS HEREBY ACKNOWLEDGED
AND CONFIRMED:

By: _____
[NAME]
COUNTY ENGINEER
Hardin County, Ohio

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Hog Creek Initials 

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

6/22/2016 3:53:59 PM

in

Case No(s). 16-1422-EL-BGA

Summary: Application of Hog Creek Wind Farm LLC for Third Amendment to Certificate - Joint Exhibits Part 2 electronically filed by Teresa Orahod on behalf of Sally W. Bloomfield