

# Wind Power GeoPlanner™

## Off-Air TV Analysis

Jordan Creek Wind Farm



Prepared on Behalf of  
Jordan Creek  
Wind Farm LLC

August 30, 2016



**COMSEARCH**  
A CommScope Company

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## 1. Introduction

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 Jordan Creek Wind Farm project in Benton and Warren Counties, Indiana. 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.

## 2. Summary of Results

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

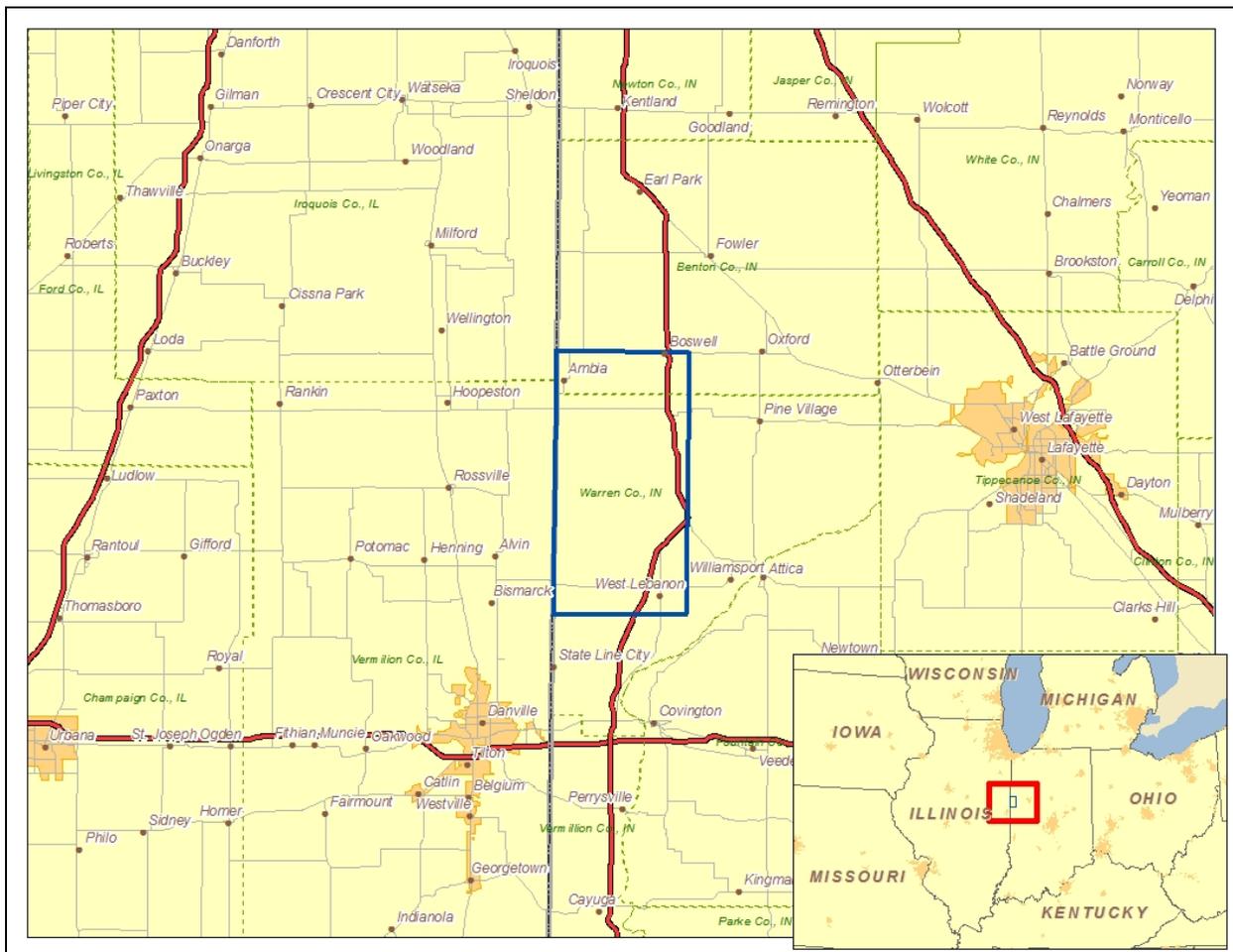


Figure 1: Wind Farm Project Area and Local Communities



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.

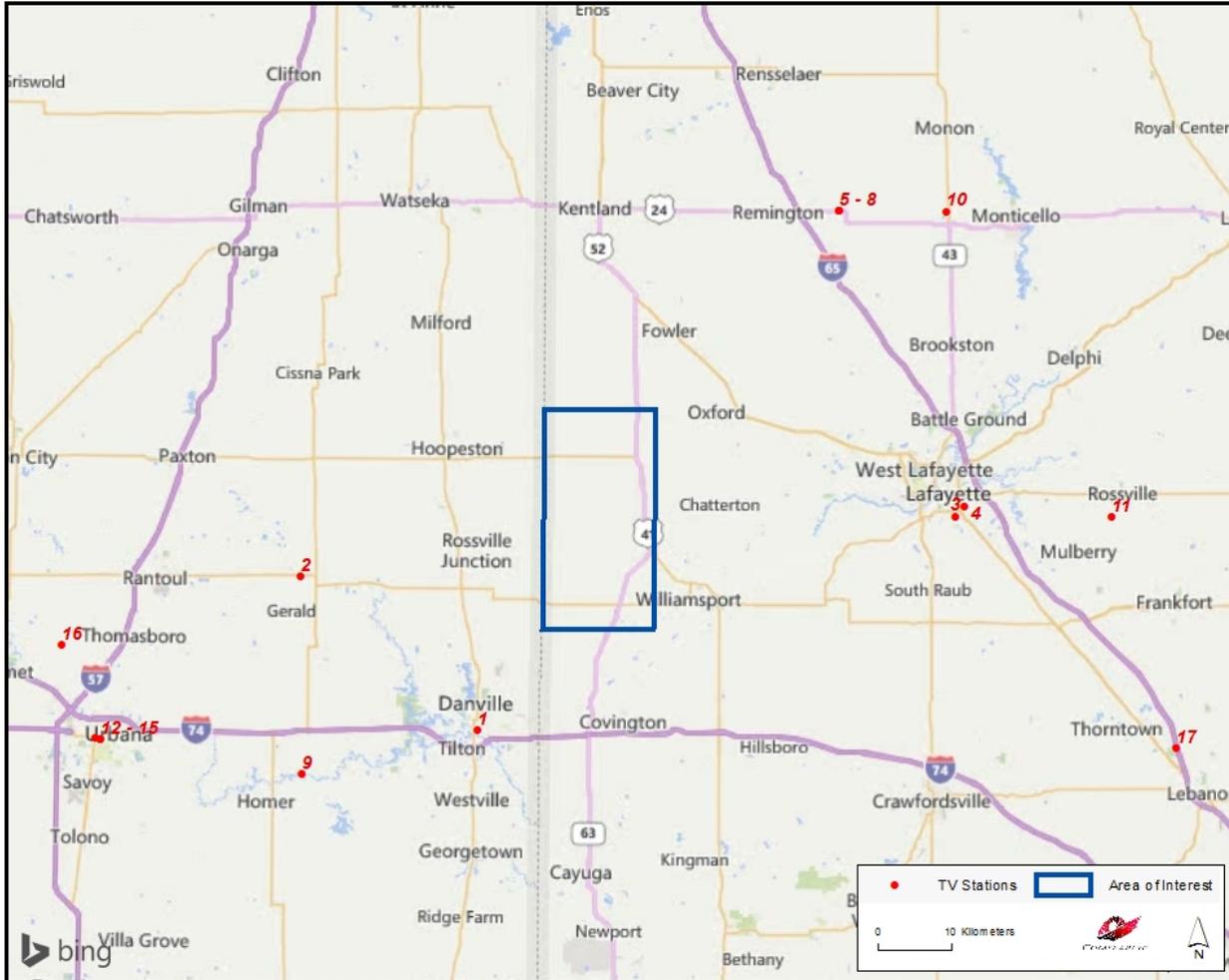


Figure 3: Plot of Off-Air TV Stations within 75 Kilometers of Project Area

ID	Call Sign	Status	Service <sup>2</sup>	Channel	Transmit ERP <sup>3</sup> (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
1	W31BX-D	LIC	LD	31	3.08	40.125000	-87.630278	33.62
2	WCCU	LIC	DT	26	507.0	40.312778	-87.916667	41.73
3	DW51DU	CP	LD	51	15.0	40.389944	-86.864694	48.48
4	W16DB-D	APP	LD	16	15.0	40.402222	-86.849694	49.77
5	W16DB-D	CP	LD	16	15.0	40.765556	-87.051528	53.01
6	W22DW-D	CP MOD	LD	22	15.0	40.765556	-87.051528	53.01
7	WUDP-LD	CP MOD	LD	31	15.0	40.765556	-87.051528	53.01
8	W49DS-D	CP	LD	49	15.0	40.765556	-87.051389	53.02
9	WICD	LIC	DT	41	950.0	40.069722	-87.912500	53.86
10	NEW	APP	LD	18	1.0	40.764722	-86.879444	62.95
11	WLFI-TV	LIC	DT	11	30.0	40.388889	-86.612778	69.87
12	W39BH	CP	LD	24	4.4	40.109444	-88.235000	74.75
13	W39BH	CP MOD	TX	32	12.5	40.109444	-88.235000	74.75
14	W39BH	LIC	TX	39	12.5	40.109444	-88.235000	74.75
15	WBXC-CD	LIC	DC	46	2.5	40.111056	-88.243000	75.29
16	W07DD-D	LIC	LD	7	0.28	40.224139	-88.298833	75.63
17	WECY-LD	LIC	LD	35	6.0	40.104139	-86.512194	84.68

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

<sup>2</sup> Definitions of service and status codes:  
DT – Digital television broadcast station  
LD – Low-power digital television broadcast station  
DX – Digital auxiliary (backup) facility  
LIC – Licensed and operational station  
CP – Construction permit granted  
APP – Application for construction permit, not yet operational

<sup>3</sup> ERP = Transmit Effective Radiated Power

### 3. Impact Assessment

Based on a contour analysis of the licensed stations within 75 kilometers of the Jordan Creek Wind Farm project, it was determined that all three of the full-power digital stations, identified below in Table 2, as well as one of the three low-power stations, may have their reception disrupted in and around the project area. 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.

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.

ID	Call Sign	Status	Service <sup>4</sup>	Channel	Transmit ERP <sup>5</sup> (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
1	W31BX-D	LIC	LD	31	3.08	40.125000	-87.630278	33.62
2	WCCU	LIC	DT	26	507.0	40.312778	-87.916667	41.73
9	WICD	LIC	DT	41	950.0	40.069722	-87.912500	53.86
11	WLFI-TV	LIC	DT	11	30.0	40.388889	-86.612778	69.87

*Table 2: Licensed Off-Air TV Stations Subject to Degradation*

<sup>4</sup> Definitions of service and status codes:  
DT – Digital television broadcast station  
DX – Digital auxiliary (backup) facility  
LD – Low-power digital television broadcast station  
LIC – Licensed and operational station

<sup>5</sup> ERP = Transmit Effective Radiated Power

## **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
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Email:	dfinney@comsearch.com
Web site:	www.comsearch.com

## Appendix A

ID	Call Sign	Status	Service <sup>6</sup>	Channel	Transmit ERP <sup>7</sup> (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
1	W31BX-D	LIC	LD	31	3.08	40.125000	-87.630278	33.62
2	WCCU	LIC	DT	26	507.0	40.312778	-87.916667	41.73
3	DW51DU	CP	LD	51	15.0	40.389944	-86.864694	48.48
4	W16DB-D	APP	LD	16	15.0	40.402222	-86.849694	49.77
5	W16DB-D	CP	LD	16	15.0	40.765556	-87.051528	53.01
6	W22DW-D	CP MOD	LD	22	15.0	40.765556	-87.051528	53.01
7	WUDP-LD	CP MOD	LD	31	15.0	40.765556	-87.051528	53.01
8	W49DS-D	CP	LD	49	15.0	40.765556	-87.051389	53.02
9	WICD	LIC	DT	41	950.0	40.069722	-87.912500	53.86
10	NEW	APP	LD	18	1.0	40.764722	-86.879444	62.95
11	WLFI-TV	LIC	DT	11	30.0	40.388889	-86.612778	69.87
12	W39BH	CP	LD	24	4.4	40.109444	-88.235000	74.75
13	W39BH	CP MOD	TX	32	12.5	40.109444	-88.235000	74.75
14	W39BH	LIC	TX	39	12.5	40.109444	-88.235000	74.75
15	WBXC-CD	LIC	DC	46	2.5	40.111056	-88.243000	75.29
16	W07DD-D	LIC	LD	7	0.28	40.224139	-88.298833	75.63
17	WECY-LD	LIC	LD	35	6.0	40.104139	-86.512194	84.68
18	WUDP-LD	LIC	LD	31	10.0	40.064389	-86.491639	88.04
19	W30DI-D	LIC	LD	30	6.0	40.043000	-86.463583	91.21
20	W33DE-D	LIC	LD	33	6.0	40.043000	-86.463583	91.21
21	W39DM-D	LIC	LD	39	6.0	40.043000	-86.463583	91.21
22	WCIA	LIC	DT	48	1000.0	40.105833	-88.450000	91.85
23	W49DS-D	LIC	LD	49	6.0	41.113917	-86.776194	97.93
24	WSWY-LP	LIC	TX	43	11.2	39.503889	-87.443611	98.23
25	WSWY-LP	CP MOD	LD	43	15.0	39.495000	-86.978056	106.64
26	WYIN	LIC	DT	17	300.0	41.348889	-87.400556	106.69
27	WILL-TV	APP	DT	9	35.0	40.038889	-88.669444	111.99

<sup>6</sup> 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

<sup>7</sup> ERP = Transmit Effective Radiated Power



**Jordan Creek Wind Farm LLC  
Wind Power GeoPlanner™  
Off-Air Television Report  
Jordan Creek Wind Farm**

ID	Call Sign	Status	Service <sup>6</sup>	Channel	Transmit ERP <sup>7</sup> (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
28	WILL-TV	LIC	DT	9	30.0	40.038333	-88.669444	112.01
29	WHFE-LD	CP	LD	33	3.0	39.336944	-87.466667	116.79
30	WEIU-TV	LIC	DT	50	255.0	39.570833	-88.307083	117.41
31	WHMB-TV	LIC	DT	20	530.0	39.894444	-86.205833	118.29
32	WIPX-LD	CP	LD	34	9.5	39.894444	-86.205833	118.29
33	WDTI	LIC	DT	44	28.0	39.894444	-86.205833	118.29
34	W30DI-D	CP	LD	30	15.0	39.894389	-86.205833	118.30
35	W33DE-D	CP	LD	33	15.0	39.894389	-86.205833	118.30
36	WIPX-LD	LIC	LD	34	9.5	39.894389	-86.205833	118.30
37	W39DM-D	CP	LD	39	1.0	39.894389	-86.205833	118.30
38	WUDZ-LD	LIC	LD	28	7.5	39.894167	-86.205694	118.32
39	WUDP-LD	CP MOD	LD	31	7.2	39.894167	-86.205694	118.32
40	WRTV	LIC	DT	25	1000.0	39.899028	-86.201028	118.42
41	WFYI	LIC	DX	21	200.0	39.899722	-86.200278	118.44
42	WFYI	LIC	DT	21	225.0	39.899167	-86.200556	118.45
43	WIIH-CD	LIC	DC	8	0.3	39.890278	-86.205556	118.53
44	WISH-TV	LIC	DT	9	22.8	39.890278	-86.205556	118.53
45	WISH-TV	LIC	LD	17	15.0	39.890278	-86.205556	118.53
46	WTTK	LIC	DT	29	550.0	39.888889	-86.201944	118.88
47	WXIN	LIC	DT	45	1000.0	39.888889	-86.201944	118.88
48	WTHR	LIC	DT	13	42.1	39.928611	-86.181944	118.39
49	WTHR	APP	DT	13	77.0	39.928611	-86.181944	118.39
50	WALV-CD	LIC	DC	46	15.0	39.928611	-86.181944	118.39
51	WUVI-LD	LIC	LD	20	0.5	41.472167	-87.328583	120.68
52	WUVI-LD	CP	LD	20	3.0	41.472222	-87.328611	120.68
53	-	CP	LD	40	0.1	39.794667	-86.237222	121.63
54	NEW	APP	LD	24	5.0	40.597167	-88.860222	122.99
55	WTHI-TV	LIC	DT	10	27.0	39.243333	-87.385278	127.22
56	WTWO	LIC	DT	36	1000.0	39.242500	-87.391389	127.30
57	WAWV-TV	LIC	DT	39	850.0	39.242500	-87.391389	127.30
58	W16CZ-D	CP	LD	16	10.0	39.231944	-87.394722	128.46
59	W23DZ-D	CP	LD	23	5.0	39.231944	-87.394722	128.46
60	W49DW-D	CP	LD	49	0.5	39.231944	-87.394722	128.46
61	WAND	LIC	DT	17	1000.0	39.952361	-88.832306	128.46
62	WBUI	LIC	DT	22	325.0	39.948889	-88.836667	128.95
63	WBXI-CD	CP	DC	47	7.8	39.769722	-86.157222	128.89
64	WIPX-LD	LIC	TX	51	6.49	39.769722	-86.157222	128.89
65	WBXI-CD	LIC	DC	47	7.8	39.769694	-86.157194	128.89
66	-	CP	LD	3	0.005	39.759944	-86.163889	129.00
67	WNDY-TV	LIC	DT	32	1000.0	40.148889	-85.935278	130.36
68	W15CZ-D	CP	LD	15	0.5	40.014944	-85.982778	130.47
69	WECY-LD	CP	LD	35	15.0	40.014944	-85.982778	130.47



ID	Call Sign	Status	Service <sup>6</sup>	Channel	Transmit ERP <sup>7</sup> (kW)	Latitude (NAD 27)	Longitude (NAD 27)	Distance to Center of Project (km)
70	WAAA-LP	LIC	TX	49	87.0	41.521389	-87.023889	130.49
71	WAAA-LP	CP	LD	49	15.0	41.521389	-87.023889	130.49
72	WLCF-LD	LIC	LD	45	15.0	39.950833	-88.868056	131.35
73	-	CP	LD	41	0.1	41.474389	-88.057417	131.47
74	WDNI-CD	LIC	DC	19	15.0	39.800278	-86.077500	132.97
75	W30DO-D	CP	LD	30	10.0	39.189444	-87.391389	133.19
76	W34ET-D	CP	LD	34	10.0	39.189444	-87.391389	133.19
77	WHNW-LD	LIC	LD	18	15.0	41.602778	-87.337500	135.10
78	WREP-LD	LIC	LD	15	0.2	39.445278	-86.418333	136.14
79	W15CZ-D	LIC	LD	15	6.0	40.421611	-85.824167	136.85
80	WODN-LP	LIC	TX	13	3.0	41.624444	-87.191111	138.78
81	WUEA-LD	LIC	LD	23	6.0	41.358278	-86.367750	140.36
82	WIIB-LD	CP	LD	35	15.0	39.120000	-87.410000	140.86
83	WKMF-LD	CP	LD	50	15.0	39.120000	-87.410000	140.86
84	W49DS-D	CP	LD	49	6.0	41.475500	-86.474694	145.33
85	W20ED-D	CP	LD	20	15.0	39.809722	-88.991944	147.46
86	WYZZ-TV	LIC	DT	28	1000.0	40.645833	-89.179167	150.51
87	WIWU-CD	LIC	DC	51	1.45	40.615556	-85.646389	153.75
88	WTTV	LIC	DT	48	870.0	39.407500	-86.147778	154.90
89	WCLJ-TV	LIC	DT	42	850.0	39.403333	-86.147222	155.26
90	WIPX-TV	LIC	DT	27	165.0	39.404444	-86.143611	155.40
91	WSOT-LD	LIC	LD	27	10.0	40.655000	-85.623056	156.43
92	W14DL-D	CP	LD	14	15.0	40.620028	-89.287417	159.07
93	W16CT-D	CP	LD	16	3.0	40.620028	-89.287417	159.07
94	W32EF-D	CP	LD	32	15.0	40.620028	-89.287417	159.07
95	W35DE-D	CP	LD	35	9.0	40.620028	-89.287417	159.07
96	WTIU	LIC	DT	14	224.0	39.141944	-86.495278	160.15
97	WWTO-TV	LIC	DT	10	80.0	41.281806	-88.936333	160.82

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