Wind Power GeoPlanner™

Off-Air TV Analysis

Hoffman Falls

Prepared on Behalf of
Liberty Renewables Inc.

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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 Hoffman Falls Project in Madison County, New York (the Project). 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 Hoffman Falls Project Area (the Project Area) and local communities are depicted below in Figure 1. The Project Area is defined as the rectangular area with a minimum of a 2-mile buffer from all turbine locations as noted in Figures 1 and 2.

Figure 1: Wind Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all off-air television stations[1] within 150 kilometers of the project area of interest (AOI). TV stations at a distance of 150 kilometers or less are the most likely to provide off-air coverage to the Project Area and neighboring communities. These stations are listed below in Table 1 and Table 2, and a plot depicting their locations is provided in Figure 2. There are a total of 91 database records for stations within approximately 150 kilometers of the limits of the project AOI. Of these stations, only 38 are currently licensed and operating.

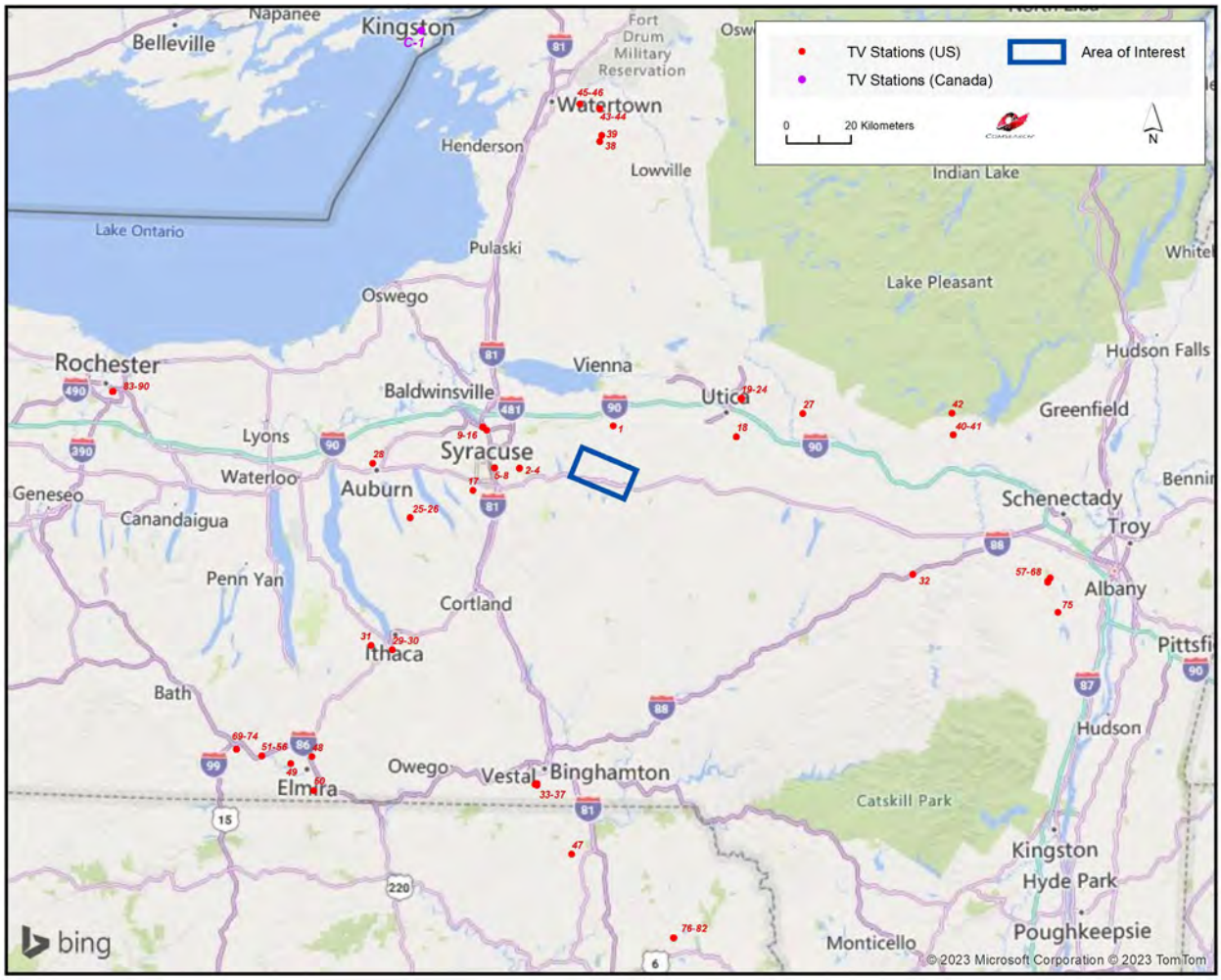

Figure 2: Plot of Off-Air TV Stations within 150 Kilometers of Project Area

[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 TV station's FCC license and governed by Comsearch's data license notification and agreement located at http://www.comsearch.com/files/data_license.pdf.

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine (km)
1	WTKO-CD	LIC	DCA	32	15.0	43.065889	-75.667389	13.19
2	WSYR-TV	CP	DTV	17	285.0	42.945000	-76.024167	20.45
3	WSYR-TV	LIC	DTV	17	105.0	42.945000	-76.024167	20.45
4	WSPX-TV	LIC	DTV	36	82.0	42.945000	-76.024167	20.45
5	NEW	CP	DTV	15	475.0	42.944944	-76.118389	28.14
6	WTVH	LIC	DTV	18	109.0	42.944944	-76.118389	28.14
7	WSTM-TV	LIC	DTV	19	150.0	42.944944	-76.118389	28.14
8	WCNY-TV	LIC	DTV	20	62.0	42.944944	-76.118389	28.14
9	W16EA-D	LIC	LPD	16	12.3	43.050056	-76.150750	32.73
10	WVOA-LD	LIC	LPD	6	2.75	43.058333	-76.166389	34.25
11	WBLZ-LD	LIC	LPD	22	12.5	43.058333	-76.166389	34.25
12	WHSU-CD	LIC	DCA	23	9.5	43.058333	-76.166389	34.25
13	WONO-CD	LIC	DCA	24	15.0	43.058333	-76.166389	34.25
14	WTVU-CD	LIC	DCA	25	15.0	43.058333	-76.166389	34.25
15	WMJQ-CD	LIC	DCA	27	12.0	43.058333	-76.166389	34.25
16	WWLF-LD	LIC	LPD	35	5.0	43.058333	-76.166389	34.25
17	WSYT	LIC	DTV	14	540.0	42.880611	-76.199639	35.60
18	WVVC-LD	LIC	LPD	33	15.0	43.037472	-75.195417	38.01
19	WWDG-CD	CP	DCA	28	10.2	43.144167	-75.178889	44.54
20	W22DO-D	LIC	LPT	22	1.55	43.143889	-75.177500	44.61
21	WWDG-CD	LIC	DCA	28	12.7	43.142778	-75.175833	44.66
22	WUTR	LIC	DTV	30	50.0	43.145278	-75.176111	44.79

[2] Definitions of service and status codes:
ACA - Analog Class A
DCA - Digital Class A
DRT - Digital Replacement Translator
DT - ETL testing
DTS - Distributed Transmission System
DTV - Full Service Television
DTX - Digital TV Auxiliary
LPA - Low Power Analog TV
LPD - Low Power Digital TV
LPT - Digital TV Translator
LPX - Analog TV Translator
TS - Legacy Service for Analog TV Auxiliary
TV - Analog TV legacy

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
AMD - Amendment

[2] ERP = Transmit Effective Radiated Power

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine (km)
23	WPNY-LD	LIC	LPD	11	0.16	43.144750	-75.175611	44.79
24	WFXV	LIC	DTV	34	1000.0	43.144750	-75.175611	44.79
25	WNYI	LIC	DTV	13	28.0	42.801444	-76.436889	56.60
26	WDSS-LD	LIC	LPD	13	28.0	42.801444	-76.436889	56.60
27	WKTV	LIC	DTV	29	708.0	43.102500	-74.940556	59.98
28	WNDR-LD	LIC	LPD	32	2.0	42.951389	-76.584444	66.16
29	WSKG-TV	CP	DRT	33	15.0	42.429778	-76.496556	82.38
30	WNYS-CD	LIC	DCA	16	1.7	42.429778	-76.496583	82.38
31	W34FR-D	LIC	LPT	34	15.0	42.441722	-76.577500	86.52
32	WUCB-LD	LIC	LPD	32	9.4	42.650833	-74.523056	95.68
33	WBGH-CD	LIC	DCA	20	0.04	42.060833	-75.943056	96.83
34	WIVT	LIC	DTV	27	298.0	42.060833	-75.943056	96.83
35	WSKG-TV	LIC	DTV	31	40.2	42.061167	-75.945611	96.84
36	WBNG-TV	LIC	DTV	8	23.8	42.058611	-75.951389	97.22
37	WICZ-TV	LIC	DTV	7	28.0	42.056111	-75.943889	97.35
38	WPBS-DT	LIC	DTV	26	98.0	43.862778	-75.727222	100.16
39	WWTI	LIC	DTV	31	31.1	43.879722	-75.719722	102.05
40	W18FE-D	CP	LPT	18	2.5	43.041472	-74.366528	104.22
41	W21CP-D	LIC	LPT	21	2.5	43.041472	-74.366528	104.22
42	WFNY-CD	LIC	DCA	16	8.8	43.101739	-74.370414	104.92
43	WWNY-TV	LIC	DTV	8	50.0	43.954167	-75.728889	110.31
44	WNYF-CD	LIC	DCA	35	15.0	43.954167	-75.728889	110.31
45	WTKJ-LD	LIC	LPD	19	1.5	43.967944	-75.805889	111.93
46	WVNC-LD	LIC	LPD	24	15.0	43.967944	-75.805889	111.93
47	W32FP-D	LIC	LPD	32	2.5	41.863694	-75.809639	116.83
48	W26BF-D	LIC	LPD	26	5.0	42.126667	-76.793056	123.49
49	WETM-TV	LIC	DTV	23	265.0	42.106111	-76.871111	129.61
50	W29EZ-D	LIC	LPD	29	0.776	42.031944	-76.783611	130.86
51	W11DQ-D	CP	LPD	11	0.1	42.125056	-76.981028	134.71
52	W11DQ-D	APP	LPD	11	0.1	42.125056	-76.981028	134.71
53	W12DP-D	APP	LPD	12	0.1	42.125056	-76.981028	134.71
54	W12DP-D	CP	LPD	12	0.1	42.125056	-76.981028	134.71
55	W17EJ-D	APP	LPD	17	0.1	42.125056	-76.981028	134.71
56	W17EJ-D	CP	LPD	17	0.1	42.125056	-76.981028	134.71
57	WYBN-LD	LIC	LPD	26	12.0	42.627611	-74.010389	136.79
58	WYBN-LD	CP	LPD	26	15.0	42.627611	-74.010389	136.79
59	WNYA	LIC	DTV	7	23.0	42.625361	-74.010194	136.87
60	WXXA-TV	LIC	DTV	8	22.0	42.625361	-74.010194	136.87
61	WNYT	LIC	DTV	12	30.0	42.625361	-74.010194	136.87
62	WNYT	CP	DTV	21	970.0	42.625361	-74.010194	136.87
63	WCWN	LIC	DTV	22	750.0	42.625361	-74.010194	136.87
64	WTEN	LIC	DTV	24	1000.0	42.625361	-74.010194	136.87

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine (km)
65	WMHT	LIC	DTV	25	445.0	42.625361	-74.010194	136.87
66	WRGB	LIC	DTV	35	1000.0	42.625361	-74.010194	136.87
67	WYPX-TV	LIC	DTV	19	600.0	42.636944	-74.000833	137.31
68	WZPJ-LD	LIC	LPD	23	15.0	42.636944	-74.000833	137.31
69	WSKA	LIC	DTV	25	50.0	42.142000	-77.077444	139.51
70	WYDC	LIC	DTV	30	55.0	42.142000	-77.077444	139.51
71	WENY-TV	LIC	DTV	35	145.0	42.142000	-77.077444	139.51
72	WJKP-LD	LIC	LPD	14	3.0	42.141944	-77.077500	139.51
73	W15EG-D	LIC	LPD	15	4.0	42.141944	-77.077500	139.51
74	WECY-LD	LIC	LPD	19	0.8	42.141944	-77.077500	139.51
75	WVBG-LD	LIC	LPD	17	15.0	42.540806	-73.973139	142.37
76	WVIA-TV	LIC	DRT	18	0.323	41.632028	-75.425444	143.45
77	WYOU	LIC	DRT	25	0.3	41.632028	-75.425444	143.45
78	WOLF-TV	LIC	DRT	27	0.3	41.632028	-75.425444	143.45
79	WBRE-TV	LIC	DRT	28	0.3	41.632028	-75.425444	143.45
80	WSWB	LIC	DRT	36	0.3	41.632028	-75.425444	143.45
81	WQPX-TV	LIC	DRT	49	0.3	41.632028	-75.425444	143.45
82	WNEP-TV	LIC	DRT	26	0.3	41.631306	-75.425167	143.54
83	WHEC-TV	LIC	DTV	10	18.1	43.135639	-77.583694	148.92
84	WROC-TV	LIC	DTV	21	1000.0	43.135639	-77.583694	148.92
85	WHAM-TV	LIC	DTV	9	30.0	43.135278	-77.583889	148.94
86	WXXI-TV	LIC	DTV	22	273.0	43.135278	-77.583889	148.94
87	WGCE-CD	LIC	DCA	26	15.0	43.134861	-77.584917	149.01
88	WUHF	LIC	DTV	28	320.0	43.134861	-77.584917	149.01
89	WBGT-CD	LIC	DCA	29	15.0	43.135278	-77.585000	149.02
90	WAWW-LD	LIC	LPD	30	15.0	43.135278	-77.585000	149.02

Table 1: Off-Air TV Stations within 150 Kilometers of Project Area (US)

ID	Call Sign	Status	Class[4]	Channel	Transmit ERP (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine (km)
C-1	CKWS-DT	OP	R	11	9.4	44.167222	-76.427500	144.82

Table 2: Off-Air TV Stations within 150 Kilometers of Project Area (Canada)

[4] Definitions of class and status codes:
R – Regular VHF Television Broadcast Station
A – NTSC UHF station
OP – Licensed and operational station
TO – Temporary operation
AU – Authorized; not yet operational

3. Impact Assessment

Based on a contour analysis of the licensed stations within 150 kilometers of the Project Area, it was determined that eighteen of the full-power digital stations, identified below in Table 3 and Table 4, together with eight low-power digital stations, may have their reception disrupted in and around the Project. The areas primarily affected would include TV service locations within 10 kilometers of the 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.

ID	Call Sign	Status	Service[5]	Channel	Transmit ERP[6] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine (km)
1	WTKO-CD	LIC	DCA	32	15.0	43.065889	-75.667389	13.19
3	WSYR-TV	LIC	DTV	17	105.0	42.945000	-76.024167	20.45
4	WSPX-TV	LIC	DTV	36	82.0	42.945000	-76.024167	20.45
6	WTVH	LIC	DTV	18	109.0	42.944944	-76.118389	28.14
7	WSTM-TV	LIC	DTV	19	150.0	42.944944	-76.118389	28.14
8	WCNY-TV	LIC	DTV	20	62.0	42.944944	-76.118389	28.14
9	W16EA-D	LIC	LPD	16	12.3	43.050056	-76.150750	32.73
10	WVOA-LD	LIC	LPD	6	2.8	43.058333	-76.166389	34.25
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12	WHSU-CD	LIC	DCA	23	9.5	43.058333	-76.166389	34.25
13	WONO-CD	LIC	DCA	24	15.0	43.058333	-76.166389	34.25
14	WTVU-CD	LIC	DCA	25	15.0	43.058333	-76.166389	34.25
15	WMJQ-CD	LIC	DCA	27	12.0	43.058333	-76.166389	34.25
16	WWLF-LD	LIC	LPD	35	5.0	43.058333	-76.166389	34.25
17	WSYT	LIC	DTV	14	540.0	42.880611	-76.199639	35.60
18	WVVC-LD	LIC	LPD	33	15.0	43.037472	-75.195417	38.01
20	W22DO-D	LIC	LPT	22	1.6	43.143889	-75.177500	44.61
21	WWDG-CD	LIC	DCA	28	12.7	43.142778	-75.175833	44.66
22	WUTR	LIC	DTV	30	50.0	43.145278	-75.176111	44.79
23	WPNY-LD	LIC	LPD	11	0.2	43.144750	-75.175611	44.79
24	WFXV	LIC	DTV	34	1000.0	43.144750	-75.175611	44.79
25	WNYI	LIC	DTV	13	28.0	42.801444	-76.436889	56.60
26	WDSS-LD	LIC	LPD	13	28.0	42.801444	-76.436889	56.60

[5] Definitions of service and status codes:
DT – Digital television broadcast station
LD – Low power digital television broadcast station
LIC – Licensed and operational station

[6] ERP = Transmit Effective Radiated Powe

ID	Call Sign	Status	Service[5]	Channel	Transmit ERP[6] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to the Nearest Turbine (km)
27	WKTV	LIC	DTV	29	708.0	43.102500	-74.940556	59.98
36	WBNG-TV	LIC	DTV	8	23.8	42.058611	-75.951389	97.22
37	WICZ-TV	LIC	DTV	7	28.0	42.056111	-75.943889	97.35

Table 3: Licensed Off-Air TV Stations Subject to Degradation (US)

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 station mentioned above, especially those that would have line-of-sight to at least one wind turbine but not to the 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 Hoffman Falls Wind Project 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

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