Wind Power GeoPlanner™

Licensed Microwave Report

Horse Creek

Prepared on Behalf of
Iberdrola Renewables

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A CommScope Company

Table of Contents

1. Introduction - 1 -

2. Summary of Results - 2 -

3. Tables and Figures - 4 -

4. Contact Us - 8 -

1. Introduction

The use of wind energy, one of the oldest forms of harnessing a natural energy source, is now one of the world's fastest growing alternative energy sources. The United States is committed to the use of wind energy, and over the next several years billions of dollars will be spent on wind power projects. However, as new wind turbine generators are installed around the country, it is important to note that they may pose an interference threat to existing microwave systems and broadcast stations licensed to operate in the United States.

Wind turbines can interfere with microwave paths by physically blocking the line-of-sight between two microwave transmitters. Additionally, wind turbines have the potential to cause blockage and reflections ("ghosting") to television reception. Blockage is caused by the physical presence of the turbines between the television station and the reception points. Ghosting is caused by multipath interference that occurs when a broadcast signal reflects off of a large reflective object—in this case a wind turbine—and arrives at a television receiver delayed in time from the signal that arrives via direct path.

Many states and other jurisdictions recognize the need for regulations addressing interference to radio signal transmissions from the wind turbine installations. Specifically, local planning authorities typically require project developers to ensure wind turbines will not cause interference. In some cases they require developers to notify the telecommunication operators in the area of the proposed wind turbine installation. Other factors prompting developers to undertake proactive investigation into potential interference include the need to prevent legal and regulatory problems and the desire to promote goodwill within the community—a good neighbor approach.

Comsearch has developed and maintains comprehensive technical databases containing information on licensed microwave networks throughout the United States. Microwave bands that may be affected by the installation of wind turbine facilities operate over a wide frequency range (900 MHz – 23 GHz). 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 non-federal government microwave systems. Comsearch provides additional wind energy services, a description of which is available upon request.

2. Summary of Results

An overall summary of results appears below.

Project Information

Name: Horse Creek

County: Jefferson

State: New York

Total Microwave Paths	Paths with Obstructions	Total Turbines	Turbine Obstructions
1	N/A	0	N/A

Methodology

Our obstruction analysis was performed using Comsearch's proprietary microwave database, which contains all non-government licensed paths from 0.9 - 23 GHz[1]. First, we determined all microwave paths that intersect the area of interest[2]. The area of interest was defined by the client and encompasses the planned turbine locations. Next, for each microwave path that intersected the project area, we calculated a Worst Case Fresnel Zone (WCFZ). The mid-point of a full microwave path is the location where the widest (or worst case) Fresnel zone occurs. Fresnel zones were calculated for each path using the following formula.

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

Where,

R_n = 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

For worst case Fresnel zone calculations, $d_1 = d_2$

[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.

The calculated WCFZ radius, giving the linear path an area or swath, buffers each microwave path in the project area. See the Tables and Figures section for a summary of paths and WCFZ distances. In general, this is the two-dimensional area where the planned wind turbines should be avoided, if possible. A depiction of the WCFZ overlaid on topographic basemaps can be found in the Tables and Figures section, and is also included on the enclosed spreadsheet and shapefiles[3,4].

Discussion of Potential Obstructions

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.

[3] The ESRI® shapefiles enclosed are in NAD 83 UTM Zone 18 projected coordinate system.

[4] Comsearch makes no warranty as to the accuracy of the data included in this report beyond the date of the report.

3. Tables and Figures

Figure 1: Area of Interest

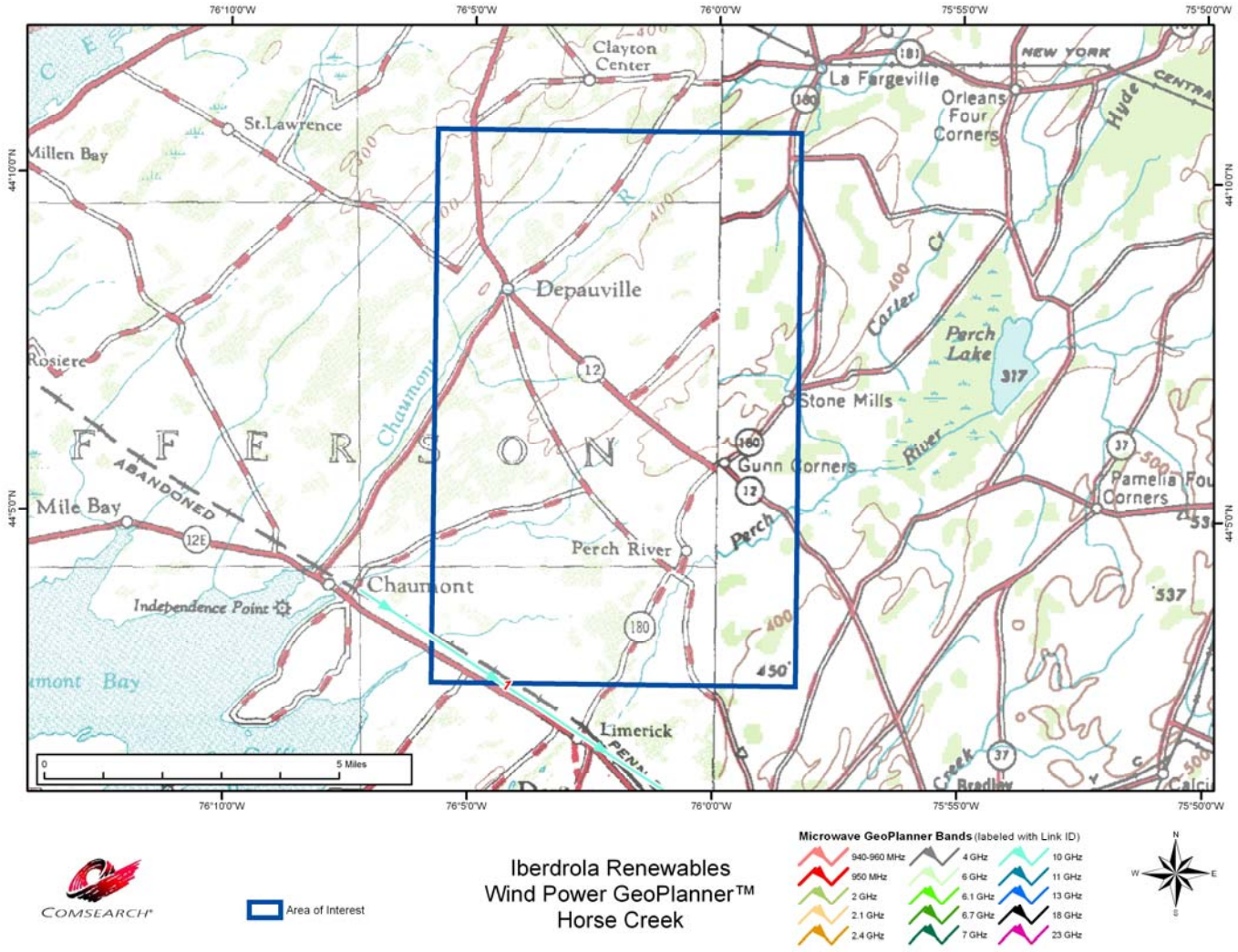

Figure 2: Microwave Paths that Intersect the Area of Interest

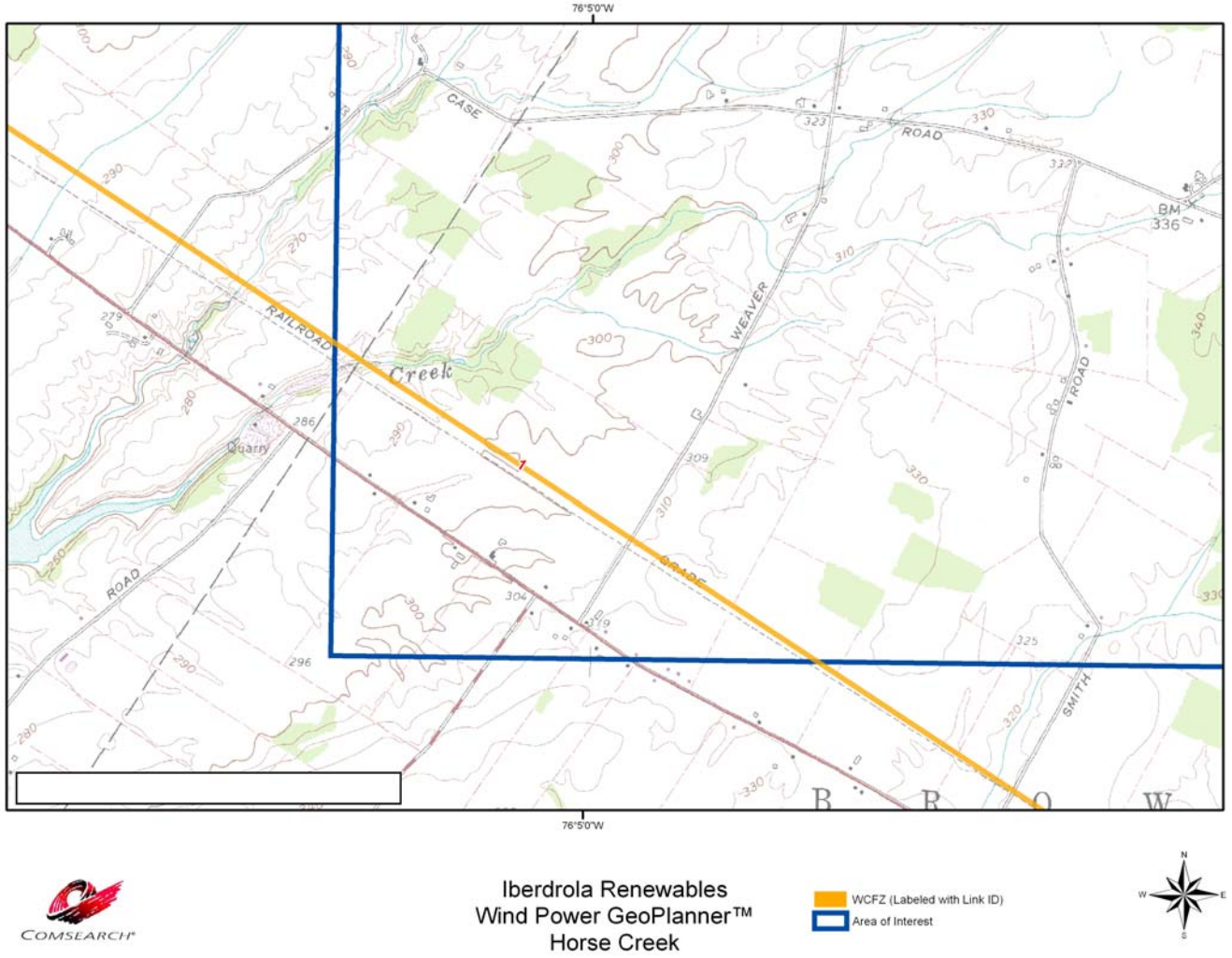

Figure 3: Microwave Paths with WCFZ Buffers

ID	Site Name 1	Site Name 2	Callsign 1	Callsign 2	Band	Licensee	WCFZ (m)
1	CHAUMONT	RYDER	WQIE321	WPUU333	10 GHz	St. Lawrence Seaway RSA Cellular Partner	10.78

Table 1: Microwave Paths that Intersect the Area of Interest

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

4. Contact Us

For questions or information regarding the Licensed Microwave Report, contact:

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Off-Air TV Reception Analysis at the Clayton Wind Energy Project Area in Jefferson County, New York

Comsearch was contracted by PPM Atlantic Renewable Energy of Skillman, NJ to identify all of the off-air television stations within 100-mile radius of the proposed Clayton Wind Energy Project in Jefferson County, NY. Off-air stations are television broadcasters that transmit signals that can be received directly on a television receiver from terrestrially located broadcast facilities. Comsearch examined the coverage of the off-air TV stations and the communities in the area that could potentially have degraded television reception because of the location of the wind turbine facility. The proposed wind energy facility boundaries and local communities are plotted in the map shown in Figure 1 of this memorandum. Table 1 lists the U. S. off-air television stations. Table 2 lists the Canadian off-air television stations. Figure 2 shows all of the television stations, U.S. and Canadian, within 100 mile radius of the proposed wind facility.

Table 1 List of U. S. Off-Air TV Channels within 100 Miles of the Clayton Wind Energy Project

Location		Call Sign	Channel	Service	Status	Distance
UTICA	NY	WKTV	2	TV	LIC	89.02 mi
SYRACUSE	NY	WSTM-TV	3	TV	LIC	81.54 mi
HERKIMER	NY	W04AE	4	TX	LIC	92.12 mi
UTICA	NY	881121KL	4	TA	-	86.83 mi
SYRACUSE	NY	WTVH	5	TV	LIC	80.81 mi
SYRACUSE	NY	WTVH	5	TV	CP	80.81 mi
WESTVALE	NY	WMBO-LP	6	TX	APP	73.93 mi
CARTHAGE	NY	WWNY-TV	7	TV	LIC	18.79 mi
SYRACUSE-DEWITT	NY	W07BA	7	TX	LIC	77.31 mi
SYRACUSE	NY	NEW	8	LD	APP	73.93 mi
SYRACUSE	NY	WSYR-TV	9	TV	LIC	81.40 mi
GOUVERNEUR	NY	NEW	9	TX	APP	31.57 mi
SYRACUSE	NY	WONO-CA	11	CA	LIC	73.93 mi
UTICA, ETC.	NY	WPNY-LP	11	LD	CP	79.83 mi
UTICA, ETC.	NY	WPNY-LP	11	TX	LIC	79.83 mi
NEWCOMB	NY	W12BG	12	TX	LIC	92.86 mi
ROME	NY	W12BZ	12	CA	LIC	69.06 mi
SYRACUSE	NY	NEW	12	LD	APP	73.93 mi
ONEIDA	NY	W13BR	13	CA	LIC	75.21 mi
OGDENSBURG	NY	W13DG	13	TX	CP	50.06 mi
SYRACUSE	NY	WBLZ-LP	13	CA	LIC	73.93 mi
MASSENA	NY	W14BU	14	TX	LIC	77.93 mi
SYRACUSE	NY	WSTQ-LP	14	TX	LIC	73.93 mi
SYRACUSE	NY	WSPX	14	DN	APP	56.56 mi
ONEIDA	NY	WTKO-LP	15	TX	LIC	75.21 mi

WATERTOWN	NY	WPBS-TV	16	TV	LIC	23.34 mi
WATERTOWN	NY	WPBS-TV	16	TV	CP	23.32 mi
SYRACUSE	NY	WSYR-TV	17	DT	LIC	81.40 mi
SYRACUSE	NY	WNDR-LP	18	CA	LIC	77.20 mi
NORWOOD	NY	WNPI-TV	18	TV	LIC	63.12 mi
NORWOOD	NY	WNPI-TV	18	TV	CP	63.16 mi
UTICA	NY	W12BZ	18	CA	CP MOD	79.83 mi
SYRACUSE	NY	WSYT	19	DS	STA	86.30 mi
SYRACUSE	NY	WSYT	19	DT	LIC	86.30 mi
WATERTOWN	NY	WTKJ-LP	19	TX	APP	15.30 mi
MASSENA	NY	W20BA	20	TX	LIC	77.93 mi
OGDENSBURG	NY	NEW	20	TX	APP	48.73 mi
UTICA	NY	WUTR	20	TV	LIC	79.83 mi
WATERTOWN	NY	WWTI	21	DS	STA	22.67 mi
WATERTOWN	NY	WWTI	21	DT	LIC	22.67 mi
SYRACUSE	NY	WTVU-LP	22	CA	LIC	73.93 mi
SYRACUSE	NY	WTVU-LP	22	TX	CP	73.93 mi
UTICA	NY	NEW	22	LD	APP	79.87 mi
SYRACUSE	NY	WTVU-LP	22	CA	APP	73.93 mi
SYRACUSE	NY	WTVU-LP	22	CA	APP	73.93 mi
NORWOOD	NY	WNPI-TV	23	DS	STA	63.12 mi
NORWOOD	NY	WNPI-TV	23	DT	LIC	63.14 mi
SYRACUSE	NY	WCNY-TV	24	TV	LIC	81.54 mi
TUPPER LAKE	NY	W25AT	25	TX	LIC	77.03 mi
MASSENA	NY	W25BX	25	TX	LIC	77.93 mi
SYRACUSE	NY	WCNY-TV	25	DT	LIC	81.54 mi
TUPPER LAKE	NY	W25AT	25	LD	APP	77.03 mi
UTICA	NY	WVVC-LP	27	TX	LIC	86.08 mi
UTICA	NY	WFXV	27	DT	CP	80.48 mi
UTICA	NY	WFXV	27	DS	STA	79.83 mi
MASSENA	NY	WNYF-LP	28	TX	LIC	77.93 mi
PITCAIRN	NY	W28CI	28	TX	CP	36.68 mi
WATERTOWN	NY	WNYF-CA	28	CA	LIC	14.74 mi
UTICA	NY	WKTV	29	DT	APP	89.02 mi
UTICA	NY	WKTV	29	DT	CP MOD	89.02 mi
SYRACUSE	NY	W30AJ	30	TX	LIC	74.43 mi
UTICA	NY	WUTR	30	DS	STA	79.83 mi
UTICA	NY	WUTR	30	DT	LIC	79.83 mi
AUBURN	NY	WNNY-LP	32	TX	APP	93.65 mi
UTICA	NY	WFXV	33	TV	LIC	80.47 mi
WATERTOWN	NY	WBQZ-LP	34	TX	LIC	5.87 mi
LAKE PLACID	NY	960910KE	34	TV	APP	99.85 mi
WATERTOWN	NY	WBQZ-LP	34	TX	CP	10.59 mi
SYRACUSE	NY	WOBX-LP	35	TX	LIC	73.93 mi
CARTHAGE	NY	WWNY-TV	35	DS	STA	17.52 mi
SYRACUSE	NY	WOBX-LP	35	CA	LIC	73.93 mi
UTICA	NY	W53AM	35	LD	APP	79.83 mi
CARTHAGE	NY	WWNY-TV	35	DT	CP MOD	18.79 mi
WATERTOWN	NY	NEW	35	LD	APP	18.79 mi
MASSENA	NY	W36BN	36	TX	LIC	77.93 mi

SYRACUSE	NY	NEW	36	LD	APP	73.93 mi
SYRACUSE	NY	W38CY	38	TX	LIC	81.44 mi
SYRACUSE	NY	W38CY	38	LD	APP	81.44 mi
OGDENSBURG	NY	NEW	39	TX	APP	47.46 mi
ONEIDA	NY	NEW	39	LD	APP	75.21 mi
DEWITT	NY	WIXT-CA	40	CA	LIC	77.20 mi
SARANAC LAKE	NY	NEW	40	NM	GRANT	76.99 mi
SARANAC LAKE	NY	WCWF	40	TV	CP	76.99 mi
UTICA	NY	WVVC-LP	40	TX	APP	85.76 mi
WATERTOWN	NY	WPBS-TV	41	DT	LIC	23.32 mi
SYRACUSE	NY	NEW	42	LD	APP	73.93 mi
SYRACUSE	NY	WNYS-TV	43	TV	LIC	86.30 mi
SYRACUSE	NY	WNYS-TV	44	DT	LIC	86.30 mi
CRYSTAL DALE	NY	NEW	45	TX	APP	41.37 mi
SYRACUSE	NY	NEW	45	LD	APP	73.93 mi
POTSDAM	NY	NEW	46	TX	APP	61.53 mi
UTICA	NY	W46DY	46	TX	CP	84.19 mi
BLUE MOUNTAIN LAKE	NY	NEW	46	TX	APP	82.72 mi
WATERTOWN	NY	WLOT-LP	46	CA	LIC	11.77 mi
SYRACUSE	NY	W30AJ	46	TX	APP	81.55 mi
SYRACUSE	NY	WTVH	47	DS	STA	80.81 mi
SYRACUSE	NY	WTVH	47	DT	CP MOD	80.81 mi
AUBURN	NY	W48AO	48	TX	LIC	86.83 mi
OGDENSBURG	NY	NEW	48	TX	APP	47.46 mi
SYRACUSE	NY	WNDR-LP	49	CA	CP	77.42 mi
WATERTOWN	NY	WWTI	50	TV	LIC	22.67 mi
UTICA	NY	W53AM	50	LD	APP	79.83 mi
SYRACUSE	NY	WHSU-CA	51	CA	LIC	73.93 mi
OGDENSBURG	NY	NEW	51	TX	APP	47.46 mi
UTICA	NY	W51CV	51	TX	LIC	79.82 mi
UTICA	NY	W51CV	51	LD	APP	79.82 mi
MORAVIA	NY	WNNY-LP	52	TX	LIC	93.65 mi
ITHACA	NY	WNYI	52	TV	APP	86.28 mi
UTICA	NY	W53AM	53	TX	LIC	79.83 mi
AUBURN	NY	W54AK	54	TX	LIC	86.83 mi
SYRACUSE	NY	WSTM-TV	54	DS	STA	81.54 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP	11.60 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP MOD	12.74 mi
SYRACUSE	NY	WSTM-TV	54	DT	LIC	81.54 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP MOD	15.30 mi
SYRACUSE	NY	WSPX-TV	56	TV	LIC	56.56 mi
UTICA	NY	W59AU	59	TX	LIC	79.87 mi
UTICA	NY	960408KE	59	TV	APP	79.87 mi
UTICA	NY	W59AU	59	TA	-	81.05 mi
SYRACUSE, ETC.	NY	WMBO-LP	60	TX	LIC	77.42 mi
SARANAC LAKE	NY	951106KE	61	TV	APP	76.99 mi
SARANAC LAKE	NY	951106KH	61	TV	APP	76.99 mi
OGDENSBURG	NY	NEW	61	TX	APP	47.46 mi
MASSENA	NY	W65CR	65	TX	LIC	77.93 mi
ILION	NY	890629KE	67	TA	-	99.20 mi

SYRACUSE	NY	WSYT	68	TV	LIC	86.30 mi
UNION SPRINGS, ETC.	NY	W69AN	69	TX	LIC	91.13 mi

TV –Normal Broadcast Station
DS-Digital Service Television, Temporary Operation, STA Operation
DT-Digital Television Broadcast Station
DR- Indicates Station has Applied for FCC Rule Making
GRA-Indicates Rule Making was granted by FCC
LP-Low Power Television Broadcast Station
TX-Translator Television Broadcast Station
LIC – Licensed and operational station
CP – License approved construction permit granted
APP – License application, not yet operational
STA – Special transmit authorization, usually granted by FCC for temporary operation

Table 2 Canadian Off-Air TV Channels within 100 Miles of the Clayton Wind Energy Project

Location		Call Sign	Channel	Class	Distance
Cornwall	ON	ON-TV-419	64	A	89.35
Cornwall	ON	ON-DT-118	47	B	89.35
Cornwall	ON	ON-DT-117	36	B	89.35
Cornwall	ON	ON-DT-116	28	B	89.35
Cornwall	ON	ON-DT-120	55	B	89.35
Cornwall	ON	ON-DT-119	31	A	89.35
Cornwall	ON	ON-TV-418	53	A	89.35
Cornwall	ON	ON-TV-417	29	B	89.35
Cornwall	ON	ON-TV-416	54	B	89.35
Cornwall	ON	ON-TV-491	11	R	87.57
Prescott	ON	CKWS-TV-2	26	A	54.78
Prescott	ON	CKWS-DT-2	3	A	54.78
Ottawa	ON	CFMT-DT-2	27	C	78.72
Ottawa	ON	CJMT-DT-2	66	C	78.72
Ottawa	ON	CITS-TV-1	32	B	78.72
Ottawa	ON	CITS-DT-1	42	C	78.72
Ottawa	ON	CJMT-TV-2	14	C	78.72
Ottawa	ON	CJMT-DT-2	66	C	78.72
Ottawa	ON	CDTV-DT-OTT	67	VU	78.72
Ottawa	ON	CFMT-TV-2(1)	60	D	78.72
Ottawa	ON	CHRO-DT-43	17	C	78.72
Ottawa	ON	CHCH-TV-1	11	R	78.72
Ottawa	ON	CFMT-TV-2	60	D	78.72
Ottawa	ON	CHRO-TV-43	43	C	78.72
Ottawa	ON	CITY-TV-3	65	C	78.72
Ottawa	ON	CHCH-DT-1	33	C	78.72
Ottawa	ON	CITY-DT-3	67	C	78.72
Brockville	ON	ON-DT-113	31	A	36.91
Brockville	ON	ON-TV-413	39	A	36.91
Ottawa	ON	CRC-DT-2	54	LP	91.20
Ottawa	ON	CDTV-DT-OTT2	67	A	91.20

	ON	CFMT-DT-2	27	C	90.58
Ottawa	ON	CRC-DT-3	54	LP	89.63
Gatineau	QC	CRC-DT-1	54	LP	91.27
Hull	QC	CRC-DT	67	LP	91.27
Hull	QC	CFGS-DT	49	C	95.52
Hull	QC	CFGS-TV	34	C	95.52
Hull	QC	CIVO-TV	30	D	95.52
Hull	QC	CIVO-DT	64	C	95.52
Hull	QC	CHOT-DT	15	C	95.52
Hull	QC	CHOT-TV	40	C	95.52
Ottawa	ON	CBOFT-DT	22	VL	95.52
Ottawa	ON	CBOT-DT	25	VL	95.52
Ottawa	ON	CICO-TV-24	24	D	95.52
Ottawa	ON	CBOT	4	R	95.52
Ottawa	ON	CICO-TV-24	24	D	95.52
Ottawa	ON	CJOH-TV	13	R	95.52
Ottawa	ON	CBOFT	9	R	95.52
Ottawa	ON	CIII-TV-6	6	R	95.52
Ottawa	ON	CBOT-DT	25	VL	95.52
Ottawa	ON	CBOFT-DT	62	VU	95.52
Ottawa	ON	CICO-DT-24	20	C	95.52
Ottawa	ON	CJOH-DT	58	VU	95.52
Ottawa	ON	CIII-DT-6	12	VL	95.52
Smiths Falls	ON	CKWS-TV-3	36	A	61.25
Smiths Falls	ON	CKWS-DT-3	52	A	61.07
Gananoque	ON	ON-TV-429	26	A	16.07
Arnprior	ON	ON-TV-402	48	A	91.74
Arnprior	ON	ON-DT-102	31	A	91.74
Kingston	ON	CKWS-TV	11	R	20.27
Kingston	ON	ON-DT-3	66	C	20.27
Kingston	ON	CKWS-DT	69	VU	20.27
Kingston	ON	ON-TV-3	58	C	20.27
Kingston	ON	CBLFT-DT-14	65	C	25.36
Kingston	ON	CICO-TV-38	38	C	25.36
Kingston	ON	CBLFT-14	32	C	25.36
Kingston	ON	CICO-DT-38	64	C	25.36
Kingston	ON	ON-DT-141	36	B	24.80
Kingston	ON	ON-DT-140	48	B	24.80
Kingston	ON	ON-TV-440	19	B	24.80
Kingston	ON	ON-TV-441	23	B	24.80
Renfrew	ON	ON-TV-454	26	A	98.13
Deseronto	ON	CJOH-TV-6	6	R	52.28
Deseronto	ON	CJOH-DT-6	49	VL	52.28
Cloyne	ON	CICO-TV-92	55	C	77.88
Cloyne	ON	CICO-DT-92	10	C	77.88
Bancroft	ON	CIII-TV-2	2	R	86.75
Bancroft	ON	CIII-DT-2	8	VL	86.75
Belleville	ON	CBLFT-13	15	C	60.11
Belleville	ON	CICO-TV-53	53	C	60.11
Belleville	ON	CBLFT-DT-13	57	C	60.11

Belleville	ON	CICO-DT-53	51	C	60.11
Belleville	ON	ON-DT-109	52	B	60.11
Belleville	ON	ON-TV-409	33	B	60.11
Belleville	ON	ON-DT-110	26	B	66.76
Belleville	ON	ON-TV-410	39	B	66.76
Trenton	ON	ON-DT-184	4	B	77.52
Trenton	ON	ON-TV-484	40	B	77.52
Brighton	ON	CKWS-TV-1	66	B	88.22
Brighton	ON	CKWS-DT-1	62	B	88.22

The most likely TV stations that will produce off-air coverage to the Clayton Wind Energy Facility area will be those stations at a distance of 40 miles or less. Of the stations listed in Table 1and 2 there are a total of 35 stations with license records within this range, and of these, 15 are Canadian and 20 are U. S. stations. Of the 20 U.S. Stations only 8 are presently broadcasting. Three of the stations are full power analog stations, 2 are full power digital stations and 3 are low power stations with limited coverage. Of the 15 Canadian stations 8 are analog and 7 are digital stations. The stations within 40 miles are listed in Table 3 below.

The number of U.S. off-air television available to the local communities is extremely limited since there are only 3 full power analog and 2 full power digital U. S. TV stations available in the area. There are 15 Canadian stations also available but many of these may not be in English, or of interest to the local U.S. communities. Based on the low number of U. S. stations in the area and the probable lack of interest in the programming content of the Canadian stations, it is not expected that the off-air television stations available in the area are the primary mode of television service for the local communities. Because of this, TV Cable service, where available, and/or direct satellite broadcast (DBS) are probably the dominant delivery mode of TV service to the proposed wind facility's surrounding communities. These services will be unaffected by the presence of the wind turbine facility. If the primary source of TV services in the area is cable and satellite the degradation of the off-air television reception by the wind turbines when they are installed may not be a serious issue in the local communities.

Table 3 Off-Air TV Channels within 40 Miles of Clayton Wind Energy Project

Location		Call Sign	Channel	Service	Status	Distance
WATERTOWN	NY	WBQZ-LP	34	TX	LIC	5.87 mi
WATERTOWN	NY	WBQZ-LP	34	TX	CP	10.59 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP	11.60 mi
WATERTOWN	NY	WLOT-LP	46	CA	LIC	11.77 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP MOD	12.74 mi
WATERTOWN	NY	WNYF-CA	28	CA	LIC	14.74 mi
WATERTOWN	NY	WTKJ-LP	19	TX	APP	15.30 mi
PHILADELPHIA	NY	WTKJ-LP	54	TX	CP MOD	15.30 mi
CARTHAGE	NY	WWNY-TV	35	DS	STA	17.52 mi
CARTHAGE	NY	WWNY-TV	7	TV	LIC	18.79 mi
CARTHAGE	NY	WWNY-TV	35	DT	CP MOD	18.79 mi
WATERTOWN	NY	NEW	35	LD	APP	18.79 mi
WATERTOWN	NY	WWTI	21	DS	STA	22.67 mi
WATERTOWN	NY	WWTI	21	DT	LIC	22.67 mi
WATERTOWN	NY	WWTI	50	TV	LIC	22.67 mi

WATERTOWN	NY	WPBS-TV	16	TV	CP	23.32 mi
WATERTOWN	NY	WPBS-TV	41	DT	LIC	23.32 mi
WATERTOWN	NY	WPBS-TV	16	TV	LIC	23.34 mi
GOUVERNEUR	NY	NEW	9	TX	APP	31.57 mi
PITCAIRN	NY	W28CI	28	TX	CP	36.68 mi

Canadian Stations

Location		Call Sign	Channel	Class	Distance
Gananoque	ON	ON-TV-429	26	A	16.07
Kingston	ON	CKWS-TV	11	R	20.27
Kingston	ON	ON-DT-3	66	C	20.27
Kingston	ON	CKWS-DT	69	VU	20.27
Kingston	ON	ON-TV-3	58	C	20.27
Kingston	ON	ON-DT-141	36	B	24.80
Kingston	ON	ON-DT-140	48	B	24.80
Kingston	ON	ON-TV-440	19	B	24.80
Kingston	ON	ON-TV-441	23	B	24.80
Kingston	ON	CBLFT-DT-14	65	C	25.36
Kingston	ON	CICO-TV-38	38	C	25.36
Kingston	ON	CBLFT-14	32	C	25.36
Kingston	ON	CICO-DT-38	64	C	25.36
Brockville	ON	ON-DT-113	31	A	36.91
Brockville	ON	ON-TV-413	39	A	36.91

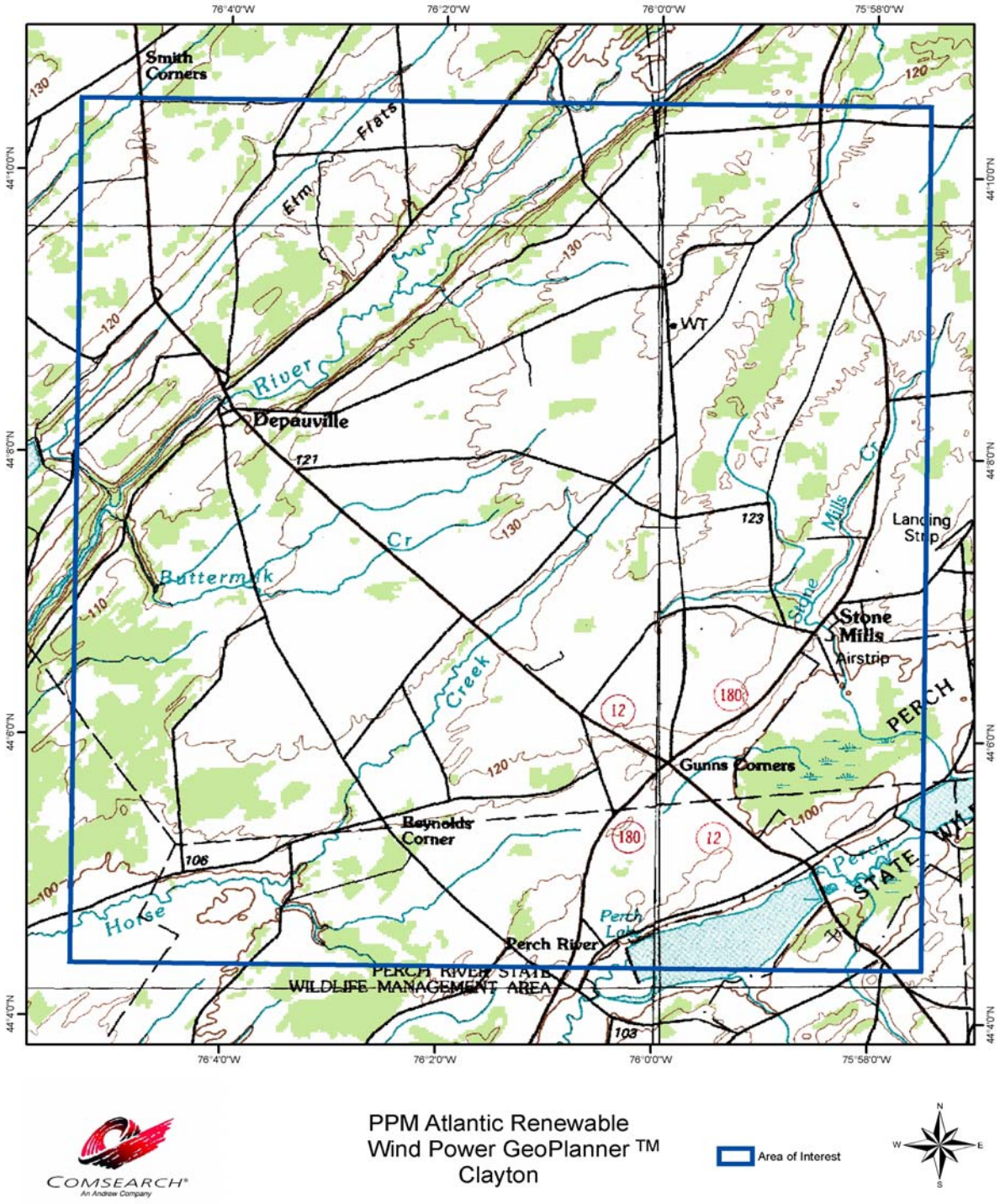

Figure 1 Clayton Wind Energy Facility Boundaries and Local Communities

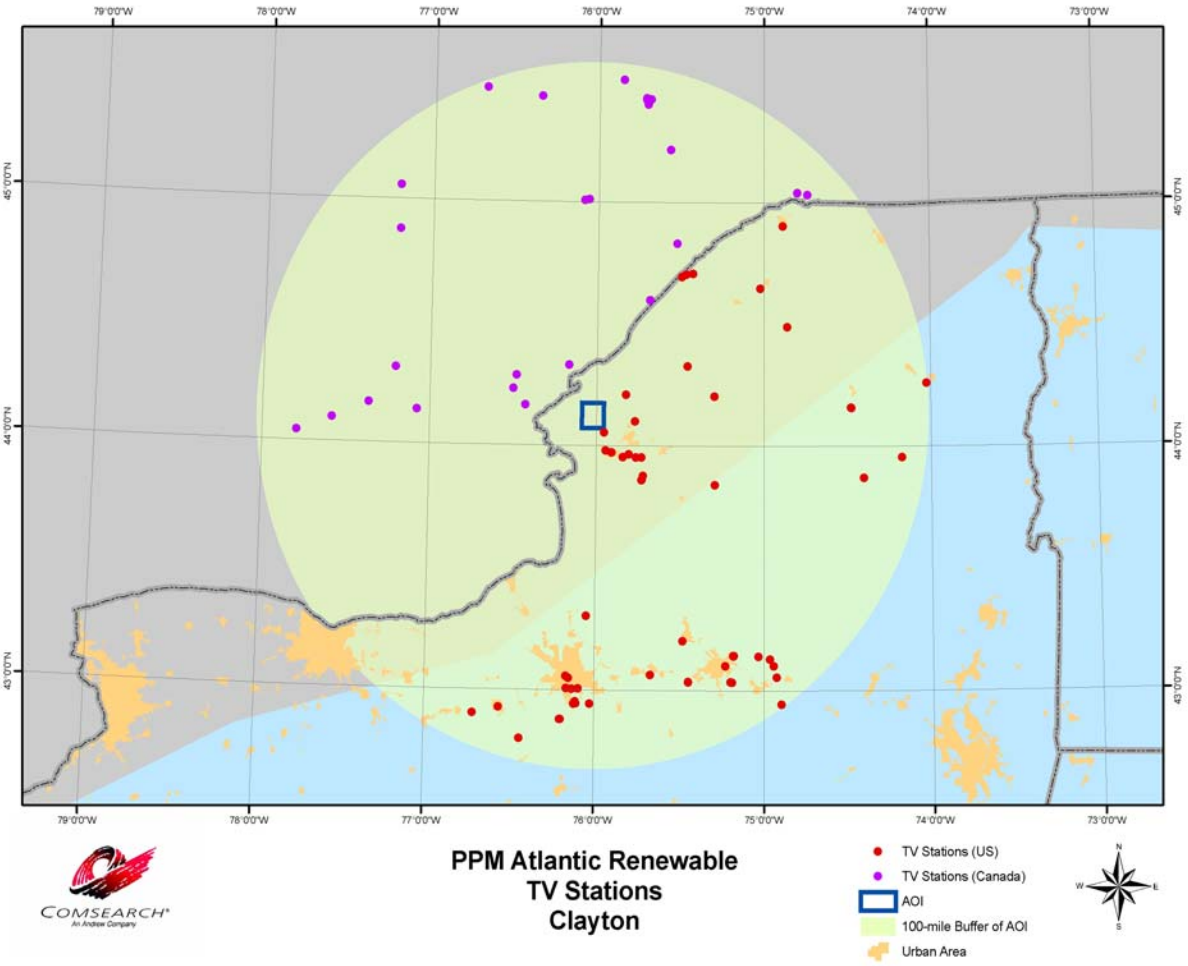

Figure 2 TV Stations within 100 Miles of Clayton Wind Energy Facility

19700 Janelia Farms Blvd
Ashburn, VA 20147
703-726-5500

Analysis of AM and FM Broadcast Station Operations in the Vicinity of the Proposed Clayton Wind Energy Facility in Jefferson County, NY

Comsearch was contracted by PPM Atlantic Renewable Energy of Skillman, NJ to determine if there would be any degradation to the operational coverage of AM and FM Radio Broadcast Stations located in the vicinity of their proposed Clayton Wind Energy Facility in Jefferson County, NY. Comsearch determined that there were three AM and ten FM stations licensed within 15 miles of the proposed wind energy facility.

Table 1 contains the parametric data for the AM stations. There are four licenses for the AM stations. There are actually only three AM broadcast stations as the two license entries for WNER are for the same station broadcasting at two different power levels. The distance to the nearest wind turbine from the AM station is 10.84 miles, which means there will be no problems to the AM station coverage from the presence of the wind turbines. This is the conclusion because AM station coverage is unaffected by tower structures as long as the separation distance to the broadcast antenna is greater than 1-km (0.57miles) for an Omni-directional antenna and 3-km (1.7miles) for a directional antenna.

Table 1 Location of AM Stations within 15 Miles of Clayton Wind Energy Facility

Location		Call Sign	Tx-ERP	Frequency	Distance Miles
WATERTOWN	NY	WTNY	1.0 kW	790 kHz	12.89 mi
WATERTOWN	NY	WATN	1.0 kW	1240 kHz	10.84 mi
WATERTOWN	NY	WNER	3.5 kW	1410 kHz	12.85 mi
WATERTOWN	NY	WNER	0.058 kW	1410 kHz	12.85 mi

Table 2 contains the parametric data for the FM stations in the area. There are ten license records for FM stations within the fifteen mile range. Five of the stations are low power FM stations. Of the other five stations, four are medium FM power stations (WSLI, WCIZ-FM, WMHM and a Station without a Call Sign designated as 'new') and one high power FM station (WFRY-FM).

Table 2 Location of FM Stations within 15 Miles of Clayton Wind Energy Facility

Location		Call Sign	Tx-ERP	Frequency	Distance Miles
WATERTOWN	NY	WSLJ	0.2 kW	88.9 MHz	14.73 mi
WATERTOWN	NY	W211AR	0.015 kW	90.1 MHz	8.86 mi
ALEXANDRIA BAY	NY	W217AE	0.026 kW	91.3 MHz	12.49 mi
BLACK RIVER	NY	NEW	6. kW	92.5 MHz	5.90 mi

WATERTOWN	NY	WCIZ-FM	6. kW	93.3 MHz	14.58 mi
CAPE VINCENT	NY	WMHI	5.8 kW	94.7 MHz	12.04 mi
WATERTOWN	NY	WFRY-FM	97. kW	97.5 MHz	14.58 mi
WATERTOWN	NY	W260BE	0.027 kW	99.9 MHz	11.92 mi
CLAYTON	NY	W262BO	0.08 kW	100.3 MHz	7.82 mi
WATERTOWN	NY	W281AA	0.05 kW	104.1 MHz	10.84 mi

The low-power FM stations are designed for very limited coverage. They will cover a small college campus or a small-town church community with special broadcasting for a limited audience. Normal coverage for these stations is nominally less than 1 mile. Since the closest low power FM station is separated by 7.82 miles no problems to the low power FM stations coverage in the area is anticipated from the Clayton Wind Energy Facility.

The other five FM stations, which operate at medium or high transmit powers, should also not be affected by the wind turbines. This is concluded because of their separation distance from the wind turbines, all greater than 5.9 miles, and the characteristics of FM radio signals. The wavelength of the FM broadcast signal is long enough to wrap around the blades of a wind turbine minimizing the attenuation affect to the signal. The FM broadcast audio signal is not that noticeably affected by wind turbines for two additional reasons; mainly, the signal modulation is frequency modulated (FM) and the wind turbines have the affect of varying the amplitude of the signal which will produce distortion to an amplitude modulated signal but not to a FM signal. Also, changes to audio coverage or distortion are not that noticeable to a listener when factored together with other causes of degradation; such as being out of range of the station or signal fades. In other words, the effects to FM audio coverage from wind turbines will not be as noticeable as the distortion that will occur to a video signal.

Figure 1 shows the location of the AM stations and Figure 2 shows the location of the FM stations in the Clayton Wind Energy Facility area.

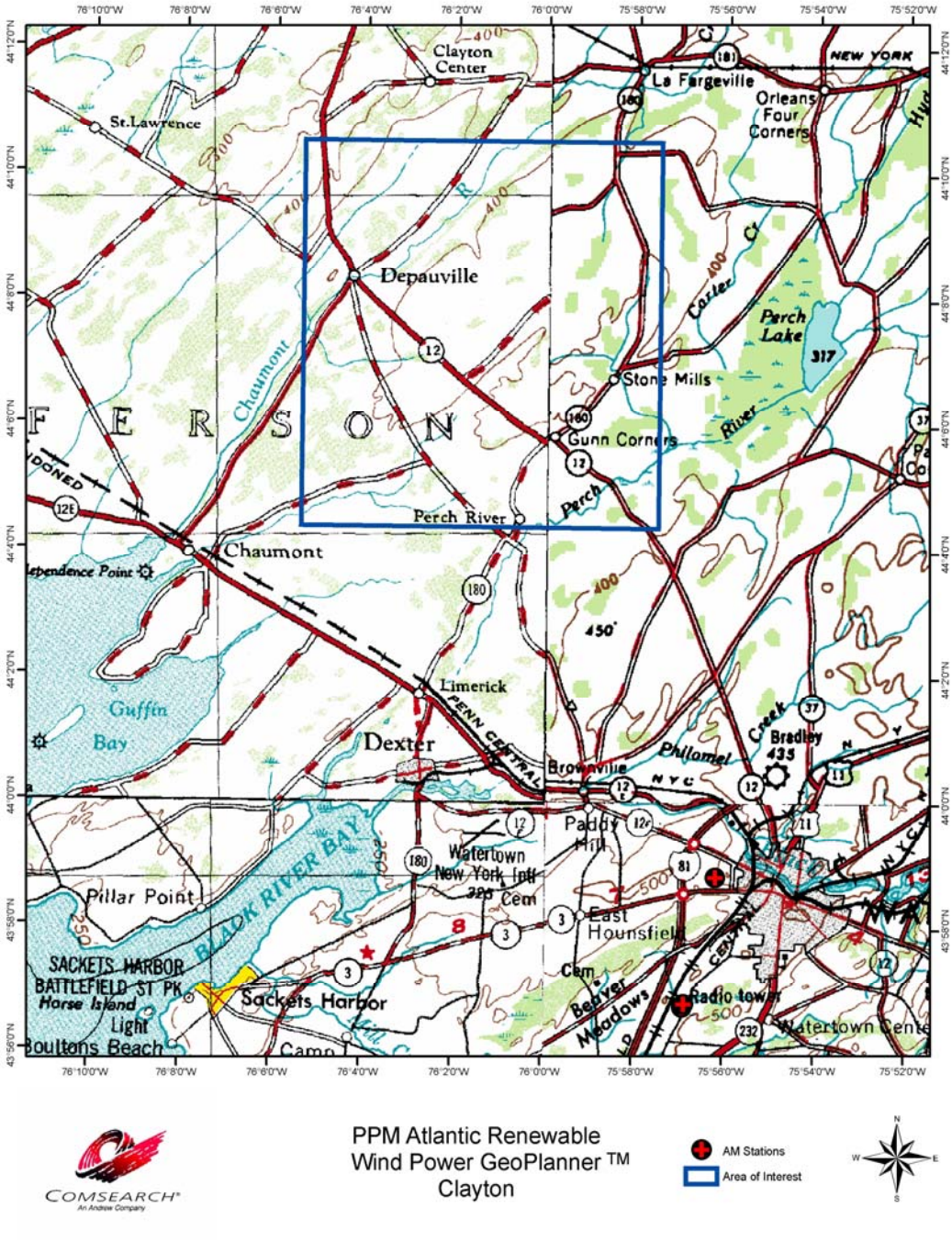

Figure 1 AM Broadcast Stations in the Vicinity of the Clayton Wind Energy Facility

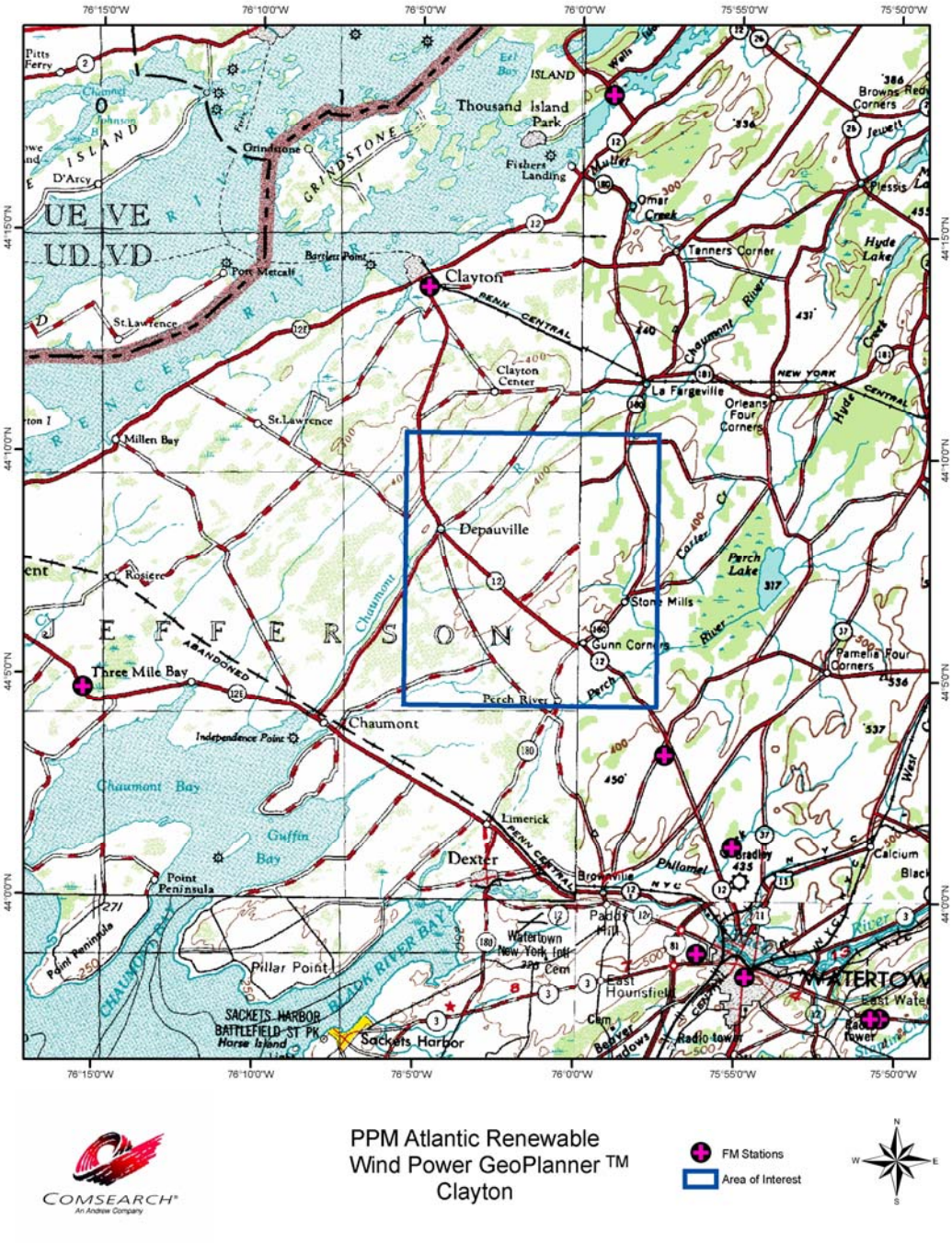

Figure 2 FM Broadcast Stations in the Vicinity of the Clayton Wind Energy Facility

COMSEARCH
19700 Janelia Farms Blvd
Ashburn, VA 20147
703-726-5500

December 28, 2006
Mr. Karl Nebbia
U. S. Department of Commerce
1401 Constitution Avenue N.W.
Washington DC 20230

RE: Notification of the Clayton Wind Energy Facility Development in Jefferson County, New York

Dear Mr. Nebbia:

This letter and its attachments will serve as the notice to the government that PPM Atlantic Renewable Energy, Inc. of Portland, OR plans to install a Wind Energy Facility in Jefferson County, NY. The installation will be called the Clayton Wind Energy Facility.

Enclosed are a data table and maps that describe the location of the Clayton Wind Energy Facility Development in New York.

Table 1 contains the block coordinates of the area of interest for the Clayton Wind Energy Facility in NAD 83.
Figure 1 is a map of the general area showing the outline of the wind energy facility boundaries in New York.
Figure 2 is a local map of the wind energy facility showing its boundaries.

The dimensions of the Wind turbines to be installed at this facility are:

Turbine Tower Hub Height, AGL - 80 meters
Turbine Blade Diameter – 90 meters
Top of Turbine Blade, AGL – 125 meters

If you have any questions with regard to this notification, please call Kurt Oliver (703) 726-5675 or me at (703) 726-5860.

Sincerely,
COMSEARCH

Lester E. Polisky
Senior Principal Engineer
Field Services Department

Attachments

Table 1 Block Coordinates for the Clayton Wind Energy Facility in Decimal Degrees Using NAD 83.

	Latitude(N)	Longitude(W)
NE	44.1752˚	75.9584˚
NW	44.1752˚	76.0899˚
SE	44.0729˚	75.9584˚
SW	44.0729˚	76.0899˚

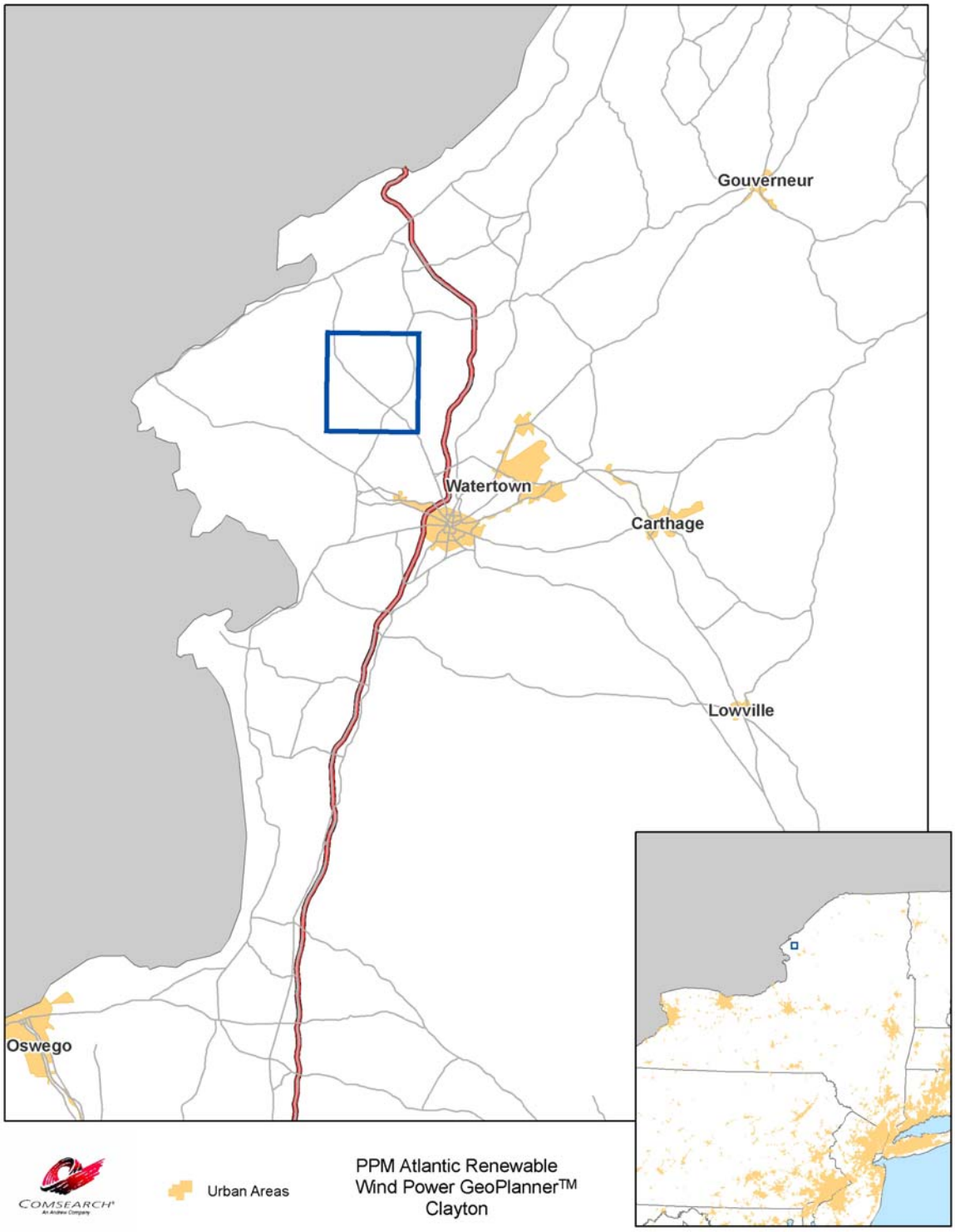

Figure 1 General Area of Clayton Wind Energy Facility Area

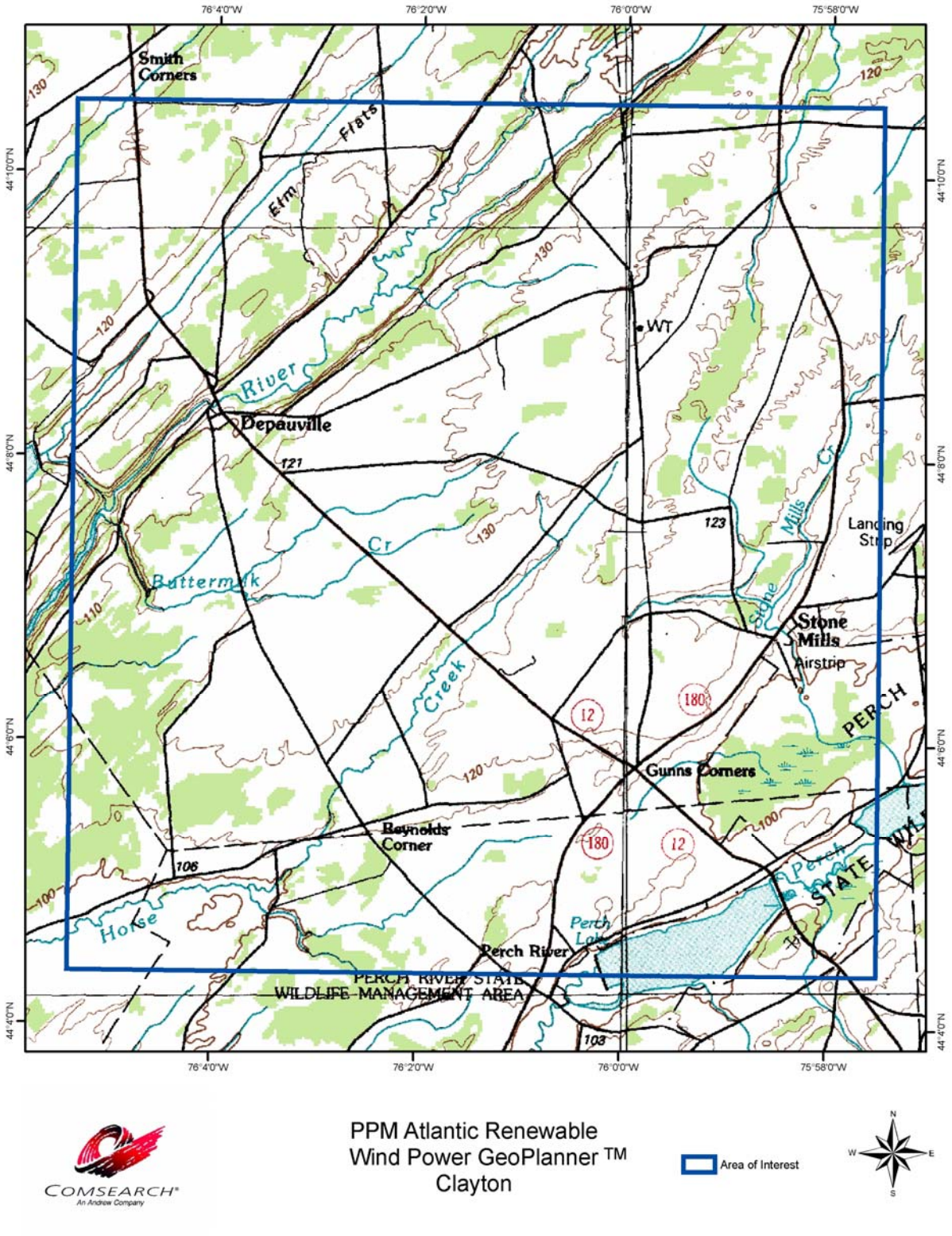

Figure 2 Local Area of Clayton Wind Energy Facility Area

UNITED STATES DEPARTMENT OF COMMERCE
National Telecommunications and Information Administration
Washington, D.C. 20230

FEB 2 2007

Mr. Lester E. Polisky
Comsearch
Senior Principal Engineer
Field Services Department
19700 Janelia Farms Blvd
Ashburn, VA 21147

Re: Clayton Wind Energy Project in Jefferson County, NY

Dear Mr. Polisky:

In response to your request, the National Telecommunications and Information Administration provided to the federal agencies represented in the Interdepartment Radio Advisory Committee (IRAC) the plans for the Clayton Wind Energy Project in Jefferson County, NY. After a 30 day period of review, the agencies have not identified any concerns regarding blockage of their radio frequency transmissions.

While the IRAC agencies did not identify any concerns regarding radio frequency blockage, this does not eliminate the need for the wind energy facilities to meet any other requirements specified by law related to these agencies. For example, this review by the IRAC does not eliminate any need that may exist to coordinate with the Federal Aviation Administration concerning flight obstruction.

Thank you for the opportunity to review these proposals.

Sincerely,

Karl B. Nebbia
Deputy Associate Administrator
Office of Spectrum Management