GeoPlanner™

Over-the-Air TV Analysis

Gibson Solar

Prepared on Behalf of
Gibson Solar LLC

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COMSEARCH®
A CommScope Company

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1. Introduction

Over-the-air (OTA) television stations broadcast signals from terrestrially-based facilities directly to television receivers. Comsearch identified those OTA stations whose service could potentially be affected by a proposed solar farm. Gibson Solar LLC is proposing to construct and place in utility service the Gibson Solar Farm, an electric generation facility located in Gibson County, Indiana. The facility will generate electricity using silicon photovoltaic (PV) modules fixed to single axis solar trackers. The installed capacity will be up to 280 MW ac (340 MW dc).

Comsearch examined the coverage of the OTA stations identified and the communities in the area that could potentially have degraded television reception due to the location of the solar farm.

2. Summary of Results

The proposed solar farm project area and local communities are depicted in Figure 1 below.

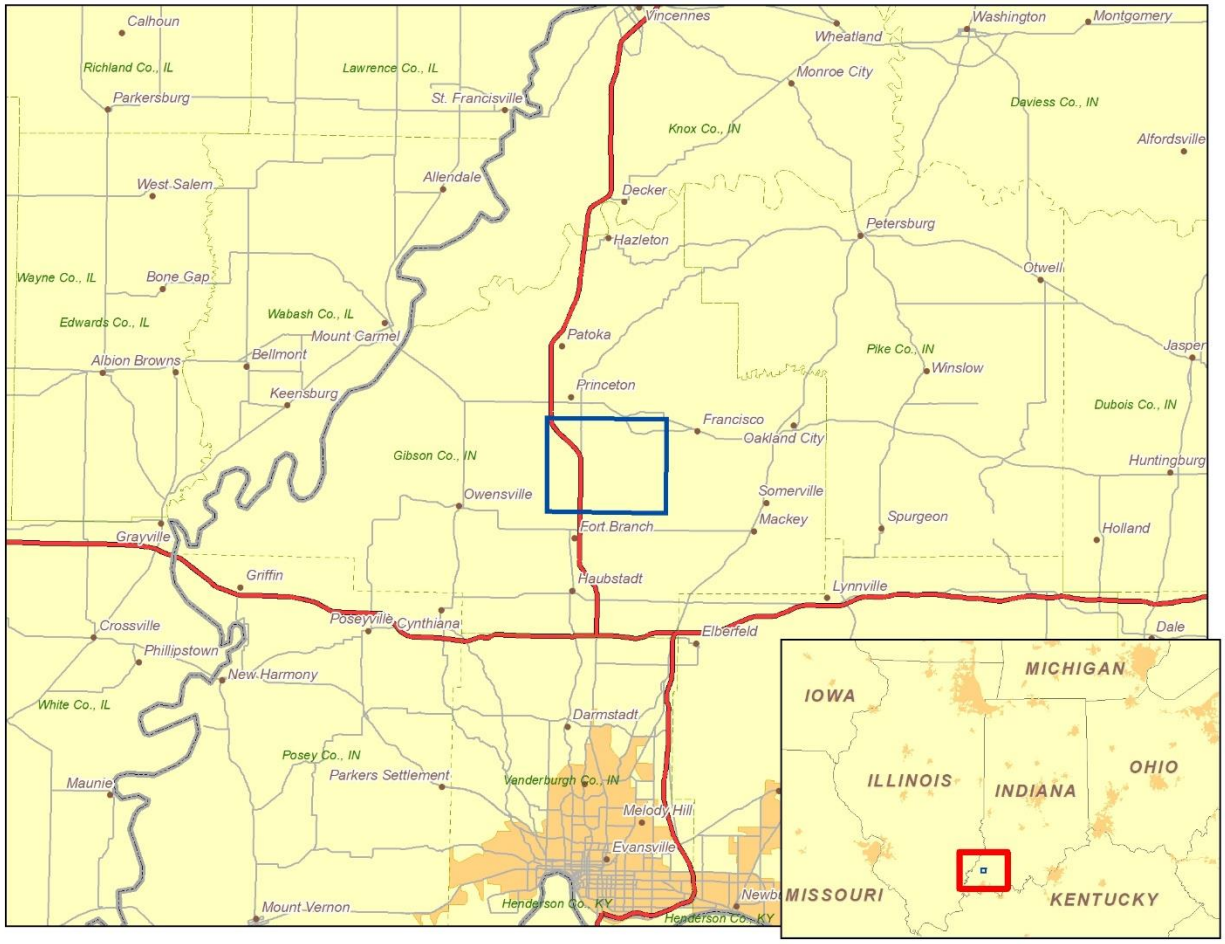

Figure 1: Solar Farm Project Area and Local Communities

To begin the analysis, Comsearch compiled all OTA television stations[1] within 150 kilometers of the solar farm. TV stations at a distance of 150 kilometers or less are the most likely to provide OTA 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 2. There are a total of sixty-three database records for stations within approximately 150 kilometers of the solar farm. Of these stations, only thirty-nine are currently licensed and operating, and seven of which are low-power stations or translators. Translator stations are low-power stations that receive signals from 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.

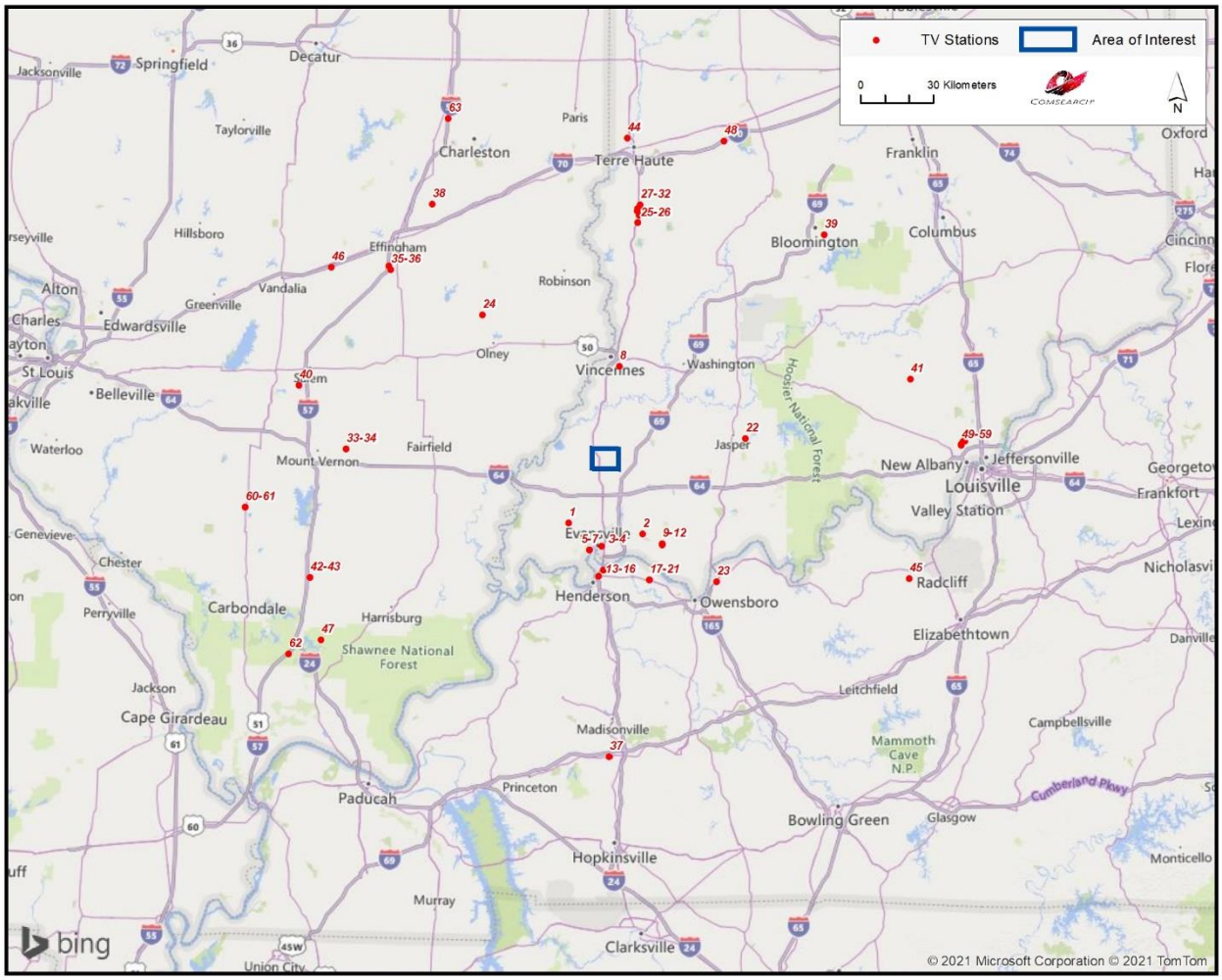

Figure 2: Plot of OTA TV Stations within 150 Kilometers of Solar Farm

[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 Area of Interest (km)
1	W23BV-D	LIC	LPD	23	3.46	38.063639	-87.710000	24.46
2	WTVW	LIC	DTV	22	1000.0	38.024111	-87.362028	28.78
3	WELW-LD	CP	LPD	30	15.0	37.977944	-87.552444	32.03
4	WEIN-LD	CP	LPD	36	9.45	37.977944	-87.552444	32.03
5	W10DG-D	CP	LPD	10	0.5	37.963361	-87.609333	33.70
6	WZDS-LD	CP	LPD	18	15.0	37.963361	-87.609333	33.70
7	W19EW-D	CP	LPD	19	5.0	37.963361	-87.609333	33.70
8	WVUT	LIC	DTV	31	69.4	38.651667	-87.476944	34.34
9	WYYW-CD	LIC	DCA	15	15.0	37.986944	-87.269722	36.06
10	WTSN-CD	LIC	DCA	20	15.0	37.986944	-87.269722	36.06
11	WDLH-LD	CP	LPD	24	0.585	37.986472	-87.270083	36.08
12	WNIN	LIC	DTV	9	27.0	37.983611	-87.270278	36.35
13	WEEV-LD	LIC	LPD	21	4.0	37.888111	-87.543611	41.99
14	WEVV-TV	LIC	DTV	28	243.0	37.888111	-87.543611	41.99
15	WFIE	LIC	DTV	26	200.0	37.887278	-87.518611	42.07
16	WEHT	LIC	DTV	12	14.0	37.865833	-87.567778	44.48
17	W06DG-D	CP	LPD	6	3.0	37.851944	-87.328889	47.84
18	W14EV-D	CP	LPD	14	15.0	37.851944	-87.328889	47.84
19	WKOH	LIC	DTV	17	37.3	37.851944	-87.328889	47.84
20	W32FR-D	CP	LPD	32	10.0	37.851944	-87.328889	47.84
21	W35DX-D	CP	LPD	35	15.0	37.851944	-87.328889	47.84
22	WJTS-CD	LIC	DCA	24	15.0	38.381444	-86.873889	53.13
23	W25FO-D	CP	LPD	25	1.0	37.846722	-87.012111	62.06
24	WUSI-TV	LIC	DTV	23	110.0	38.838611	-88.129722	71.65
25	W30DO-D	CP	LPD	30	10.0	39.189278	-87.391278	94.31
26	W34ET-D	CP	LPD	34	10.0	39.189278	-87.391278	94.31

[2] Definitions of service and status codes:
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

[3] ERP = Transmit Effective Radiated Power

ID	Call Sign	Status	Service[2]	Channel	Transmit ERP[3] (kW)	Latitude (NAD 83)	Longitude (NAD 83)	Distance to Area of Interest (km)
27	W24DQ-D	CP	LPD	24	15.0	39.217528	-87.386111	97.47
28	W16CZ-D	CP	LPD	16	10.0	39.231944	-87.394722	99.01
29	WAWV-TV	LIC	DTV	18	250.0	39.242500	-87.391389	100.20
30	WTWO	LIC	DTV	35	464.0	39.242500	-87.391389	100.20
31	WTHI-TV	LIC	DTV	10	27.0	39.243333	-87.385278	100.33
32	W29FI-D	CP	LPD	29	15.0	39.254556	-87.379250	101.62
33	W21ED-D	CP	LPD	21	15.0	38.328250	-88.770444	102.08
34	W27EN-D	CP	LPD	27	15.0	38.328250	-88.770444	102.08
35	W28EB-D	CP	LPD	28	15.0	39.003611	-88.572222	111.77
36	WEDK-LD	CP	LPD	25	15.0	39.015806	-88.580778	113.21
37	WKMA-TV	LIC	DTV	31	36.7	37.189167	-87.513611	119.51
38	W33EK-D	LIC	LPT	33	15.0	39.250361	-88.379611	121.23
39	WTIU	LIC	DTV	33	797.0	39.141944	-86.495250	123.28
40	W29CI-D	LIC	DCA	29	15.0	38.562778	-88.999444	124.31
41	WRLW-CD	LIC	DCA	21	10.5	38.599722	-86.088056	124.74
42	W15BU-D	CP	DCA	15	15.0	37.845278	-88.929444	125.52
43	W15BU-D	LIC	DCA	15	7.0	37.845278	-88.929444	125.52
44	W43BV	LIC	LPX	43	11.2	39.503889	-87.443611	128.95
45	WKUT-LD	LIC	LPD	20	15.0	37.854278	-86.100889	129.34
46	W14ES-D	CP	LPD	14	5.2	39.007889	-88.858667	131.86
47	WSIL-TV	LIC	DTV	34	1000.0	37.613889	-88.872222	133.09
48	W43BV	CP	LPD	43	15.0	39.494944	-86.978028	135.12
49	WBKI	LIC	DTV	16	860.0	38.350278	-85.849167	142.51
50	WDRB	LIC	DTV	32	1000.0	38.350278	-85.849167	142.51
51	WHAS-TV	LIC	DTV	11	16.4	38.356389	-85.847778	142.63
52	WDYL-LD	LIC	LPD	15	13.5	38.365333	-85.840056	143.31
53	WBNM-LD	LIC	LPT	25	15.0	38.365333	-85.840056	143.31
54	WKPC-TV	LIC	DTV	30	58.0	38.366944	-85.831667	144.05
55	WKMJ-TV	LIC	DTV	34	40.0	38.366944	-85.831667	144.05
56	WLKY	LIC	DTV	14	710.0	38.369000	-85.829889	144.21
57	WMYO-CD	LIC	DCA	18	5.0	38.369000	-85.829889	144.21
58	WJYL-CD	LIC	DCA	29	5.0	38.369000	-85.829889	144.21
59	WAVE	LIC	DTV	36	890.0	38.369000	-85.829889	144.21
60	WSIU-TV	LIC	DTV	8	53.0	38.103056	-89.244444	145.01
61	WSIU-TV	APP	DTV	8	70.0	38.103056	-89.244444	145.01
62	WTCT	LIC	DTV	30	1000.0	37.557222	-89.023333	147.70
63	WEIU-TV	LIC	DTV	30	174.0	39.570833	-88.307083	149.33

Table 1: OTA TV Stations within 150 Kilometers of Solar Farm

3. Impact Assessment

Typically, solar farms do not cause electromagnetic interference (EMI) to OTA television reception. If any, the most likely source of EMI are the photovoltaic (PV) inverters that are installed at every Power Conversion Station (PSC) throughout the solar farm. These PV inverters convert the direct current (DC) current output of a solar array into alternating current (AC) that can be fed into a commercial electrical grid. However, Title 47 Part 15B of the FCC rules and regulations provide guidelines for grid-tied PV inverters such that their EMI emissions are controlled to within certain limits and thereby avoid contaminating the AC grid voltage. And due to the low frequency (60 Hz) operation of the PV inverters, EMI from these devices does not normally extend above 1 MHz which would be well below the frequency of operation for OTA television.

4. Recommendations

If possible, the PV inverters of a power conversion station (PCS) should be installed away from residential areas to reduce the likelihood of EMI to households that may rely on OTA television service. At minimum, a setback distance of 250 feet from any household and the centralized inverters is recommended. In the unlikely event that EMI is observed at a certain household following the construction of the solar farm, a high-gain directional antenna may be employed, preferably outdoors, and oriented towards the signal origin to mitigate the potential impact on OTA TV signal reception.

Both cable service and direct broadcast satellite service will be unaffected by the presence of the solar farm and may be offered to those residents who can show that their OTA TV reception has been disrupted by the presence of the solar farm after it is installed.

5. Contact

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

Contact person: David Meyer
Title: Senior Manager
Company: Comsearch
Address: 19700 Janelia Farm Blvd., Ashburn, VA 20147
Telephone: 703-726-5656 (office) / 703-726-5595 (fax)
Email: dmeyer@comsearch.com
Web site: www.comsearch.com