



**Flint Mine Solar**  
**Case No. 18-F-0087**  
**1001.26 Exhibit 26**  
**Effect on Communications**

## EXHIBIT 26 EFFECT ON COMMUNICATIONS

### (a) Existing Broadcast Communication Sources

This Exhibit identifies all existing broadcast communication sources within a two-mile radius of the Facility Area and the associated interconnection. A Communications Study prepared by Comsearch identified three tower structures and 37 communication antennas (4 microwave transmission antennas, and 34 land mobile antennas) within two miles of the Facility and the associated interconnection (see Appendix 26-A). Half of the land mobile services in the area (17 antennas total) are associated with local services, such as emergency response, school districts, highway departments, and police stations. The other land mobile antennas are associated with commercial uses, such as CSX Rail, electric and gas utility owners, telecommunications companies, and others. Communication infrastructure within the two-mile Study Area is depicted in Figure 26-1.

The Applicant is not aware of any research conducted to date that indicates utility-scale solar generation facilities interfere with or otherwise affect communication systems. The Facility lacks tall structures and does not have exposed moving parts. The photovoltaic (PV) arrays generate weak electromagnetic fields (EMFs) during the day that dissipate at short distances (see Exhibit 34 for more information). The EMFs are generated in the same extremely low frequency range as electrical appliances and wiring found in most homes and buildings (MDER, 2015). In a study of three solar arrays in Massachusetts, electric field levels measured along the boundary of each project were not elevated above background levels (Massachusetts Clean Energy Center, 2012). Accordingly, the Facility is not expected to have any material impact on communication systems related to AM/FM radio, television, telephone, microwave transmission, military or civilian radar,<sup>1</sup> air traffic control, armed forces, global positioning system (GPS), long-range navigation (LORAN) system, amateur radio, or the NYS Mesonet system.

#### (1) AM Radio

No AM radio stations are located within two miles of the Facility and the associated interconnection. AM radio stations will not be affected by the construction and operation of the Facility and will not be addressed further in this Application.

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<sup>1</sup> The Federal Aviation Administration (FAA) has concluded that solar arrays do not cause radar interference: "Radar interference occurs when objects are placed too close to a radar sail (or antenna) and reflect or block the transmission of signals between the radar antenna and the receiver (either a plane or a remote location)... Due to their low profiles, solar PV systems typically represent little risk of interfering with radar transmissions. In addition, solar panels do not emit electromagnetic waves over distances that would interfere with radar signal transmissions, and any electrical facilities that do carry concentrated current are buried beneath the ground and away from any signal transmission... Off-airport solar projects are even more unlikely [than on-airport solar projects] to cause radar interference unless located close to airport property and within the vicinity of a radar equipment and transmission pathways" (Plante et al., 2010)."

(2) FM Radio

No FM radio stations are located within two miles of the Facility and the associated interconnection. FM radio stations will not be affected by the construction and operation of the Facility and will not be addressed further in this Application.

(3) Television

No television broadcasting sources are located within two miles of the Facility and the associated interconnection. Television broadcasting sources are not anticipated to be affected by the construction and operation of the Facility and will not be addressed further in this Application.

(4) Telephone

The Applicant is aware of one cellular tower, operated by Verizon, adjacent to the Facility. No telecommunication tower sites were identified by Comsearch within two miles of the Facility and the associated interconnection (Appendix 26-A). Due to the low profile of PV modules, cellular and other telephone sources are not anticipated to be affected by the construction and operation of the Facility and will not be addressed further in this Application.

(5) Microwave Transmission

Four microwave antennas were identified within two miles of the Facility and the associated interconnection (see Figure 26-1) (Appendix 26-A). Microwave antennas are located on towers owned by Crown Atlantic Company, LLC and SBA Towers, LLC, respectively. The four antennas are operated by the following companies: T-Mobile License LLC (WRDN373 and WQXU841), Central Hudson Gas and Electric Corporation (WPOP666), and Mid-Hudson Cablevision (WRBR266). The Applicant will consult with microwave telecommunication system owners prior to construction to determine the location of Fresnel zones. However, given the low-profile of PV modules, the Facility is not anticipated to disturb or block any lines-of-sight for microwave telecommunication systems.

(6) Emergency Services

Comsearch assessed emergency service communication sources within two miles of the Facility Area (Appendix 26-A) (Appendix 26-A). Registered frequencies for the following types of first responder entities were evaluated: police, fire, emergency medical services, emergency management, hospitals, public works, local school districts, transportation and other state, county, and municipal agencies. Land mobile and emergency services incumbent data were derived from the Federal Communication Commission's (FCC) Universal Licensing System and the

FCC's Public Safety & Homeland Security Bureau. Comsearch identified 38 site-based licenses and 29 regional area-wide licenses designated for public safety use. The licensee, call sign, frequency bands, antenna height, and distance to solar site for the site-based licenses are provided in Table 1 of the Land Mobile & Emergency Services section of the report (Appendix 26-A). The licensee, area of operation, and frequency band for area-wide licenses are provided in Table 2 of the same section of the report.

The Applicant consulted with the Greene County Emergency Coordinators Office for additional information on potential impacts to emergency services. During consultations, concerns were raised about microwave connections between the Greene and Columbia County 911 centers located in the vicinity of the proposed Facility. PV module heights are typically lower than the antenna heights for these communication systems, avoiding disturbing or blocking the line-of-sight necessary to have successful communication.

Although these services operate in different frequency ranges and provide different types of service (e.g., voice, video and/or data applications), there is commonality among these different communication sources regarding the impact of a solar project:

1. The heights of the PV modules (no more than 15 feet above ground level) are generally lower than the antenna height of the land mobile systems identified, and the closest land mobile system is separated from the PV modules by over a half-mile.
2. The FCC has established setback distance criteria for interference emissions in the land mobile bands. If these criteria are applied conservatively, a minimum setback distance of 77.5 meters for PV inverters is derived. No PV inverters are located within 77.5 meters of land mobile communication sources.
3. Land mobile systems are designed to operate reliably in a non-line-of-sight environment, with multiple base transmitter stations, overlap between adjacent transmitter sites, and frequencies of operation that allow the signal to propagate over and through the solar modules.

Therefore, no significant adverse effects to emergency service communication sources near the Facility are anticipated. Reception is not likely to be degraded by Facility components, and no change in coverage is likely to occur.

#### (7) Municipal/School District Services

Two municipal and school district communication sources were identified within two miles of the Facility and the associated interconnection (Appendix 26-A). The licensee for both sources is the Coxsackie-Athens Community School District (WQWI769 and WRBN637). For the reasons set forth in Section (a)(6) above, land mobile sites and area-wide public safety communications are unaffected by the presence of PV modules. As municipal communications sources fall into these categories, no impacts are anticipated as a result of Facility construction or operation.

#### (8) Public Utility Services

Three public utility communication sources were identified within two miles of the Facility and the associated interconnection. The licensees of the sources are Central Hudson Gas and Electric Corporation (KEA640 and WPED921) and the Sleepy Hollow Lake Water Company, Inc (WPUB939) (Appendix 26-A). For the reasons set forth in Section (a)(6) above, land mobile sites and area-wide public safety communications are unaffected by the presence of PV modules. As public utility communications sources fall into these categories, no impacts are anticipated as a result of Facility construction or operation.

#### (9) Doppler/Weather Radar

NEXRAD (next-generation radar) or Doppler weather radar are operated by the National Weather Service, the Federal Aviation Administration (FAA), and the U.S. Air Force. NEXRAD detects precipitation, winds, and temperature and humidity discontinuities. From these data, computer algorithms generate a suite of meteorological and hydrological products and alerts used for determining short-term forecasts, advisories, and warnings for significant weather events such as tornadoes, large hail, wind shear, downbursts, flash floods, and other weather phenomena. The nearest NEXRAD Doppler radar to the Facility Area is radar KENX in Albany, NY, approximately 20 miles away.

Comsearch used the Department of Defense (DoD) radar screening tool to determine whether potential issues with National Weather Service NEXRAD WSR-88D are anticipated (Appendix 26-A). No potential issues were identified with the NEXRAD WSR-88D radar system as a result of the Facility. However, the Applicant will keep the National Oceanic and Atmospheric Administration informed as the Facility develops so any potential corrupted radar data can be flagged.

#### (10) Air Traffic Control

Comsearch used the DoD radar screening tool to determine whether potential issues with FAA long range radar systems are anticipated (Appendix 26-A). There are three FAA radar systems whose coverage could be impacted based on the geographical location of the Facility. However, based on the 15-foot maximum height of the solar array modules in addition to the ground elevation, the Facility would not exceed any criteria used to identify potential obstructions to aerospace communication systems. In addition, the Facility is not located near an airport or heliport and will not emit frequencies that could interfere with surrounding navigation radars. Therefore, harmful impacts to surrounding FAA long range radar systems are not anticipated.

#### (11) Armed Forces

According to the Military Installations, Ranges, and Training Areas GIS dataset maintained by the DoD, the nearest Armed Forces installation is the Watervliet Arsenal located approximately 28 miles northeast of the proposed Facility (data.gov, 2018). Comsearch used the DoD radar screening tool to determine whether potential issues with military systems are anticipated (Appendix 26-A). Armed forces communication systems are not anticipated to be affected by the construction and operation of the Facility.

#### (12) GPS

GPS is a U.S.-owned utility that provides users with positioning, navigation, and timing services. This system consists of three segments: the space segment, the control segment, and the user segment. The U.S. Air Force develops, maintains, and operates the space and control segments. The GPS control segment consists of a global network of ground facilities that track the GPS satellites, monitor their transmissions, perform analyses, and send commands and data to the constellation. The GPS ground facility located closest to the proposed Facility is the Air Force Satellite Control Network remote tracking station located in New Hampshire. Due to the large distance between the proposed Facility and the nearest GPS ground facility no impacts on GPS are anticipated.

#### (13) LORAN

LORAN was a long-range navigation system developed during World War II that has since been deemed obsolete. Radio signals were sent through a series of towers across long distances as an aid to keep ships and aircraft on course. In accordance with the 2010 Department of Homeland Security Appropriations Act, the U.S. Coast Guard terminated the transmission of all U.S. LORAN signals in 2010. Therefore, no further discussion of LORAN is provided in this Application.

(14) Amateur Radio Licenses

Amateur radio operators, also known as HAM operators, use private radio systems to communicate locally, from coast-to-coast, and around the world. A website has been developed to identify HAM operators by zip code using FCC registration data. In the three zip codes that touch the Facility Site, 40 HAM operators are registered. Table 26-3 lists the call signs for the stations registered in these zip codes (KE6UZM, 2019). As discussed in Section (b) below, no impacts to communications infrastructure, including HAM operators, are anticipated as a result of Facility construction or operation.

**Table 26-3. FCC-Registered Amateur Radio Stations in Facility Site Zip Codes**

Zip Code	Call Sign	Location
12414	AC2JM, K2AVX, KB2SOJ, KC2AGI, KC2BTL, KC2FXE, KC2IK, KC2LIW, KC2THG, KC2THH, KC2THJ, KC2YOI, KC2ZLM, KD2CCM, KD2EBF, KD2FXF, KD2HCQ, KD2HDO, KD2RFI, KD2HCQ, KD2HDO, KD2RFI, N1GNF, N2CRJ, N2LEN, WA2YZD	Catskill, NY
	KD2GQY, KD2GQY	Smiths Landing, NY
12015	KA2CRY, KB2AUE, KC2PSO, KC2UDS, KC2YFF, KD2CCO, KD2GLR, KD2OHM, WA2UYY	Athens, NY
12051	KC2SKI, KD2MJU, KD2MKC, KE2EB, N2PKB, W6MGV, WB2KEX	Coxsackie, NY

(15) New York State Mesonet System

The New York State Mesonet System is a statewide network of weather stations developed and run by the University at Albany. This system collects data on mesoscale meteorological phenomena and is used to supplement data gathered by traditional automated surface observing systems, supporting decision-making in agriculture, emergency management, energy, ground transportation, and aviation. The New York State Mesonet System is not anticipated to be affected by the construction and operation of the Facility and will not be addressed further in this Application.

(b) Existing Underground Cable and Fiberoptic Lines within Two Miles

As shown in Figure 26-1, the Applicant has identified several underground cable and fiberoptic lines within the Study Area. These lines are owned and operated by Verizon, Windstream and StateTel and were identified in correspondence with these companies. The information presented in Figure 26-1 represents the extent of data received from these companies. Any collection line systems crossings of this infrastructure are indicated in the Site Plans (Appendix 11-A). The Applicant will construct the Facility to avoid interference with this fiber optic cable and all other existing utility systems. See Exhibit 12 for a full discussion of the measures the Applicant will take to avoid interference with existing utility systems.

(c) Anticipated Effects on Communication Systems

Section (a) above provides a description of the communication systems in and around the Facility and any expected impacts to those systems. The subsections below discuss the anticipated effects of the proposed Facility and the electric interconnection on the communication systems identified above in Sections (a) and (b).

(1) Potential Structure Interference with Broadcast Patterns

As noted above, no interference with broadcasting patterns is anticipated to result from construction or operation of the Facility.

(2) Potential for Structures to Block Lines-of-Sight

Given the low-profile of PV modules, the Facility is not anticipated to disturb or block any lines-of-sight or Fresnel zones for microwave telecommunication systems or any other line-of-sight communication systems.

(3) Physical Disturbance by Construction Activities

Physical disturbance to communication infrastructure (e.g., towers, buried cables, etc.) during construction is not anticipated. The location of any proposed crossing of communications infrastructure will be indicated in the Preliminary Design Drawings (see Appendix 11-A) and reviewed by the contractor prior to construction. All Facility construction and maintenance work that requires excavation will follow the One Call process with Dig Safely New York, Inc. This process helps prevent damage by alerting the excavator to the locations of underground utilities, including electric, gas, oil, steam, water, sewer, and communications lines. If an underground facility cannot be avoided and needs to be exposed, the excavator will provide proper support and protection so that the existing infrastructure is not damaged. Upon completion of work, the excavator backfills around any exposed utilities.

(4) Adverse Impacts to Co-Located Lines due to Unintended Bonding

Considering the separation and protection measures discussed in Section (c)(3) and the measures to avoid impacts to existing utilities discussed in Exhibit 12(c), the Applicant does not believe that there is significant potential for the proposed Facility and electrical interconnection to adversely impact co-located or adjacent lines due to unintended bonding.

(5) Other Potential for Interference

As discussed in Section (a), interference with radio broadcast coverage is not anticipated. Further, no AM or FM stations are found within two miles of the Facility (Appendix 26-A).



As discussed in Section (a)(4), Section (a)(6), Section (a)(7), and Section (a)(8), interference with services using land mobile communication systems are not anticipated as these systems do not require line-of-sight. These communication sources are typically unaffected by the presence of large structures (e.g., wind turbines or buildings), much less the low-profile PV modules proposed for the Facility.

(d) Evaluation of Design Configuration

The Facility is not anticipated to affect communication systems. In the unlikely event that the Facility impacts the communications systems discussed in Section (a), the Applicant will take appropriate steps to review and respond to the complaint as set forth in Section (e), below.

(e) Post-construction Activities to Identify and Mitigate Adverse Effects on Communication Systems

The Applicant takes seriously any complaints that it receives from members of the public concerning potential Facility impacts. The Applicant has developed a Complaint Resolution Plan (Appendix 12-C) through which members of the public can issue formal complaints should any issues arise as a result of Facility construction or operation. Complaints can be made in person at the Facility's O&M building, via phone, or in writing. Following receipt of the complaint, the Applicant will contact the complainant within 72 hours. The Applicant will implement a multi-step complaint response for all registered complaints, which may include: (1) community engagement; (2) gathering information; (3) responding to the complaint; (4) following up after the response has been issued; and (5) taking further action if the complainant believes that the issue has not been resolved.

(f) Potential Interference with Radar

As detailed in Section (a), radar is not anticipated to be affected by the construction and operation of the Facility (Plante et al., 2010).

## REFERENCES

Data.gov. 2018. *Military Installations, Ranges, and Training Areas* [GIS dataset].

KE6UZM. 2019. *Where are all the HAMs?* August 25, 2019. Available at <http://hams.mapmash.com/mapByZip.php>.

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Massachusetts Department of Energy Resources, et al. (MDER). 2015. *Clean Energy Results: Questions and Answers, Ground-Mounted Solar Photovoltaic Systems* June 2015. "MDER Q&A," p. 10.

Plante, J., S. Barrett, P. DeVita, and R. Miller. 2010. *Technical Guidance for Evaluating Selected Solar Technologies at Airports*. Federal Aviation Administration. Washington, DC.