



WATKINS GLEN SOLAR ENERGY CENTER

Case No. 17-F-0595

1001.35 Exhibit 35

Electric and Magnetic Fields

Contents

| | |
|---|---|
| Exhibit 35: Electric and Magnetic Fields..... | 1 |
| 35(a) ROW Segments with Unique Characteristics..... | 1 |
| 35(b) Cross Sections | 1 |
| 35(c) Aerial Photographs/Drawings | 2 |
| 35(d) Electric and Magnetic Field (EMF) Study..... | 2 |

Tables

| | |
|---|---|
| Table 35-1. NYPSC EMF Level Interim Guidelines..... | 3 |
|---|---|

Figures

| | |
|---|--|
| Figure 35-1. Nearest Residence to Overhead Connection | |
|---|--|

Appendix

| | |
|---|--|
| Appendix 35-1 Electric and Magnetic Field Study | |
|---|--|

Exhibit 35: Electric and Magnetic Fields

This Exhibit will track the requirements of Stipulation 35, dated February 21, 2020, and therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) § 1001.35.

The New York State Public Service Commission (NYPSC) set forth in the *Opinion and Order Determining Health and Safety Issues, Imposing Operating Conditions, and Authorizing* (Case 26520); *Operation Pursuant to those Conditions No. 78-13*; and *Statement of Interim Policy on Magnetic Fields of Major Electric Transmission Facilities* (NYPSC Cases 26529 and 26559) guidance for electric and magnetic fields (EMF) (NYPSC Interim Guidelines). These documents provide guidelines for addressing EMFs at the edge of the right-of-way (ROW). The limit for electric field strength 1 meter (3.28 feet) above ground level is 1.6 kilovolt per meter (kV/m) with the line at the rated voltage as the limit at the edge of the ROW. The limit for magnetic field strength measured 1 meter above ground level is 200 milligauss (mG) at the edge of the ROW. The Project complies with these guidelines.

35(a) ROW Segments with Unique Characteristics

The Applicant has identified that the 115-kilovolt (kV) interconnection line connecting the Project's collection substation with the point of interconnection (POI) switchyard and the double-circuit 115-kV transmission line connections to the existing New York State Electric and Gas Bath-Montour Falls transmission line as the only overhead ROW segments with unique characteristics within the Project Area. The interconnection line will be between 75 and 100 feet in length and will be composed of either a flexible or rigid bus connection. The transmission line will be approximately 350 feet in length. The proposed ROW for the transmission line is 150 feet wide total and 75 feet wide from the centerline between the two transmission lines to the edge of the ROW. An evaluation of the EMF on these segments is included in the EMF Study in Appendix 35-1.

35(b) Cross Sections

The EMF Study (Appendix 35-1) includes structural details and dimensions and identifying phase spacing, phasing, and other characteristics affecting the EMF calculations performed. Structural details and dimensions for the overhead transmission and interconnection lines, including a cross-section of the proposed line, are included in the Preliminary Design Drawings in Appendix 11-1.

Details related to the underground collection system for the Project are also shown in Appendix 11-1.

35(c) Aerial Photographs/Drawings

The Preliminary Design Drawings provided in Appendix 11-1, as well as Figure 35-1, detail the proposed overhead interconnections with aerial photography. The drawing and figure detail the location of the Project in relation to the nearest residences. The EMF Study, provided as Appendix 35-1, evaluates the distance between the interconnection line and transmission interconnection and the nearest residences.

35(d) Electric and Magnetic Field (EMF) Study

Minimal EMF are generated by the operation of solar facility components such as the electrical collection lines and transformers. EMF strength decreases with the square of the distance from the source (the electric charges or currents) for power lines and the cube of the distance from point sources such as substations. The solar panels will be a minimum of 30 feet from Project Area boundaries, and individual panels represent outputs consistent with household EMF levels. Additionally, the location of underground 34.5-kV collection cables, and the location of the collection substation transformers and other electrical equipment inside a restricted area will provide separation of these components from the general public. As a result, EMF levels from solar panel arrays and collection lines are expected to be limited or non-existent.

The Applicant evaluated the potential cumulative EMF impacts related to the Project, as detailed within the EMF Study. The evaluation analyzed the EMF along the proposed interconnection between the Project's collection substation and the POI switchyard and the transmission line connection from the POI switchyard to the existing Bath-Montour Falls 115-kV transmission line, as well as the underground electric collection circuits. Overhead electric collection lines are not proposed as part of this Project.

The proposed cross sections, to scale, are detailed in Appendix 35-1. The cross sections show the following information:

- The proposed structural details and dimensions, and identifying phasing, phase spacing, and other characteristics affecting EMF calculations;
- All underground electric transmission, sub-transmission, and distribution facilities;
- All ROW boundaries; and
- Structural details and dimensions for all structures (dimensions, spacing, phasing, and similar categories) and a station number identifying the locations.

The EMF levels calculated in the EMF study are provided in Table 35-1 below. Refer to Appendix 35-1 for additional information regarding the EMF levels.

Table 35-1.EMF Study Results

| Field Type | Limit | Maximum Value at Property/ ROW Edge |
|-------------------|--------------|--|
| Electric Field | 1.6 kV/m | 0.045 kV/m |
| Magnetic Field | 200 mG | 69.8 mG |

The study reveals that the calculated EMF levels for the interconnection line and transmission line interconnection are less than the 1.6-kV/m maximum and 200-mG field level permitted at the edge of a transmission ROW in New York occupied by a major transmission line as per the NYPSC Interim Guidelines. The report demonstrates that the EMF levels are well within the guidelines.

35(e) Potential Induced Voltages

Substation perimeter fencing will be grounded in accordance with the Institute of Electrical and Electronic Engineers standards and specifications to eliminate the risk of induced voltage. Additional adjacent fencing and other Project Components are not proposed outside or immediately adjacent to the substation. Should Project Components be proposed outside the substation, the potential induced voltage will be evaluated per the applicable standards.