ConnectGen Montgomery County LLC

Mill Point Solar I Project

Matter No. 23-00034

§ 900-2.23 Exhibit 22

Electric and Magnetic Fields

Revised August 2024

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Glossary Terms

Applicant:	ConnectGen Montgomery County LLC (ConnectGen), a direct subsidiary of ConnectGen LLC, is the entity seeking a siting permit for the Facility from the Office of Renewable Energy Siting (ORES) under Section 94-c of the New York State (NYS) Executive Law.
Facility:	The proposed components to be constructed for the generation, collection and distribution of energy for the Project will include: photovoltaic (PV) solar modules and their rack/support systems; direct current (DC) and communications cables connecting the panels to inverters; the inverters, with their support platforms, control electronics, and step-up transformers; buried alternate current (AC) medium voltage collector circuits; fencing and gates around each array of modules; access roads; temporary laydown/construction support areas; a medium voltage-to-transmission voltage substation with associated equipment and fenced areas; a new 3-breaker ring bus point of interconnection switchyard (POI switchyard); two adjacent approximately 305 foot-long 345 kV transmission line segments to interconnect the new POI switchyard to the existing National Grid Marcy – New Scotland 345-kilovolt transmission line; and an operations and maintenance (O&M) building with parking/storage areas as well as any other improvements subject to ORES jurisdiction.
Facility Site:	The tax parcels proposed to host the Facility, which collectively totals 2,665.59 acres.
Point of Interconnection (POI) or POI Switchyard:	A new 3-breaker ring bus point of interconnection switchyard will be constructed adjacent to the existing National Grid Marcy – New Scotland 345-kilovolt transmission line; the substation will tie into the new POI switchyard via an overhead span and deliver power produced from the Facility onto the electric grid through two overhead spans tapping the National Grid-owned Marcy – New Scotland 345 kV transmission line. The POI switchyard is located off Ingersoll Road in the northeastern portion of the Facility Site.

Limits of Disturbance (LOD):	The proposed limits of clearing and disturbance for construction of all Facility components and ancillary features are mapped as the LOD. The LOD encompasses the outer bounds of where construction may occur for the Facility, including all areas of clearing, grading, and temporary or permanent ground disturbance. This boundary includes the footprint of all major Facility components, defined work corridors, security fencing, and proposed planting modules, and incorporates areas utilized by construction vehicles and/or personnel to construct the Facility.
Project or Mill Point Solar I	Collectively refers to permitting, construction, and operation of the Facility, as well as proposed environmental protection measures and other efforts proposed by the Applicant.
Study Area:	In accordance with the Section 94-c Regulations, the Study Area for the Facility includes a radius of five miles around the Facility Site boundary, unless otherwise noted for a specific resource study or Exhibit. The 5-mile Study Area encompasses 96,784.84 acres, inclusive of the 2,665.59-acre Facility Site.

Acronym List

AC	Alternating current
DC	Direct current
EMF	Electromagnetic frequency
HDD	Horizontal Directional Drill
HV ROW	High Voltage (Transmission) Right-of-Way
kV	Kilovolt
LOD	Limits of Disturbance
mG	Milligauss
MV	Medium voltage
MV ROW	Medium Voltage (Collection) Right-of-Way
NYS	New York State
NYPSC	New York Public Service Commission
O&M	Operations and Maintenance
ORES	Office of Renewable Energy Siting
OATT	Open Access Transmission Tariff
POI	Point of Interconnection
PV	Photovoltaic
ROW	Right-of-Way
STE	Short term emergency

EXHIBIT 22 ELECTRIC AND MAGNETIC FIELDS

Electric and magnetic fields (EMF) are produced by a source that generates, transmits, or uses electricity. New York State has a policy limiting EMF from new gen tie lines to levels produced by existing transmission lines or maintaining current levels. The policy sets forth guidelines addressing EMF at the edge of transmission right-of-ways (ROWs). For electric field strength, the guideline is 1.6 kilovolts per meter (kV/m), measured 1 meter above ground level at the edge of the ROW segment. For magnetic field strength, the guideline is 200 milligauss (mG), measured 1 meter above ground level at the edge of the ROW segment. An EMF Study was conducted to estimate the EMF strength created by the Facility's proposed system and is provided as Revised Appendix 22-1: Electric Magnetic Field Study Report.

22(a) Right-of-Way (ROW) Segments with Unique Characteristics

The proposed underground medium voltage (MV) collection system for the Facility is anticipated to be a total of 82,553.19 linear feet (15.64 miles), designed to be rated at 34.5 kilovolts (kV), and is assumed to have a maximum of 13 collection lines routed in parallel trenches, each measuring 10 feet apart. The MV collection system will connect the solar array to the proposed substation. The underground collection system may be installed by either trenching or horizontal directional drilling (HDD). The ROW for the collection system (MV ROW) will range in width from 10 to 170 feet depending upon the number of parallel trenches. Overhead lines are not proposed for the collection system. Per Section 900-2.23(a), an EMF analysis is not required for collection lines operating under 69 kV. No collection lines rated above 69 kV will be utilized by the Facility, therefore an EMF analysis was not performed on the MV collection system.

The Facility design proposes an approximately 1,300-foot-long 345 kV generation tie line segment to interconnect the new substation to the proposed Point of Interconnection (POI) switchyard which will be owned and operated by National Grid. The POI switchyard will include a loop-in and loop-out connection with the existing National Grid 345 kV Marcy-New Scotland #18 transmission line (#18 line) via two adjacent approximately 305 foot-long 345 kV transmission lines. In addition, the 345 kV Edic-New Scotland #14 transmission line (#14 line) runs parallel to the proposed 3-pole structures and loop-in/loop-out structures on the #18 line. The aforementioned components are high voltage (HV) lines. The EMF Study details potential impacts to the interconnections between the proposed substation and the proposed National Grid POI switchyard, the proposed loop-in and loop-out connections between the National Grid POI switchyard and the #18

transmission line, and the existing and proposed #14 and #18 line transmission ROWs (HV ROWs).

The results of the EMF Study conclude that all electric and magnetic field levels for the overhead interconnection cables at the edge of each transmission ROW are within the Interim Standard values of 1.6 kV/m for electric fields and 200 mG for magnetic fields set forth by the New York State Public Service Commission (NYSPSC) (see Revised Appendix 22-1).

22(b) Cross Sections

The EMF Study in Revised Appendix 22-1 includes cross-sections showing the cumulative EMF for the base case (existing facilities) and proposed cross-sections showing the following:

(1) Overhead Electric Facilities

There is an existing overhead National Grid 345 kV Marcy-New Scotland #18 transmission line running east-west through the northern portion of the Facility Site. The Facility will interconnect to this transmission line, which has an existing ROW width of 370 feet. The proposed POI switchyard will be located immediately adjacent to and north of the existing National Grid ROW, containing two existing transmission lines, the Marcy-New Scotland #18 and the Edic-New Scotland #14 line. The Marcy-New Scotland #18 line is on the side of the ROW that abuts the Facility Site. The Edic-New Scotland #14 line will not be impacted by the Facility.

(2) Underground Electric Facilities

No known existing underground electric transmission, sub-transmission, or distribution facilities are located on the Facility Site.

(3) Underground Gas Transmission Facilities

No known underground gas transmission facilities are located on the Facility Site.

(4) Right-of-way Boundaries

The edges of the HV ROW from the substation and the POI switchyard, are designed to be 75 feet from the centerline. The new HV loop-in and loop-out connection transmission lines from the POI switchyard to the existing Marcy-New Scotland #18 345 kV transmission line are designed to be 75 feet from the edge of the HV ROW. Multiple collection lines would be spaced 10 feet apart with the collection trenches ranging in width from 10 to 170 feet depending upon the number of parallel trenches.

(5) Structure Details and Identification

Details and dimensions for all structures (dimensions, phase spacing, phasing, and similar categories) and an overview map showing the locations of the proposed structures are included in Exhibit 5, Appendix 5-3.

22(c) Aerial Photographs/Drawings

The EMF Study (Revised Appendix 22-1) provides aerial photographs and drawings detailing the proposed electrical facilities.

(1) Right-of-way Segment

Revised Appendix 22-1 includes a set of drawings showing the exact location of each identified ROW segment for the MV ROW and the HV ROW.

(2) Cross-section

Revised Appendix 22-1 includes a set of drawings showing each cross-section.

(3) Nearest Residence or Building

Revised Appendix 22-1 includes a set of drawings enhanced to show the nearest residence or occupied non-residential building to the MV ROW and HV ROW segments. The drawings include the distances between the edges of ROW and the nearest edge of residences or buildings (see Revised Appendix 22-1). A review of the Facility Site shows that there are two residential properties in proximity to the proposed gen tie line upgrades for this Project. One residence is 250 feet away and one is 30-feet away from the proposed upgrades (see Revised Appendix 22-1).

22(d) Electric and Magnetic Field (EMF) Calculation Report

The EMF Study (Revised Appendix 22-1) includes the following:

(1) Signature and Stamp

The EMF Study (Revised Appendix 22-1) was prepared and signed by a licensed Professional Engineer, registered and in good standing in the State of New York.

(2) Software Used for Model

The Bonneville Power Corona and Field Effects Version 3.1 Software was used to model the facilities and provide calculations detailed in the EMF Study. A computer simulation was developed to calculate the existing and proposed EMF levels. The EMF Study provides analysis assumptions, design scenarios, calculation tables, and field strength graphs for each identified HV ROW segment cross-section of the proposed generation tie line and loop-in and loop-out connection transmission lines.

(3) Electrical Field Model Parameters

The EMF Study (Revised Appendix 22-1) modeled electric field circuits at a voltage rating of 345 kV. The EMF Study also provides electric field calculation tables and field strength graphs calculated at 1 meter (3.28 feet) above ground level with 5-foot measurement intervals depicting the width of the entire HV ROW out to 500 feet from the edge of the ROW on both sides, including digital copies of all input assumptions and outputs for the calculations.

(4) Magnetic Field Model Parameters

The EMF Study (Revised Appendix 22-1) modeled the strength and locations of magnetic fields along the HV ROW to be generated by the Facility for circuit phase currents equal to the summer normal, summer short term emergency (STE sum), winter normal, and winter short term emergency (STE win) loading conditions. The EMF Study provides magnetic field calculation tables and field strength graphs calculated at 1 meter (3.28 feet) above ground level with 5-foot measurement intervals depicting the width of the entire HV ROW out to 500 feet from the edge of the ROW on both sides, including digital copies of the input assumptions and outputs for the calculations.

(5) Magnetic Field 10-year Model Parameters

As indicated in the EMF Study (Revised Appendix 22-1), there is no expected change in amperage in maximum average load initially versus 10 years after initiation of operation. Therefore, the modeling of magnetic fields using maximum average load, and the associated graphs and tables included in the EMF Study, is applicable to both initial operation and operation after 10 years.

(6) Magnetic Field Base Case Model Parameters

The EMF Study (Revised Appendix 22-1) modeled a "base case" with the circuit phase currents equal to the maximum average annual load currently estimated to occur on the existing power lines within the HV ROW (without construction or operation of the proposed Facility). The EMF Study provides magnetic field calculation tables and field strength graphs calculated at one meter above ground level with 5-foot measurement intervals depicting the width of the entire HV ROW out to 500 feet from the edge of the ROW on both sides, including digital copies of the input assumptions and outputs for the calculations.

(7) Compliance with NYSPSC Standard

All EMF levels associated with the Facility's transmission interconnections are within the established NYSPSC Standard of 1.6 kV/m for the electric field and 200 mG for the magnetic field at the edge of the HV ROWs. Details are further described in the EMF Study in Revised Appendix 22-1.