

Mohawk Solar

Case No. 17-F-0182

1001.11 Exhibit 11

Preliminary Design Drawings

EXHIBIT 11 PRELIMINARY DESIGN DRAWINGS

The Preliminary Design Drawings prepared for this Facility include two drawings sets, the “Civil – Preliminary Design Drawings”, which are included as Appendix 11-A of this Application, and the “Preliminary Electrical Detail Drawings” were prepared using computer software (i.e., AutoCAD), and are labeled “conceptual, not for construction.” The Preliminary Design Drawings were prepared under the direction of a professional engineer, licensed and registered in New York State.

(a) Site Plan

The Preliminary Design Drawings constitute the Site Plan for the Facility and have been prepared at a common engineering scale (e.g. 1” = 100’). These drawings include the following features:

- PV panel locations, and associated mounting features;
- Access roads (temporary and permanent);
- Perimeter fencing;
- Turn-around areas to be used during construction;
- Grading showing proposed final contours;
- Electric collection lines with the required number of circuits for each collection line route;
- Transmission or gen-tie line;
- Approximate limits of disturbance for all Facility components (PV panels, inverters, access roads, buildings, electric lines, substation, etc.);
- Clearing limits for all Facility components (PV panels, inverters, access roads, fences, buildings, electric lines, etc.);
- Permanent Right-of-Way (ROW) for all electric cable installations;
- Locations for trenchless electric cable installations (including layout of approximate laydown areas and trenchless installation distances);
- Applicant’s proposed setbacks from occupied structures, property lines and easements, existing overhead electric lines, gas transmission pipelines and associated easements, and roads;
- Laydown areas to be used for equipment storage and parking areas;
- Back-up generators and fuel storage areas;
- Collection substation outline, including local setbacks, access driveway and fence line;
- POI switchyard outline, including local setbacks, access driveway and fence line; and
- Preliminary location of the O&M building with associated local setbacks, access driveway, parking area and any associated septic or water systems.

An illustration of the various setbacks from Facility components to other features (e.g. property lines) based on the Applicant's proposed setbacks is provided in Figure 11-1. Soil types and delineated wetlands and streams in the vicinity of the Facility are included in the Preliminary Design Drawings provided in Appendix 11-A. Additional information regarding wetlands and streams is provided in Exhibit 22 of this Application. Additional information on soil types within the Facility Site is provided in Exhibit 21.

The Preliminary Design Drawings, and other support drawings, are organized by discipline -- civil, electrical, and structural. Generally, the drawing set for each of these disciplines are further organized by PV panel arrays and/or electrical circuit, or by Facility component.

Civil drawings were developed by the Mott MacDonald Group ("Mott MacDonald") and are provided in the Preliminary Design Drawings (Appendix 11-A). This drawing set includes:

- A general site plan map;
- Grading and erosion control for Facility components; and
- Construction design details, including site plans and profiles for access roads, collection line trenching, PV panel racking, grounding techniques, and communication details.

Electrical drawings (Appendix 5-B (Transmission or Gen-Tie Line Details); Appendix 5-D (Buried Collection Line Details); and Appendix 5-F (Substation Plans and Details)) were developed by Mott MacDonald. These drawings provide details specific to the buried collection line system, POI switchyard and collection substation, road and pipeline crossings, and the transmission or gen-tie line that will connect the two substations. The gen-tie line will span approximately 200 feet and will include six poles, one within the collection substation site, three within the POI switchyard site, and two directly outside of the POI switchyard site, ultimately connecting to the National Grid transmission system.

Structural drawings (i.e. Solar Panel Array Details, Appendix 11-B) were developed by Mott MacDonald and include Facility layout, grounding details, equipment specifications, PV tracker rack section and elevation detail, and trenching details.

(b) Construction Operations Plan

The Preliminary Design Drawings (Appendix 11-A) depict the location of all anticipated construction staging/material laydown areas. These areas will include construction preparation, construction equipment, and worker parking areas, and the contractor trailers/offices. The panel array fields and substation site will be used as informal laydown areas

during the construction of site-specific areas, and there is also a formally designed laydown area that is 7.8 acres in size (shown on drawing MHS-C-111-35-Laydown Area in Appendix 11-A). Finally, the construction trailers will be located at the O&M building.

With respect to notable excavations associated with the Facility, as indicated in (a) above, the Preliminary Design Drawings include plan and profile sheets, each of which indicate the anticipated cut and fill associated with notable Facility construction activities. Therefore, notable excavations are associated with areas anticipated to experience notable cut as identified on the profile drawings. Excess soil will be stockpiled along the construction corridors and used in site restoration.

(c) Grading and Erosion Control Plans

The footprint of a solar generating facility is generally a large tract of contiguous area with compact rows of arrays sited to fit within the existing landscape without the need for extensive grading. Publicly available contour data was obtained from LIDAR data (2-meter contour intervals). Using AutoCAD software, a three-dimensional (3D) surface was created from which 2-foot contours intervals were interpolated. Existing and proposed contours (2-foot intervals) are depicted on the plan view sheets of the Preliminary Design Drawings.

Erosion control practices consistent with the requirements of 16 NYCRR § 1001.11(c) are shown in the Preliminary Design Drawings, such as stormwater culvert crossings. However, no permanent stormwater retention areas are anticipated. Additionally, soil information and preliminary cut and fill calculations are presented in the Preliminary Design Drawings (Appendix 11-A). See Exhibit 21 for further discussion related to depths to bedrock, preliminary cut and fill calculations, a summary of test borings conducted on-site, and soil information. Exhibit 21 also includes an overview of the stand-alone Report of Expected Geotechnical Conditions (Appendix 21-A).

(d) Landscaping Plan

Locations for landscaping plans (i.e. vegetative screening) are discussed in Exhibit 24 of this Application and the Visual Impact Assessment (VIA) (Appendix 24-A). The following features were identified as visually sensitive resources within 1 mile of the Facility: Mohawk River, Mohawk Valley NYS Heritage Area, Forest Preserve Users snowmobile trail, Canajoharie County Club, Canajoharie and Otsquago Creek, Village of Fort Plain, Bike Route 5, Village of Canajoharie, Dunkel Cemetery, Yarding Cemetery, enlarged Erie Barge Canal National Register of Historic Places (NRHP)-listed site, Interstate 90, and numerous state highways. Additional factors, such as topography, current vegetation, and buildings may create visual screening from these sites. As previously stated, additional screening efforts are included in Exhibit 24.

Tree and vegetation cleaning are anticipated to be minimal within the Facility Site. The Facility is primarily located on open agricultural lands that have minimal presence of trees and natural vegetation. The Preliminary Design Drawings depict the Facility footprint and the extent to which trees may need to be removed. With respect to the anticipated acreage of tree removal, see Exhibit 22. An on-site inventory and survey of all trees to be removed is not included in this Application.

(e) Lighting Plan

Exterior lighting fixtures and specifications to be used in the collection substation and at the O&M Building are discussed in Exhibit 18 and the Site Security Plan (Appendix 18-B). The PV panel array sections will not have any lighting associated with them. Where utilized, lighting will be kept to a minimum and will utilize the lowest intensity required to accomplish safety purposes. Additionally, all lighting will be placed on an auto-off switch to further minimize the impacts of trespassing light off site. Further detail of the lighting plan can be found in Exhibit 18. Manufacturer cut sheets for Facility lighting are included in Appendix 11-C. A detailed Exterior Lighting Plan (“Lighting Plan”) will be submitted as a compliance filing for review and approval no later than 30 days prior to the commencement of construction.

(f) Architectural Drawings

The Applicant proposes to build a new Operations and Maintenance (O&M) building. Typical architectural drawings of an O&M building are included in Appendix 11-D. Note that these drawings are presented for informational purposes only, because changes to the O&M building drawings may be necessary following Certification.

Appendix 5-F contains typical interconnect switchyard drawings. Typical drawings for the new POI switchyard and collector substation are also included.” As with the O&M building, these typical drawings may also change following Certification based on final design.

Finally, the Applicant intends to install perimeter fencing around each PV panel array. A typical drawing of the perimeter fencing is included in Appendix 11-A, drawing MHS-C-110-03.

(g) Typical Design Detail Drawings

The Preliminary Design Drawings and various appendices of the Application, detailed below, contain typical design details for all Facility components:

- PV array layout and details (Appendix 11-B);

- Access roads (Preliminary Design Drawings, Appendix 11-A);
- Construction areas (Preliminary Design Drawings, Appendix 11-A);
- Typical details associated with trenchless installations, including typical staging areas, construction machinery arrangements, and bore pits (Appendix 11-E);
- Buried collection lines (Electrical Drawings, Appendix 5-D), including potential trenching details, single and multiple circuit layouts with proposed depth and level of cover, separation requirements between circuits, limits of disturbance, and required permanent ROWs;
- Overhead transmission, or gen-tie line, between the POI and regional grid, including typical elevations, height above grade, structure layouts, clearing width limits for construction and operation of the Facility, and permanent ROW widths, average span lengths for each proposed layout, and structure separation requirements (for installations containing more than one pole, etc.) for all single and multiple circuit layouts (Appendix 5-B);
- Typical support structures (piers, etc., including dimensions) to be used for PV panel installations (Appendix 11-F);
- Typical details of any potential protection measures of existing pipelines; these drawings will show the proposed Facilities and any associated typical or specific protection measure installations relative to existing pipeline installations (separations and crossing methods of existing pipelines are depicted in these details) (Appendix 11-E and Appendix 12-B);
- PV tracker rack (Solar Panel Array Details, Appendix 11-B (drawing MHS-E-403-01); Equipment Spec Sheets, Appendix 5-C)
- Examples of typical technical and safety manuals for the types of equipment (PV and inverter) that are anticipated to be used in the Facility (Appendix 11-G).

(h) Interconnection Facility Drawings

A single line drawing of the POI switchyard is included in the System Reliability Impact Study (SRIS), which is Critical Energy/Electric Infrastructure Information and has been filed under protective cover as Appendix 5-A. Additional details on the POI switchyard will be available once the Facilities Study is complete, which will be after the Certificate is issued by the Siting Board). The general arrangement of the POI switchyard is included in the Preliminary Design Drawings (Appendix 11-A) and the Substation Plans and Details (Appendix 5-F).

(i) Engineering Codes, Standards, Guidelines, and Practices

The list of codes and standards that have been, and will continue to be considered during the design, construction, operation, and maintenance of this Facility is extensive. The following is provided as a representative list of applicable codes and standards, which will be updated following Certification, during final design:

- The Aluminum Association (AA)
- American Association of State Highway and Transportation Officials (AASHTO)
- American Concrete Institute (ACI)
- American Institute of Steel Construction (AISC)
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- American Society for Testing and Materials (ASTM)
- American Welding Society (AWS)
- Concrete Reinforcing Steel Institute (CRSI)
- Edison Electric Institute Publications (EEI-AEIC)
- Federal Energy Regulatory Commission (FERC)
- Insulated Cable Engineers Association (ICEA)
- International Electro-technical Commission (IEC)
- Institute of Electrical and Electronics Engineers (IEEE)
- Mine Safety and Health Administration (MSHA)
- National Bureau of Standards (NBS)
- National Electrical Manufacturers Association (NEMA)
- National Electric Safety Code (NESC)
- National Electrical Testing Association (NETA)
- National Fire Protection Association (NFPA)
- National Institute of Standards and Technology (NIST)
- National Ready Mixed Concrete Association (NRMCA)
- Occupational Safety and Health Administration (OSHA)
- Portland Cement Association (PCA)
- Rural Electrification Administration (REA)
- Society of Automotive Engineers (SAE)
- Society for Protective Coatings (SSPC)
- Uniform Building Code (UBC)
- Underwriter's Laboratories, Inc. (UL)

(j) Flood Hazard Areas

There are no Special Flood Hazard Areas (SFHA or “100-year floodplain”) within the Facility Site. Therefore, this section is not Applicable.