



Cassadaga Wind Project

Case No. 14-F-0490

1001.11 Exhibit 11

Preliminary Design Drawings

EXHIBIT 11 PRELIMINARY DESIGN DRAWINGS

The Preliminary Design Drawings prepared in support of this Exhibit have been prepared using computer software (i.e., AutoCAD), and these drawings are labeled “for permitting only, not for construction”. The Preliminary Design Drawings were prepared under the direction of a professional engineer who is licensed and registered in New York State, and these drawings are included as Appendix M to this Application.

(a) Site Plan

The Preliminary Design Drawings included in Appendix M constitute the site plan for the Facility and have been prepared at a scale of 1" = 100', with the exception of those sheets associated with the collection lines and the 115 kV generator lead line, which have been prepared at a scale of 1" = 200'. These drawings depict all Facility components (turbines, access roads, buried and above-ground collection lines, permanent meteorological towers, O&M building, collection substation, generator lead line, and point of interconnection substation). With respect to typical details for the O&M building, please see Appendix N. With respect to an on-site concrete batch plant, the Applicant currently anticipates this feature will be located at the centrally located construction staging area off Cleland Road, and general information about this temporary feature is included in Appendix O. However, it may be necessary for the Applicant to obtain concrete from local or regional suppliers either in addition to the on-site concrete batch plant or solely source the concrete using offsite suppliers.

The Preliminary Design Drawings are organized into five regions: northwest (NW); northeast (NE); central (CE); southwest (SW); and southeast (SE). The drawing sets for each of these regions are further organized as follows: soils map; index sheet; plan and profile drawings. Please see Appendix M for additional information.

(b) Construction Operations Plan

The Preliminary Design Drawings included in Appendix M depict the location of all anticipated construction staging/material laydown areas, which is where the contractor trailers/offices and parking areas will be located during construction. 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 indicates 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

Unlike a conventional energy generating facility in which a large tract of contiguous acreage must be graded in order to properly site the facility, the footprint of a wind power project is relatively small, is more spread out, and is designed to fit within the existing land form. Publicly available contour data was obtained from Chautauqua County (5-foot contour intervals) and using AutoCAD software a three dimensional (3D) was created with this data, from which 2-foot contour intervals were interpolated. Existing and proposed contours (2-foot intervals) are depicted on the plan view sheets of the Preliminary Design Drawings. In addition, as indicated in subpart (a) above a soil types map is also included with the drawing sets for each region; however, please see Exhibit 21 for more detailed information such as depth to bedrock, preliminary cut and fill calculations, a summary of test borings conducted at a sub-set of turbine locations and substation locations, etc. Exhibit 21 also includes reference to the stand-alone Preliminary Geotechnical report.

(d) Landscaping Plan

Based on the Applicant's experience with wind power development, the only potential locations for significant landscaping plans would be associated with the collection substation and/or POI substation. However, as indicated in the Visual Impact Assessment prepared for the Facility, both substations are located in fields that are not proximate to visually sensitive receptors and are surrounded by existing forest vegetation (see Exhibit 24 for additional information). Therefore, visual impact associated with the substations is anticipated to be essentially non-existent, and screening plans are not proposed.

With respect to those areas where trees may be removed due to Facility construction and operation, please see the Preliminary Design Drawings included as Appendix M, which depict the Facility footprint on recent aerial imagery. With respect to the anticipated acreage of tree removal, please see Exhibit 22.

(e) Lighting Plan

As indicated in the Preliminary Security Plan prepared for the Facility (see Exhibit 18 for additional information), security lighting is an important component of the security plan. Security lighting shall be installed at all wind turbines, substations and the O&M building. Security lighting that fails shall be promptly replaced and checking security lighting functionality shall be a component of all maintenance inspections of substations and turbines in accordance with the Facility's inspection schedule, at a minimum.

Turbines shall have a safety light near the turbine door. The light shall be set on a motion detector and hooded downward. If motion detector lighting is not feasible, the light will be placed on an auto-off switch in which the light will automatically turn off after a specified period of time (i.e., period of time needed to accomplish any nighttime safety or maintenance work). The light will be the lowest intensity required to accomplish its safety purpose and will not be a sodium vapor light. Lighting of the nacelles shall be implemented as per the requirements and determinations of the FAA. Specifications for anticipated turbine lights will be in accordance with FAA's December 4, 2015 Advisory Circular 70/7460-1L, specifically Chapter 13 (Marking and Lighting Wind Turbines), which requires the use of FAA L-864 aviation lights (Chapter 13 of the FAA Circular is included in Appendix P). Because the Determinations of No Hazard to Air Navigation have already been received, which contemplate the use of white paint/synchronized red lights, radar-activated FAA marking lights will not be considered. Radar-activated FAA marking light systems are considerably more expensive than the traditional white paint/synchronized red light marking system. Furthermore, radar-activated lighting is more practical at wind farms with a smaller Facility area to reduce the number of radar locations needed to provide coverage for the Facility.

Substation lights shall be kept to the minimum necessary for security and maintenance safety. Substation lighting will be replaced with low-light video and/or camera surveillance monitoring or other security methods that do not require lighting whenever practicable. Substation lighting will be set on a motion detector or an auto-off switch, and hooded downward. The light will be the lowest intensity required to accomplish its safety purpose and will not be a sodium vapor light. Following Certification of the Facility, a lighting designer will be employed to design a lighting plan for the substation in order to avoid any redundant and ineffective lighting.

O&M building lights will be set on a motion detector and will be hooded downward. If motion detector lighting is not feasible, the light will be placed on an auto-off switch in which the light will automatically turn off after a specified period of time (i.e., period of time needed to accomplish any nighttime safety or maintenance work). The light will be the lowest intensity required to accomplish its safety purpose and will not be a sodium vapor light

(f) Architectural Drawings or Typical Details

Typical architectural drawings of an O&M building are included in Appendix N. Please note that these drawings are presented as typical for informational purposes, and changes to the typical O&M building drawings may be necessary following Certification. In addition, the Applicant may purchase an existing building to utilize for O&M operations, in which case the layout and architecture of the building will be typical to the area. Appendix Q includes typical turbine foundation drawings; however, this information will be filed separately under confidential cover. Please see Appendix

I for typical substation drawings, and these typical drawings may also change following Certification based on final design.

(g) Typical Design Detail Drawings

The Preliminary Design Drawings and various appendices of this Application contain typical design details associated with the Facility, summarized as follows:

- Access roads (Preliminary Design Drawings, Appendix M)
- Turbine laydown areas (Preliminary Design Drawings, Appendix M)
- Horizontal directional drilling (Preliminary Design Drawings, Appendix M)
- Buried and above-ground collection lines (Appendix G)
- Above-ground collection lines co-located with the 115 kV generator lead line (Appendix G)
- Wind turbine foundations (Appendix Q; filed separately under confidential cover)
- Wind turbine brochures (Appendix K)
- Typical wind turbine technical and safety manuals (Appendix R; filed separately under confidential cover)

(h) Interconnection Facility Drawings

A single line drawing of the POI substation is included in the System Reliability Impact Study (SRIS), which is Appendix E to the Application. However, the SRIS will be filed separately under confidential cover. Additional details on the POI substation will be available once the facilities study is complete. However, the facilities study will not be completed until after the Certificate is issued by the Siting Board. The general arrangement of the POI substation is included in Appendix I and typical structures for the 115 kV generator lead line is included in Appendix J. In addition, the Preliminary Design Drawings included in Appendix M include plan and profile drawings for the 115 kV generator lead line.

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

The list of codes and standards that have been and will 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)