



NORTH SIDE ENERGY CENTER

Case No. 17-F-0598

1001.11 Exhibit 11

Preliminary Design Drawings

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Appendices

Appendix 11-1	Preliminary Design Drawings (Civil Construction Plans)
Appendix 11-2	Preliminary Landscape Plans
Appendix 11-3	Electrical Design

Exhibit 11: Preliminary Design Drawings

This Exhibit will track the requirements of proposed Stipulation 11, dated February 10, 2021, and therefore, the requirements of 16 New York Codes, Rules and Regulations (NYCRR) § 1001.11.

This exhibit contains Preliminary Design Drawings (Civil Construction Plans) and supporting documentation, which were developed under the direction of a licensed Professional Engineer in the State of New York. The plans were prepared using AutoCAD Civil 3D design software and are generally presented at a scale of 1 inch equals 100 feet, with the exception of those intended to provide an overview of the Project Area. The drawings are labeled appropriately as “Preliminary– Not for Construction Purposes.”

The Project proposes to install fixed or tracker racking systems. As the technology is rapidly evolving for solar panel technology, and the market conditions at the time that procurement decisions need to be made are unknown at this time, the North Side Energy Center, LLC (Applicant) is proposing in this Application to evaluate both types of racking systems, with the final decision to be made and detailed in the Compliance Filing. Only selected elements of the North Side Energy Center (North Side Energy Center or Project) would change based upon the type of array racking system used, but all changes would be within the Component fence line and to the same land uses shown in the Proposed Layout. Using one racking system versus the other, therefore, would not cause any new, significant, adverse environmental impacts. The location of interior access roads and inverters, depending upon the final locations, could differ from that shown in the Appendix 11-1. Land coverage ratios will also be adjusted but are not expected to be substantially or significantly different.

Accordingly, the drawings, plan and maps provided as Appendix 11-1 depict the use of tracker racking systems which require a similar Project footprint as the fixed-tilt racking. As part of the alternative layout evaluation, Exhibit 9 provides a discussion on a fixed racking system.

11(a) Site Plan

The Civil Construction Plans include a Site Plan for the Project (Appendix 11-1), a Landscaping Plan (Appendix 11-2), and a Collector Substation Design (Appendix 5-2), which all together depict the following Project components:

- (1) Proposed solar panels and associated mounting features and inverters;

- (2) Access roads and parking areas (included as part of designated laydown areas);
- (3) Proposed grading, which includes locations for grading for permanent contours for final grading (no temporary grading is proposed);
- (4) Underground electric cable collection lines (number of circuits per route is indicated on the Civil Details drawings);
- (5) Existing electric transmission line and utility locations, and associated rights-of-ways (ROW);
- (6) Approximate Limit of Disturbance (LOD) for all Project components;
- (7) Vegetative clearing limits;
- (8) Indication of any off-site permanent ROW, and road crossings for collection line installations;
- (9) Outline of collection substation and interconnection switchyard, including access roads, setbacks, and fence line;
- (10) Proposed locations of collection line crossings of streams, waterbodies, roads, and other relevant resource features; as well as proposed locations of trenchless methods of installation, including the approximate laydown areas, workspace, and trenchless installation details;
- (11) Project laydown areas which include areas for staging, equipment storage, and designated parking;
- (12) Access areas for operation and maintenance (access roads are to be used for parking by maintenance technicians during operation). There are no proposed Operation and Maintenance (O&M) buildings or facilities, water supplies, or septic systems associated with the Project. Only the substation and switchyard control equipment will require electricity (see Section 11(f) below);
- (13) Fencing and gates, including clearing associated with the fencing;
- (14) Property lines and zoning setbacks;
- (15) Existing utility equipment locations and easement limits of those existing locations, including electric transmission and distribution lines, cable and telecommunication lines, and other features as applicable;
- (16) Site security features, including perimeter fencing; and
- (17) Proposed planted screening locations;
- (18) Low-medium transformers within the solar panel arrays; and
- (19) Energy storage systems are not depicted as none are proposed

The “Overall Site Plan – Single-Axis Tracker” included as part of the Preliminary Design Drawings depicts the proposed locations of the solar arrays, access roads, collection lines, collection substation, laydown and staging areas, and other features as outlined above. The detailed Civil Site Plans drawings (1” = 100’) show the proposed locations of Project components relative to mapped streams and wetlands. Soil types and bedrock are depicted on Figures 21-2 and 21-3 in Exhibit 21 relative to Project components. The Project Area lies outside of Special Flood Hazard Zones.

Solar technology is rapidly advancing; therefore, it is not possible to determine the exact module type that will be utilized for a project with a commercial operation date of 2023. The Applicant intends to utilize a module similar to the Jinko Solar Eagle 72HM G2 380-400 Watt Mono Perc Half Cell Module. A specification sheet for the modules has been included in Appendix 2-1. The Applicant is proposing the use of a tracker array system, which will be installed with minimal ground disturbance via driven posts. Aside from driven posts, the only foundations proposed for the Project will be concrete for select components of the collection substation and the switchyard.

11(b) Construction Operations Plan

Specific details regarding construction and operation of the Project, such as project laydown areas, are included in the Preliminary Design Drawings. Material staging areas, construction equipment and worker parking areas (included as part of designated laydown areas), and points of ingress and egress are shown on Drawings C.101 through C.331. Areas of excavation (for purposes of site grading) and conceptual soil storage areas are indicated on the Civil Site Plan drawings. Final Project construction details, such as the final locations of construction trailers/offices and any concrete batch plant locations, are not certain at this time as an Engineering, Procurement, and Construction (EPC) Contractor has not yet been selected for the Project. The construction trailers/offices will be located entirely within the indicated laydown areas for the Project. Concrete batch plants, if necessary for Project construction, will be located within either the indicated laydown areas or the substation yard.

During construction, the EPC Contractor will hire a subcontractor to plow snow off construction access roads as needed. Snow will be pushed off the access roads and windrowed at each respective edge of the road. The EPC will determine where to push and store snow based upon safety considerations and conditions encountered at that time.

11(c) Grading and Erosion Control Plan

Soils information, site grading, stormwater management, and erosion control measures are shown on the Civil Site Plans. These plans depict existing and proposed topography at 1-foot contour intervals. Existing topography was derived from a Light Detection and Ranging (LiDAR) survey contracted by the Applicant and completed in spring 2020. Soil types and boundaries were obtained from the Natural Resources Conservation Service (NRCS) Web Soil Survey database for St. Lawrence County, New York. Refer to Exhibit 21 for additional geotechnical information including boring reports, depth to bedrock, earthwork volume calculation, etc. and Appendix 21-1 for the Geotechnical Engineering Report prepared by Terracon.

General areas of cut and fill are indicated on Grading & Drainage Plans and estimated cut and fill quantities have been detailed in Exhibit 21. Topsoil will be segregated from common fill (subsoils) and an Environmental Monitor, trained in agricultural conservation practices will be on-site during construction to oversee topsoil separation, as necessary. Additionally, the Applicant will comply with the New York State Department of Agriculture and Markets (NYSDAM) *Guidelines for Solar Energy Projects – Construction Mitigation for Agricultural Lands, revised in October of 2019*, for requirements specific to construction, restoration, monitoring, and decommissioning to the maximum extent practicable. Therefore, topsoil will be stripped, graded, replaced, and revegetated to further minimize impacts to agricultural areas. Retaining walls will not be necessary during Project construction.

A Stormwater Pollution Prevention Plan (SWPPP) has been included in Appendix 23-3. The preliminary Project design conforms to the requirements of the New York State Stormwater Management Design Manual (2015). The erosion and sediment control measures shown on the plans have been designed in conformance with the New York State Standards and Specifications for Erosion and Sediment Control (2016). Construction activities will comply with the requirements of the New York State Pollution Discharges Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001, or that are in effect at time of construction). Stormwater impacts are not anticipated to occur as a result of the Project. Anticipated erosion and sediment controls and stormwater management practices (SMPs) have been detailed in the SWPPP and the Preliminary Design Drawings. A Final SWPPP will be prepared to detail the proposed post-construction stormwater control practices and the stormwater design calculations.

11(d) Landscaping Plan

Landscape Screening Plan drawings have been prepared to depict proposed landscaping. The landscape screening plan details the location of proposed vegetative screening in relation to Project components and adjacent sensitive receptors. The Landscaping Plan, as seen in Appendix 11-1, provides general planting notes, details on plantings and identifies the quantities and types of tree and shrub species that are proposed. Additionally, a seed mix for the grass type to be planted within the solar array area is detailed on the drawing. The Landscape Screening Plan Screening drawings illustrate the type of landscape screenings that is being proposed.

The clearing limits of existing trees are depicted on the Civil Site Plan and Tree Clearing Plan drawings. Clearing is kept to the minimum needed for construction and to prevent shading during operation.

Similar to other projects in New York and in regions that receive snow accumulations, the Applicant intends to hire a local contractor to plow access roads across the Project. Snow will be pushed off the permanent access roads and windrowed at each respective edge of the road. Operation & Maintenance (O&M) personnel will determine where to push and store snow based upon safety considerations and conditions encountered at that time.

11(e) Lighting Plan

Lighting is only proposed at the Project interconnection facilities and is only for security, safety, and maintenance purposes; no lighting is proposed within the solar arrays. Details regarding the Project's Lighting Plan are included in the Preliminary Design Drawings in Appendix 11-1. Manually-operated security lighting is proposed at the collection substation and switchyard. A lighting plan for the collection substation and switchyard is included with the Exhibit 11 drawings. This plan was developed to minimize fugitive light while meeting lighting standards established by the National Electric Safety Code (NESC). The collection substation and switchyard will primarily remain unoccupied. All lighting will be activated manually turned on by a switch. Lighting will be installed facing downward to minimize potential impacts to the surrounding public. Lighting has been designed to provide a 3.0 foot-candle average, to eliminate unnecessary light trespass beyond the collection substation and switchyard. Lighting will be attached to equipment or pole structure mounted and will not be illuminated during unoccupied periods. The collection substation and switchyard will use full cut-off fixtures and task lighting wherever feasible, as specified in the Lighting Plan. Drop-down optics will not be utilized for the Project.

11(f) Architectural Drawings

Habitable buildings are not proposed as part of the Project. The Preliminary Design Drawings include cross-sections of the collection substation and Point of Interconnection (POI) switchyard interconnection equipment, as well as fencing, gates, and relevant site security features. These drawings identify the arrangement of the previously noted features, as well as the length, width, height, material of construction, color and finish of relevant components, and the type of fencing to be installed around Project components. Additionally, a floor plan and interior lighting plan for the proposed collection substation and switchyard control rooms have been included. As noted above, the control equipment are not habitable structures and they do not require running water and are not meant for human occupation.

11(g) Design Detail Drawings of Underground and Overhead Facilities

The Preliminary Design Drawings and various appendices of the Application contain typical design details associated with the Project, including the proposed depth and level of cover for buried collection lines and overhead interconnection facilities indicating height above grade, descriptions and preliminary specifications of all major components. The following information will also be included, as applicable:

- (1) Collection lines for the Project will be installed underground. The Preliminary Design Drawings include the following components regarding underground installations:
 - (i) Single and multiple-circuit layouts;
 - (ii) Co-located installations with dimensions of proposed depth and level of cover;
 - (iii) Separation requirements between circuits;
 - (iv) Clearing width limits for construction and operation of the facility;
 - (v) Limits of disturbance; and
 - (vi) Required permanent ROW.

- (2) The only overhead line currently proposed for the Project is the approximately 0.03-mile transmission line connecting POI switchyard to the existing transmission line. The

Preliminary Design Drawings include the following components regarding aboveground installations:

- (i) Elevation plans for overhead facilities (collection and transmission line) including height above grade, structure layouts, clearing width limits for construction and operation of the facility, and permanent ROW widths;
 - (ii) Average span lengths for each proposed layout; and
 - (iii) Structure separation requirements (for installations containing more than one pole, etc.) for all single and multiple-circuit layouts.
- (3) The solar arrays will be fastened to posts driven into the ground. Typical details of the post installation have been provided on Sheet C.603 of the Civil Drawing Set within the Preliminary Design Drawings.
- (4) A circuit map indicating overhead and underground installations, and number of required circuits proposed per collection line run is included in the Collection System Drawing Set within the Preliminary Design Drawings.
- (5) A typical collector trench and typical details associated with trenchless installations including typical staging areas, construction machinery arrangements, and bore pits are identified on the Preliminary Design Drawings
- (6) Technical data sheets associated with solar panels representative of those to be used for this Project have been provided in Appendix 2-1.

11(h) Interconnection Facilities

For the interconnection facilities, the plans and drawings required by subsections (a)–(g) have been included in Appendix 11-1 of the Application, as well as a profile of the centerline of the overhead interconnection line at an exaggerated vertical scale.

11(i) Engineering Codes, Standards, and Guidelines

The Applicant intends to conform to the below listed engineering codes, standards, guidelines, and practices to conform to during the planning, designing, construction, and operation of the Project electric collection substation, POI switchyard, and associated structures, as applicable:

- American National Standards Institute (ANSI)
- Institute of Electrical and Electronics Engineers (IEEE)
- Insulated Cable Engineers Association (ICEA)
- American Society of Mechanical Engineers
- National Electric Code (NEC)
- National Electrical Safety Code (NESC)
- National Electric Manufacturers Association
- National Fire Protection Association (NFPA)
- Uniform Building Code
- United Laboratories
- American Iron and Steel Institute
- American Institute of Steel Construction
- International Building Code 2006
- American Association of State Highway and Transportation Officials (AASHTO) Standard for Aggregates
- American Society of Civil Engineers (ASCE) 7-10 Minimum Design Loads for Buildings and Other Structures
- Federal Occupational Safety and Health Administration (OSHA) 1910.269
- American Concrete Institute (ACI)

Energy storage systems are not proposed for the Project and therefore are not discussed within this Exhibit.

11(j) Wetland Boundaries

Wetlands identified within the Project Area are referred to as “delineated wetlands.” The boundaries of delineated wetlands were recorded with a Trimble Geo 7000 XH Global Positioning System (GPS) unit with reported sub-meter accuracy or a Juniper Geode GPS/Global Navigation Satellite System (GLONASS) Sub-meter Receiver. Refer to Section 22(i)(1) and Appendix 22-5 for a detailed description of how these delineated wetlands were identified within the Project Area.

Wetlands and adjacent areas were estimated within 100 feet of the limits of disturbance on parcels the Applicant does not have control over. These wetlands identified outside the Project Area are referred to as “predicted wetlands.” See Section 22(i)(2) for a detailed description of how these predicted wetlands and adjacent areas were interpolated.

The Preliminary Design Drawings depict both delineated wetlands and predicted wetlands. Figure 22-3 depicts the delineated wetlands within the Project Area and the subsequent 100-foot area from the limits of disturbance. Shapefiles provided to the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Public Service (NYS DPS) with the Application include delineated wetlands and predicted wetlands.

11(k) Site Plans Including Vegetation, Ground Disturbance, and Wetlands

As referenced above, the Preliminary Design Drawings depict all Project components; proposed grade changes and conceptual locations for stockpile areas; the limits of ground disturbance and vegetative clearing; and all field-delineated wetlands, predicted wetland boundaries, state mapped, regulated 100-foot adjacent areas, and state mapped regulated wetlands located within 100 feet of all areas to be disturbed by construction.