Joint Application for Permit

Submitted to the New York District Office of the U.S. Army Corps of Engineers and the New York State Board on Electric Generation Siting and the Environment

Mohawk Solar

Towns of Canajoharie and Minden
Montgomery County, New York

Prepared for:

Mohawk Solar LLC
A subsidiary of **Avangrid Renewables LLC**

7650 North State Street, Suite 1
Lowville, NY 13367
315-874-4231 (phone)
mohawksolar@avangrid.com

Prepared by:

Environmental Design & Research,
Landscape Architecture, Engineering & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1000
Syracuse, New York 13202
Contact: Patrick Heaton
Phone: 315-471-0688

May 2020

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

COMMONLY USED ACRONYMS AND ABBREVIATIONS

ac	acre(s)
AMSL	Above Mean Sea Level
CES	Clean Energy Standard
CLCPA	Climate Leadership and Community Protection Act
ECL	Environmental Conservation Law
EDR	Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C.
ESA	Endangered Species Act of 1973
GIS	Geographic Information System
kV	Kilovolt
l.f.	linear feet
JD	Jurisdictional Determination
MW	Megawatt(s)
NYCRR	Official Compilation of Codes, Rules, and Regulations of the State of New York
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
NYSDPS	New York State Department of Public Service
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
O&M	Operations and Maintenance
POI	Point of Interconnection
PSC	Public Service Commission
REV	Reforming Energy Vision
ROW	Right-of-Way
State	New York State
SEP	State Energy Plan
s.f.	square feet
SHPO	State Historic Preservation Office
SPDES	State Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

NEW YORK STATE | Department of Environmental Conservation | Office of General Services | Department of State

US Army Corps of Engineers

JOINT APPLICATION FORM

For Permits for activities activities affecting streams, waterways, waterbodies, wetlands, coastal areas, sources of water, and endangered and threatened species.

You must separately apply for and obtain Permits from each involved agency before starting work. Please read all instructions.

☑ New York State Board on Electric Generation Siting and the Environment (401 Water Quality Certification)

1. **Applications To:**

>NYS Department of Environmental Conservation ☐ Check here to confirm you sent this form to NYSDEC.

Check all permits that apply:

- ☐ Stream Disturbance
- ☐ Excavation and Fill in Navigable Waters
- ☐ Docks, Moorings or Platforms
- ☐ Dams and Impoundment Structures
- ☐ 401 Water Quality Certification
- ☐ Freshwater Wetlands
- ☐ Tidal Wetlands
- ☐ Wild, Scenic and Recreational Rivers
- ☐ Coastal Erosion Management
- ☐ Water Withdrawal
- ☐ Long Island Well
- ☐ Incidental Take of Endangered / Threatened Species

>US Army Corps of Engineers ☑ Check here to confirm you sent this form to USACE.

Check all permits that apply: ☑ Section 404 Clean Water Act ☐ Section 10 Rivers and Harbors Act

Is the project Federally funded? ☐ Yes ☑ No

If yes, name of Federal Agency:

General Permit Type(s), if known: Nationwide Permit (NWP) 51

Preconstruction Notification: ☑ Yes ☐ No

>NYS Office of General Services ☐ Check here to confirm you sent this form to NYSOGS.

Check all permits that apply:

- ☐ State Owned Lands Under Water
- ☐ Utility Easement (pipelines, conduits, cables, etc.)
- ☐ Docks, Moorings or Platforms

>NYS Department of State ☐ Check here to confirm you sent this form to NYSDOS.

Check if this applies: ☐ Coastal Consistency Concurrence

2. **Name of Applicant**

Mohawk Solar LLC

Taxpayer ID (if applicant is NOT an individual): 47-4247745

Mailing Address: 1125 NW Couch St., Suite 700

Post Office / City: Portland

State: OR

Zip: 97209

Telephone: 518-703-0180

Email: Scott.McDonald@Avangrid.com

Applicant Must be (check all that apply): ☐ Owner ☑ Operator ☑ Lessee

3. **Name of Property Owner (if different than Applicant)**

Multiple (see Appendix A)

Mailing Address: Multiple (see Appendix A)

Post Office / City: Canajoharie and Minden

State: NY

Zip:

Telephone:

Email:

For Agency Use Only	Agency Application Number:

4. **Name of Contact / Agent**

Melissa Fisher (Avangrid Renewables)

Mailing Address	Post Office / City	State	Zip
1125 NW Couch St., Suite 700	Portland	OR	97209

Telephone 802-289-5013 Email Melissa.Fisher@Avangrid.com

5. **Project / Facility Name**

Mohawk Solar

Property Tax Map Section / Block / Lot Number:

Multiple (see Appendix A)

Project Street Address, if applicable	Post Office / City	State	Zip
Refer to the attached narrative and Figures 1 and 2.		NY	

Provide directions and distances to roads, intersections, bridges and bodies of water

Refer to the attached Figures.

☑ Town ☐ Village ☐ City

County	Stream/Waterbody Name
Montgomery	Multiple (refer to attached narrative)

Canajoharie and Minden

Project Location Coordinates: Enter Latitude and Longitude in degrees, minutes, seconds:

Latitude: 42 ° 53 ' 23.3 " Longitude: 74 ° 38 ' 2.0 "

6. **Project Description:** Provide the following information about your project. Continue each response and provide any additional information on other pages. **Attach plans on separate pages.**

a. Purpose of the proposed project:

Mohawk Solar LLC (the Applicant), is proposing to construct Mohawk Solar, a solar energy generation facility and associated necessary infrastructure (the Facility) in the Towns of Canajoharie and Minden in Montgomery County, New York. The 90.5-MW Facility will deliver affordable clean energy to the New York power grid. Refer to the attached narrative for more details.

b. Description of current site conditions:

Land use within the Facility Site is largely characterized by hayfields, pastureland, successional fields, forestland, wetlands, and low density rural residential development. Refer to the attached narrative for more details.

c. Proposed site changes:

Site changes required for construction of the project include the clearing of forest and other vegetation, as well as soil disturbance for the construction of access roads, buried collection lines, and transformers. Approximately 518 acres of solar photovoltaic (PV) panel arrays will be constructed on the site. Refer to the attached narrative and Figures for more details.

d. Type of structures and fill materials to be installed, and quantity of materials to be used (e.g., square feet of coverage, cubic yards of fill material, structures below ordinary/mean high water, etc.):

Permanent impacts to wetlands and streams will result from construction of gravel access roads and/or installation of PV array piers and perimeter fence posts. Estimated permanent impacts total up to 0.470 acre (0.399 acre of permanent fill and forest conversion impacts to wetlands and 0.071 acre of permanent impacts to streams). Refer to Sections 3.0 and 4.0 of the attached narrative and the attached Figures for more details.

e. Area of excavation or dredging, volume of material to be removed, location of dredged material placement:

Refer to Sections 3.0 and 4.0 of the attached narrative and the attached Figures for more details.

f. Is tree cutting or clearing proposed? ☑ Yes If Yes, explain below. ☐ No

Timing of the proposed cutting or clearing (month/year): November 1, 2021 to March 31, 2022

Number of trees to be cut: Unknown Acreage of trees to be cleared: 36.1

g. Work methods and type of equipment to be used:

Refer to Sections 3.2, 4.0, and 6.0 of the attached narrative and the attached Figures for details regarding project construction methods and equipment.

h. Describe the planned sequence of activities:

Refer to Section 3.2 of the attached narrative. The construction process will initiate with the clearing of trees and other vegetation within the limits of disturbance. Following vegetation clearing, access roads and collection lines will be installed/established. PV panel arrays, transformers, and associated components will then be installed. The substation, the switchyard, and the O&M building will be built concurrently with the panel arrays.

i. Pollution control methods and other actions proposed to mitigate environmental impacts:

Please refer to Section 6.0 of the attached narrative, as well as the project SWPPP (which can be provided upon request) for details pertaining to pollution control measures and mitigation of environmental impacts.

j. Erosion and silt control methods that will be used to prevent water quality impacts:

Please refer to Section 6.0 of the attached narrative, as well as the project SWPPP (which can be provided upon request) for details pertaining to erosion and sediment measures that will be implemented.

k. Alternatives considered to avoid regulated areas. If no feasible alternatives exist, explain how the project will minimize impacts:

Please refer to Sections 5.0 and 6.0 of the attached narrative for an evaluation of alternatives and impact avoidance measures.

l. Proposed use: ☐ Private ☐ Public ☑ Commercial

m. Proposed Start Date: April 2021 Estimated Completion Date: November 2022

n. Has work begun on project? ☐ Yes If Yes, explain below. ☑ No

o. Will project occupy Federal, State, or Municipal Land? ☐ Yes If Yes, explain below. ☑ No

p. List any previous DEC, USACE, OGS or DOS Permit / Application numbers for activities at this location:

q. Will this project require additional Federal, State, or Local authorizations, including zoning changes?

☑ Yes If Yes, list below. ☐ No

Certificate of Environmental Compatibility and Public Need pursuant to Article 10 of the Public Service Law (PSL) (Case No. 17-F-0182); NYSDEC SPDES; approval of 401 Water Quality Certification by the New York State Board on Electric Generation Siting and the Environment.

7. **Signatures.**

Applicant and Owner (If different) must sign the application.
Append additional pages of this Signature section if there are multiple Applicants, Owners or Contact/Agents.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief.

Permission to Inspect - I hereby consent to Agency inspection of the project site and adjacent property areas. Agency staff may enter the property without notice between 7:00 am and 7:00 pm, Monday - Friday. Inspection may occur without the owner, applicant or agent present. If the property is posted with "keep out" signs or fenced with an unlocked gate, Agency staff may still enter the property. Agency staff may take measurements, analyze site physical characteristics, take soil and vegetation samples, sketch and photograph the site. I understand that failure to give this consent may result in denial of the permit(s) sought by this application.

False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the NYS Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than $10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature of Applicant | Date: April 30, 2020

Applicant Must be (check all that apply): ☑ Owner ☑ Operator ☑ Lessee

Printed Name: Scott McDonald | Title: Lead/Senior Business Developer

Signature of Owner (if different than Applicant) | Date:

Printed Name: | Title:

Signature of Contact / Agent | Date: April 30, 2020

Printed Name: Melissa Fisher | Title: Sr. Permitting & Environmental Manager

For Agency Use Only **DETERMINATION OF NO PERMIT REQUIRED**

Agency Application Number:

_____ (Agency Name) has determined that No Permit is required from this Agency for the project described in this application.

Agency Representative:

Printed Name: | Title:

Signature: | Date:

1.0 INTRODUCTION

1.1 Facility Overview and Purpose

Mohawk Solar LLC (the Applicant), a subsidiary of Avangrid Renewables LLC (Avangrid), is proposing to construct Mohawk Solar, a utility-scale solar energy generation facility and associated infrastructure (the Facility) in the Towns of Canajoharie and Minden in Montgomery County, New York (see Figure 1). The Facility will consist of approximately 518 acres of solar photovoltaic (PV) panel arrays with a total generating capacity of up to 90.5 megawatts (MW). Other proposed components will include gravel access roads, grass access roads (i.e., corridors), pad-mounted transformers, buried electrical collection lines, an operations and maintenance (O&M) building, a collection substation, and a point of interconnect (POI) switchyard. Planting modules are also proposed to provide visual screening. The Facility layout is depicted in Figure 2.

Current New York State (State) energy policy is focused on the need to increase competition among energy providers, lower the cost of energy to consumers, increase efficiencies, drive investments in the electric system, and send market signals to support broad State policy preferences for green energy, energy efficiency, and equal access to affordable and clean energy. To advance these interests, both generally and with respect to specific projects, New York relies on a suite of public policy planning tools, including the State Energy Plan (SEP) and, more recently, the Reforming the Energy Vision (REV) initiative and Clean Energy Standard (CES) proceedings, to guide state actions and initiatives. In addition, New York recently enacted the Climate Leadership and Community Protection Act (CLCPA), which requires 40 percent greenhouse gas emissions reductions in absolute terms from 1990 levels by 2030 and 85 percent emissions reductions by 2050. The CLCPA also mandates that 70 percent of the State's electricity must come from renewable energy by 2030, and 100 percent of the State's electricity supply must be emissions free by 2040.

These planning documents and policies, which are interrelated and interdependent, are collectively meant to spur progress toward diverting the State away from the monopolistic fossil fuel-based utility market and toward a cleaner, greener, cheaper, more diverse, more flexible, and more reliable market-based renewable energy future. Renewable energy projects, such as Mohawk Solar, will play a key role in advancing this market transformation and signify the responsiveness of the private sector to the State's articulated goals and promised reforms.

The Facility is consistent with State policies that encourage the development of renewable energy projects, seek solutions to combat climate change, and emphasize the need to transition New York's energy markets away from a reliance on fossil fuels for electricity generation. The Facility, which has a maximum generating capacity of 90.5 MW, will represent an important contribution to the SEP's core renewable energy initiative, and help to further the related core initiatives to build sustainable and resilient communities, encourage energy infrastructure modernization, and spur

innovation. The Facility is also consistent with the SEP's guiding principles of encouraging private sector investment and enabling market transformation.

Therefore, the purpose of the proposed Facility is to create an economically viable, 90.5-MW solar powered electric generating facility in Montgomery County, New York that will provide a significant source of renewable energy to the State power grid and also provide long-term economic support for the host landowners and municipalities. Specifically, the Facility will:

- Satisfy regional energy needs in an efficient and environmentally sound manner;
- Supplement and offset fossil-fuel electricity generation in the region, with emission-free energy;
- Contribute to reducing the amount of electricity imported to New York;
- Maximize the energy-generating potential of the solar resource in the Facility area; and
- Promote the long-term economic viability of rural areas in the Mohawk Valley region of New York.

To advance these goals, an Application for a Certificate of Environmental Compatibility and Public Need for Mohawk Solar was submitted to the New York State Board on Electric Generation Siting and the Environment (the Siting Board) pursuant to Article 10 of the Public Service Law (PSL) (Case No. 17-F-0182) on June 5, 2019. A Certificate is anticipated to be granted for the Facility in 2020.

2.0 FACILITY LOCATION & SITE DESCRIPTION

2.1 Facility Location

The proposed Facility is in the Towns of Canajoharie and Minden in Montgomery County, New York. The Facility Site (the collection of parcels that will host Facility components) is roughly bounded by Interstate 90 to the north, State Route 10 to the east, State Route 163 to the west, and U.S. Route 20 to the south. The Facility Site is located approximately 1 mile southwest of the Village of Canajoharie, approximately 0.5 mile south of the Village of Fort Plain, and approximately 4 miles northwest of the Village of Sharon Springs (see Figure 1).

The Facility is in the Hudson-Mohawk physiographic province of New York. The area can generally be described as a river valley and lowlands, adjacent to mountainous regions of the Adirondacks, and dominated by rural agricultural land interspersed with patches of secondary forest, successional shrubland, and wetlands. In Montgomery County, the region is characterized by the east-west oriented Mohawk River, which is a former glacial spillway of the last ice age. South of the Mohawk River valley, Montgomery County contains rounded hills and ridges with soils derived from glacial till and outwash deposits. Elevations within the Facility Site range from approximately 600 to 900 feet above mean sea level (AMSL). The majority of Montgomery County lies on Ordovician shale and sandstone. Additionally, Cambrian-aged limestone and dolostone are found scattered throughout the northeastern portion of the county. The underlying bedrock is characterized by a complex mixture of Schenectady shale, interbedded with Canajoharie shale (USDA, 1978). Land use within the area is largely characterized by mixed agriculture use and serves as a mixed transportation corridor incorporating canals, railroads, and highways.

2.2 Wetland Study Area

In order to identify wetlands, streams, and other surface water features in the vicinity of proposed Facility components, Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) defined a Wetland Study Area (Study Area) for the Facility, which includes areas that are proposed to host Facility components, as well as additional areas adjacent to proposed Facility components within participating parcels. A list of participating parcels, along with landowner contact information, is provided in Appendix A. Although the entire Study Area was reviewed by EDR on behalf of the Applicant, more detailed investigations were conducted within those locations anticipated to be disturbed by construction activities. The original Study Area defined in the Facility's Article 10 Application is presented in Appendix B (original *Wetland Delineation Report*). The current Study Area, which incorporates updates following a site visit conducted with U.S. Army Corps of Engineers (USACE) personnel, is presented in Appendix C (*Wetland and Stream Delineation Report Addendum*).

2.3 Water Resources

2.3.1 Mapped Federal and State Wetlands/Waters

Review of available U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping indicates the presence of 33 wetland/water resources within the Study Area (see Appendix C, Figure 5). NWI-mapped wetlands/waters total approximately 101 acres within the Study Area. NWI mapping represents wetlands/waters based on associated vegetative community types, and uses standardized classification codes for each community type (USFWS, 2016; USFWS, 2019a). NWI data indicate that palustrine emergent (PEM) wetlands are the dominant wetland community type within the Study Area. Other NWI-mapped wetland communities include palustrine scrub-shrub (PSS) wetlands, as well as freshwater ponds and riverine resources. Acreages of these community types within the Study Area are summarized in Table 1, below.

Table 1. Federally Mapped Wetlands/Waters within the Wetland Study Area

NWI Community Type	Mapped Area within Wetland Study Area (acres)
Palustrine Emergent	66.00
Palustrine Scrub-Shrub	20.80
Freshwater Pond	2.88
Riverine	11.70
Total	**101.38**

The Freshwater Wetlands Act (Article 24 and Title 23 of Article 71 of the Environmental Conservation Law [ECL]) gives the New York State Department of Environmental Conservation (NYSDEC) jurisdiction over state-protected wetlands and associated 100-foot adjacent areas (i.e., upland buffers). The Freshwater Wetlands Act requires the NYSDEC to map all state-regulated wetlands (typically those greater than 12.4 acres in size) to provide landowners and other interested parties with a means of determining where New York State jurisdictional wetlands exist on the landscape. Review of publicly available NYSDEC Freshwater Wetlands mapping indicates that there are two state-protected wetlands that occur within the Study Area (see Appendix C, Figure 5): Wetland C-18 is designated as Class I and Wetland SS-1 is designated as Class II. Wetland C-18 is approximately 217.34 acres with an estimated 66.88 acres within the Study Area. Wetland SS-1 is approximately 54.98 acres with an estimated 30.10 acres within the Study Area. A jurisdictional determination (JD) site visit was conducted with NYSDEC Region 4 personnel prior to Article 10 Application filing to determine the extent of New York State wetlands jurisdiction, pursuant to Article 24 of the ECL (refer to Section 2.3.4 below for additional information).

Regardless of whether wetlands are identified on NWI and/or NYSDEC mapping, all wetlands within the Study Area (both mapped and unmapped) have the potential to be regulated by the USACE under Section 404 of the Clean Water

Act (CWA). For purposes of this Joint Application for Permit, it is assumed that all wetlands and streams delineated within the Study Area are federal jurisdictional resources (see Section 2.3.3 below for additional details).

2.3.2 State Mapped Streams

Under Article 15 of the ECL (Protection of Waters), the NYSDEC has regulatory jurisdiction over any activity that disturbs the bed or banks of protected streams, including small lakes and ponds with a surface area of 10 acres or less located within the course of a protected stream. Protected streams include any stream, or particular portion of a stream, that has been assigned any of the following classes and standards: AA, AA(T), AA(TS), A, A(T), A(TS), B, B(T), B(TS), C(T) or C(TS) (6 NYCRR Part 701). Streams classified with a (T) or (TS) standard are characterized as supporting trout or trout spawning, respectively. These classified streams typically require seasonal work restrictions if disturbance is proposed. Streams that are assigned Class C or Class D designations are not typically State jurisdictional under Article 15 of the ECL.

NYSDEC stream mapping indicates that there are ten NYSDEC Class C streams present within the Study Area. These streams include unnamed tributaries of Canajoharie Creek, the Mohawk River, and Otsquago Creek. During the NYSDEC JD site visit, NYSDEC Region 4 personnel determined that none of the streams are State jurisdictional under Article 15 of the ECL. However, all on-site streams are still regulated by the USACE under Section 404 of the CWA.

2.3.3 On-Site Delineations

An initial desktop analysis of the Study Area was conducted by EDR prior to performing on-site wetland and stream delineations on behalf of the Applicant. The desktop analysis was performed using NYSDEC Freshwater Wetland and Stream mapping, NWI mapping, U.S. Geological Survey (USGS) topographic mapping, and recent aerial orthoimagery. From these data sources, EDR identified areas likely to contain wetland and stream resources within the Study Area.

Following the desktop analysis, a reconnaissance-level field investigation based on a preliminary Facility layout was conducted by EDR in November 2016. The approximate locations of wetlands and potential wetland areas were identified and used for early-stage Facility design purposes. The Facility Site was then revisited during October and November 2017, throughout the growing season in 2018, and in April 2019 to conduct formal wetland and stream delineations within the Study Area. The results of these on-site delineations were summarized in a *Wetland Delineation Report* (Appendix B), which was submitted to the NYSDEC and other state agencies as part of the Facility's Article 10 Application. The Article 10 Application also included detailed mapping of on-site wetlands and streams, as well as an estimation of impacts based on the Facility layout presented in the Article 10 Application. The Applicant is continuing through the Article 10 permitting process, and recently completed settlement negotiations. It is anticipated that an Article 10 Certificate will be issued for the Facility in 2020.

The *Wetland Delineation Report* was also provided to the USACE in July 2019 for review prior to conducting a JD site visit, and the USACE assigned an application number for the Facility (see Appendix D). A preliminary USACE JD site visit was conducted at the Facility Site on October 16, 2019 and October 17, 2019 to review wetland and stream boundaries previously delineated by EDR. As a result of the site visit, USACE and EDR representatives identified and delineated additional federally jurisdictional wetland areas within the Study Area. USACE also recommended modifications to the Study Area boundaries and confirmation of several, previously delineated wetland boundaries. The rationale for revisiting these areas was based both on differences in on-site conditions observed at the time of the USACE site visit compared to when the original delineations occurred, as well as additional reviews of on-site hydrological and hydric soils characteristics (primarily within and along the edges of agricultural fields). EDR conducted additional delineations in October and November 2019 to address USACE recommendations. EDR then prepared a *Wetland and Stream Delineation Report Addendum* (see Appendix C) including descriptions of the expanded Study Area and updates for newly delineated wetlands and streams within the Study Area.

Based on the updated Study Area and all on-site delineations conducted to date, a total of 77 delineated wetlands are present within the Study Area, totaling an estimated 203.33 acres. In addition, a total of 18 streams (riverine resources) have been delineated, totaling approximately 23,313 linear feet (4.42 miles). Additional details and data for delineated wetlands and streams are provided in Appendices B and C (note that Appendix C contains updated summary tables and mapping).

2.3.4 State Jurisdictional Wetlands

A JD site visit was conducted with staff from the NYSDEC Region 4 office on November 6, 2018 to review delineated wetland and stream boundaries and to determine the extent of state jurisdiction pursuant to Article 24 and Article 15 of the ECL. Based on the JD site visit and associated follow-up consultation, the NYSDEC subsequently issued a Freshwater Wetlands Determination, which identified 11 New York State jurisdictional wetlands. These state jurisdictional wetlands are listed below in Table 2 and are depicted in Appendix C, Figure 8. In addition, on May 2, 2019, the NYSDEC provided a letter stating that there are no delineated [stream] resources subject to Article 15 jurisdiction within the Study Area. NYSDEC JD correspondence is presented in Appendix C (as Appendix E to the *Wetland and Stream Delineation Report Addendum*).

Table 2. State Jurisdictional Delineated Wetlands

Delineated Wetland ID	Delineated Acreage[1]	Associated NYSDEC Mapped Wetland ID
H	0.77	C-18
I	0.26	
T	62.31	
Y	0.11	
BB	0.79	
DD	1.05	
EE	0.46	
OO	17.57	
TT	1.02	
R	9.26	SS-1
3L	0.97	

[1] Includes the total acreage of delineated areas within the Wetland Study Area, but not the extent of the entire wetland (which may extend beyond the Wetland Study Area outside the Facility Site).

3.0 FACILITY DESCRIPTION

3.1 Facility Components

The entire Facility footprint is expected to encompass an estimated 770 acres. Proposed facility components include approximately 518 acres of solar photovoltaic (PV) panels, approximately 25 miles of buried electrical collection lines, approximately 30 miles of gravel and grass access roads, pad-mounted transformers, an operations and maintenance (O&M) building, a collection substation, and a point of interconnect (POI) switchyard. Each of these Facility components are described below in greater detail.

3.1.1 Photovoltaic Solar Panels

The Facility will utilize the latest in solar power generation technology to enhance Facility efficiency and output. The preliminary design specifies that the distance between rows of solar panels would be between 15 feet and 25 feet on-center with approximate row lengths between 180 and 280 feet. The PV panels would have a typical height of between 10 feet and 15 feet above the ground at their highest point. The PV panels will be secured by a racking system supported by metal piers (i.e., piles) that will be installed to a minimum depth of 8 feet, depending on site subsurface conditions. Most of the piers will be driven into the ground without the need for excavation or fill. Some of the piers will be installed by a process of pre-drilling a hole in which the pier can be encased with a small amount of concrete to provide additional reinforcement. The sites for proposed PV arrays are predominant flat with gently rolling hills; therefore, minimal grading is anticipated in the PV array areas.

3.1.2 Electrical System

Within each Facility solar field, a network of electric lines and associated communication lines will collect the electric power from different groups of arrays and transmit it to a central location. PV panels will be grouped into series of circuits that are routed, through cable trays on the racking, to combiner boxes. Power from one or more of the combiner boxes then will be transmitted to a group of related components: a direct current to alternating current (DC-to-AC) inverter, a medium-voltage transformer that increases the voltage to 34.5 kilovolts (kV), and a cabinet containing power control electronics. The medium voltage transformers and power control electronics will be mounted on skids or concrete pads. Medium voltage collection lines will carry power from the transformers to the collection substation and POI switchyard. Each of these components is described below and their locations are depicted in Figure 2.

Current Facility designs include approximately 25 miles of underground electrical collection lines that will be installed between/among different groups of PV arrays. The collection substation and POI switchyard are co-located directly east of the St. Johnsville-Marshville 115 kV line and approximately 0.4 miles west of Fredricks Street. The northern

collection substation will collect energy from the buried collection lines, and then connect to the POI switchyard, which will tie into the electric grid. The collection substation and POI switchyard will be connected by approximately 200 feet of transmission or gen-tie line.

3.1.3 Access Roads

The total length of access roads required to service the Facility is approximately 30 miles, some of which includes upgrades to existing farm roads. Gravel access roads will account for approximately 6 miles of this total, whereas grass access roads will account for the remainder. Construction designs for gravel access roads assume a nominal travel surface width of 20 feet, with 2-foot wide shoulders (on both sides), and additional fill to achieve design grades along each gravel access road. These gravel access roads will be located outside of PV array areas, will be comprised of stone underlain by woven geotextile fabric. Excavation and filling related to gravel access road construction will vary as dictated by site conditions and excavation/fill requirements, including culvert structure sizing, bank elevation, and other grades. Grass access roads (i.e., 20-foot maintained corridors) will be established within the PV arrays, at grade, along the perimeter fencing.

3.1.4 Temporary Laydown Area

Construction of the Facility will require the development of a temporary laydown area (estimated size of 7.8 acres), which will accommodate larger storage containers, components, and parking for construction workers. The laydown area will consist of gravel-surfaced yards located west of Nestle Road in the Town of Minden (in the northwestern portion of the Facility Site; see Figure 2). The laydown area is a temporary feature associated with construction of the Facility, and no permanent fencing or lighting of this area is proposed.

3.1.5 Operations and Maintenance Building

An approximately 1,280-square foot O&M building will be constructed and used to store maintenance equipment and supplies. An associated gravel parking/storage area will also be established. The O&M building and the gravel parking/storage area will be constructed on approximately 1 acre of land in the Town of Canajoharie.

3.1.6 Fencing and Gates

The Facility also includes perimeter fencing around PV panels, the collection substation, and the POI switchyard. The perimeter fencing surrounding PV panels will be made of aluminum-coated steel and will include two driving gates and one main gate for each PV array. Security fencing around the collection substation and the POI switchyard will stand approximately 8.5 feet high and will include three strands of barbed wire.

3.2 Facility Construction

Pending the receipt of all required permits and approvals, Facility construction is anticipated to begin in April 2021 and to be completed for a November 2022 commercial operations date (COD). The general sequence of Facility construction consists of the following main elements and activities: (1) securing the perimeter of the areas in which construction will occur; (2) installation of stormwater and erosion and sediment control measures; (3) clearing vegetation where necessary; (4) minor earthwork and grading, where necessary; (5) establishment of temporary and grass access roads and construction of permanent gravel access roads; (6) installation of equipment (piers, racking, PV panels, buried electric and communication lines, inverters, transformers, pyranometers, the collection substation, the POI switchyard, and fencing); and (7) site restoration, where necessary. A more detailed explanation of Facility construction activities is provided below.

3.2.1 Pre-Construction Activities

Before construction commences, a field visit will be conducted to stake out the exact locations of proposed Facility components. In accordance with the anticipated requirements of the Article 10 Certificate for the Facility, the Applicant will provide funding for an Environmental Monitor to oversee Facility construction and restoration activities to ensure compliance with all applicable environmental protection measures included in the Article 10 Certificate and other permit conditions. Prior to the start of construction at any given area, the Environmental Monitor and a representative of the construction contractor will conduct a walk-over of areas to be affected, or potentially affected, by proposed construction activities. This pre-construction walk-over will focus on the previously identified sensitive resources to avoid (e.g., wetlands, streams, archaeological resources, agricultural resources), as well as the limits of clearing, limits of disturbance, location of wetland and stream crossings, location of drainage features (e.g., culverts, ditches), location of underground utilities and tile drainage lines, and layout of erosion and sediment control measures. Upon identification of these features, they will be marked in the field with stakes, pin flags, and/or fencing. Other pre-construction activities include a baseline invasive species survey, which will be completed within six months of commencing construction-related earthmoving activities (see Appendix F for details).

3.2.2 Laydown Area Construction

The temporary laydown area will be established by stripping and stockpiling the topsoil, and then grading and compacting the subsoil. Geotextile fabric and a layer of gravel may be installed to create a level working area. Electrical and communication lines will be brought in from existing distribution poles to allow for connections with construction trailers. Construction of this area will not result in impacts to wetlands or streams.

3.2.3 Site Preparation for Construction

Facility construction, which will include site preparation and clearing of woody vegetation from all PV panel sites, access roads, and electrical collection line routes, will be conducted in accordance with seasonal restrictions as specified in the Article 10 Certificate and other permit conditions. Trees cleared from the work area will be removed and disposed of outside of any wetlands, streams, or floodways. Actual clearing impacts for the Facility will be based on final engineering design and are described and quantified in Section 4.0.

3.2.4 Access Road Construction

Wherever feasible, Facility access roads have been co-located with existing farm roads in order to minimize impacts to active agricultural land, forested areas, and water resources. Where existing roads are unavailable or unsuitable, new gravel access roads will be constructed to provide access to each PV array. Gravel access road construction will involve topsoil stripping and grubbing of stumps, as necessary. Stripped topsoil will be stockpiled (and segregated from subsoil) along the road corridor for use in site restoration. Any grubbed stumps will be removed, chipped, or buried in upland areas of the site. Following removal of topsoil, subsoil will be graded, compacted, and surfaced with gravel or crushed stone. A geotextile fabric or grid will be installed beneath the road surface, if necessary, to provide additional support. Grass access roads within fenced PV arrays will not require excavation or installation of fill materials; rather, woody vegetation will be cleared where necessary to establish open corridors and herbaceous vegetation will be maintained in an early successional state.

Gravel access roads are designed in accordance with International Fire Protection Association requirements, to be a nominal 20 feet in width to assure adequate emergency and service access to the site. Permanent impacts from gravel access roads for stream and wetland crossings will vary as dictated by site conditions and excavation/fill requirements, including culvert structure sizing, bank elevation, and other grades. For the purposes of this Joint Application, permanent impacts were calculated for stream and wetland crossings based on preliminary culvert designs and/or the following general assumptions: 20-foot wide finished travel surface, 2-foot wide shoulders (on both sides), and approximately 16 feet of fill to achieve design grades along each gravel access road.

Culverts will be installed, as necessary, to maintain natural drainage patterns. Where access roads must cross wetlands with flowing water or streams with flowing water, a temporary pump-around or coffer dam, will be used to install crossings “in the dry”. Appropriate erosion and sediment control measures will be installed and maintained according to the NYSDEC-approved Stormwater Pollution Prevention Plan (SWPPP) developed for the Facility. At the completion of construction, the travel surface of access roads that cross wetlands and streams will be stabilized with a suitable substrate material and/or a wetland seed mix.

3.2.5 Pier Foundation and Fencing Construction

PV panels will be supported on driven piers installed to a minimum depth of 8 feet due to structural requirements and the depth of frost action at this site. Based on the subsurface conditions of the Facility Site, installation of piers may be hindered by ground refusal above required embedment depths. If this occurs, it may be necessary to pre-drill oversized holes to install the piers. In these cases, a concrete footing will be poured to encase the pier footings and provide additional structural stability. In addition to driven piers, ground screws (i.e., helical piers) may be used to support the racking system in some locations (i.e., where soils are poor with respect to providing stability and there is no shallow bedrock). Ground screws would not disturb a greater area than piers.

Foundations for the collection substation, POI switchyard, O&M building, and equipment pads may consist of larger members. These foundations will vary by structure but are likely to include cast-in-place concrete spread foundations, continuous foundations, drilled concrete shafts, or reinforced concrete mats. However, these Facility components are not located in jurisdictional areas. Therefore, no impacts from these foundations are anticipated.

Perimeter fencing surrounding PV arrays, the collection substation, and the POI switchyard will include the installation of aluminum-coated steel posts. Most of these posts will be driven directly into the ground. However, others may require the installation of a concrete footer. In these cases, it may be necessary to pre-drill oversized holes to install the fence posts. Concrete will be used to fill the holes to provide structural stability to the fence posts.

3.2.6 Electrical Collection System Installation

Direct burial methods, utilizing equipment such as a cable plow, rock saw, rock wheel and/or trencher, will be used to install the underground electrical collection system, whenever possible. Direct burial involves the installation of bundled cable (electrical and fiber optic bundles) directly into a narrow cut or "rip" in the ground. Installation in this manner typically disturbs an area approximately 24 inches wide, with the bundled cable installed to a minimum depth of 36 inches in most areas, and 48 inches in active agriculture fields and pasture lands. Where direct burial is not possible, an open trench will be excavated. Open trench will involve conventional excavation equipment. For this method, topsoil and subsoil are excavated, segregated, and stockpiled adjacent to the trench. Following cable installation, the trench is backfilled with suitable fill material (bedding, subsoil, and topsoil) and any additional spoils are spread on the ground surface or otherwise properly disposed of in upland areas. These areas will be returned to pre-construction grades.

Vegetation clearing related to installation of buried electrical lines will vary in width between 30 and 100 feet depending on the number of circuits proposed in an area. However, in areas where buried electrical lines are co-located with

proposed access roads, no additional vegetation or soil disturbance, beyond that anticipated for road construction, is typically expected. The cleared area along the buried electrical lines will be restored through seeding and mulching and allowed to regenerate naturally.

At locations where an electrical collection line crosses streams or wetlands, either a jack and bore crossing method or an open trench, will be used for installation. Jack and bore installation involves digging a bore pit and a receiving pit on both sides of and away from the sensitive resource (e.g. stream or wetland). The crossing will be installed using a drilling or auger machine set up in the bore pit, which will create a path for the underground cable to be laid. Jack and bore methodology for cable installation avoids significant impacts to environmental resources by routing the cable beneath the sensitive feature.

Typically, a cleared ROW is required during the installation of above ground or underground lines. By contrast, the jack and bore drilling method does not require surface disturbance or clearing activities between the bore pits. The only potential impact associated with jack and bore crossing method is a minor surface release of drilling mud. Such inadvertent returns are rare, and the contractor will be required to develop a final inadvertent return plan that will be implemented during construction (see example Inadvertent Return Plan included in Appendix E). The locations where jack and bore crossing will be implemented are depicted in Figures 3 and 4.

3.2.7 Substation and POI Switchyard Construction

Substation construction will begin with clearing the site and stockpiling topsoil for later use in site restoration. The site will be graded and a laydown area for construction equipment, materials, and parking will be prepared. Concrete foundations for major equipment and structural supports will be poured, followed by the installation of various conduits, cable trenches, and grounding grid conductors. The collection substation major equipment and structural supports include standard electrical, control, and protective equipment, such as: collection line feeders and breakers, a 34.5 kV and 115 kV bus, a main power transformer (to increase the voltage from 34.5 kV to 115 kV), a high-voltage breaker, metering/relaying transformers, disconnect switches, an equipment enclosure containing power control electronics, and a lightning mast within the concrete foundation. Above ground construction will involve the installation of structural steel, bus conductors and insulators, switches, circuit breakers, transformers and control buildings. The final steps involve laying down crushed stone throughout the station, erecting a chain link fence around the station perimeter, connecting the high voltage links, and testing the control systems. Restoration of the area immediately adjacent to the substations will then be completed.

3.2.8 Operations and Maintenance Building Construction

A new O&M building will be constructed to support Facility operations. Approximately one acre of land will be cleared and graded in preparation for construction of the O&M building. Any stripped topsoil will be stockpiled for general use in site restoration. Upon completion of construction, all disturbed soils outside the parking area and storage area will be graded and stabilized with seed and mulch. The O&M building is not located in federal wetland or waterbody areas. The portion of the O&M building construction work area that overlaps a State-regulated 100-foot adjacent area will be restored following construction.

4.0 JURISDICTIONAL IMPACTS

Through an iterative design process, the Applicant has avoided or minimized impacts to delineated wetlands and streams to the maximum extent practicable (see discussion in Section 6). Where full avoidance was not possible, wetland and stream crossings by collection lines and access roads were located in narrow and/or previously disturbed areas whenever possible. However, unavoidable temporary disturbance and minor permanent loss of wetlands and other federal jurisdictional waters will result from Facility construction activities. These impacts are described below.

4.1 Federal Jurisdictional Impacts

During construction, temporary and permanent direct or indirect impacts to wetlands and surface waters may occur as a result of the installation of access roads and buried electrical collection lines. Direct impacts, including clearing of vegetation, earthwork (excavating and grading activities), and the direct placement of fill in wetlands and surface waters, are typically associated with the development of permanent gravel access roads. The construction of these access roads is anticipated to result in permanent filling (loss of wetland/surface water acreage), permanent forest conversion (forested wetlands only), and temporary impacts to wetlands. The installation of buried collection lines will temporarily disturb streams and wetlands during construction as a result of clearing (brush hogging, or similar clearing method requiring no removal of rooted woody plants). In addition, soil disturbance and permanent forest conversion from burial of the electrical collection lines may occur. Indirect impacts to wetlands and surface waters may result from erosion and sedimentation caused by adjacent construction activities (e.g., removal of vegetation and soil disturbance). This indirect impact may occur at wetlands adjacent to work areas where no direct wetland impacts are anticipated, including areas adjacent to access roads, buried electrical collection routes, staging area(s), or the substations.

4.1.1 Temporary Federal Wetland/Stream Impacts

Based on the current Facility layout and limits of disturbance (LOD), a total of 31 wetlands will be temporarily impacted by construction activities. Temporary impacts will primarily include: (1) vegetation clearing and/or other modification (e.g., mowing/trimming) along linear component corridors and within PV array work areas; (2) soil disturbance to install buried collection lines; and (3) soil disturbance to install PV array piers and fencing. To assure that construction-related wetland impacts are minimized to the greatest extent practicable, erosion and sediment control measures will also be implemented wherever Facility construction occurs within, or adjacent to, wetlands and streams. Environmental protection measures will be implemented in accordance with the approved SWPPP and the conditions of the Article 10 Certificate.

Except for some concrete-reinforced pier foundations and fence posts, which would result in permanent wetland impacts, Facility installation activities within the proposed PV array areas are limited to those work activities likely to

cause temporary or *de minimis* impacts to waters of the U.S. These impacts include vegetation disturbance, temporary trenching/stockpiling/side-casting of soil, and tracking/rutting by equipment and vehicles. These activities are anticipated to have only localized and temporary ground-disturbing impacts within federal jurisdictional wetland areas but do not involve dredging/excavation or filling/discharges in non-tidal wetlands under federal jurisdiction. In addition, it is anticipated that the USACE will determine that other activities occurring within the PV arrays, such as driving or screwing steel pier foundations and fence posts and installation/removal of timber matting are non-jurisdictional activities. Consequently, all activities occurring within the fenced PV arrays are referred to as temporary/non-jurisdictional impacts. Temporary construction-related impacts to federal wetlands are summarized in Table 3, below, and illustrated in Figure 3.

Table 3. Estimated Temporary Impacts to Federal Jurisdictional Wetlands

Wetland ID	Estimated Temporary Impact by Wetland Type (square feet [s.f.])				Total Estimated Impact (s.f.)	Corresponding Figure 3 Sheet Number(s)	Work Activity
	PEM[1]	PFO[1]	PSS[1]	POW[1]			
Wetland 3B				16.1	16.1	8	Collection Line Installation
Wetland 3D	316.9				316.9	8	Collection Line Installation
Wetland 3E	171.9				171.9	6	Collection Line Installation
Wetland 3F	120.8				120.8	7	Fence and Access Road Construction
Wetland 3F Extension	343.9				343.9	7	Access Road Construction
Wetland 3O	14.7				14.7	6	Collection Line Installation
Wetland 3P Extension	7,694.4				7,694.4	18, 19	Fence and Access Road Construction
Wetland 4A	50,222.5				50,222.5	27, 28	Fence and Access Road Construction
Wetland 4C	2,088.6				2,088.6	31	PV Array Construction
Wetland 4D	944.6				944.6	31	Fence and Access Road Construction
Wetland 4H	2,718.0				2,718.0	7	Fence and Access Road Construction
Wetland 4J	1,617.4				1,617.4	21	Access Road Construction
Wetland 4L	3,322.6				3,322.6	20	PV Array Construction
Wetland 4M	20,336.8				20,336.8	20	Fence, Access Road, and PV Array Construction

Wetland ID	Estimated Temporary Impact by Wetland Type (square feet [s.f.])				Total Estimated Impact (s.f.)	Corresponding Figure 3 Sheet Number(s)	Work Activity
	PEM[1]	PFO[1]	PSS[1]	POW[1]			
Wetland AA	14.8				14.8	29	Access Road Construction
Wetland DD Extension	2,065.4				2,065.4	13	Collection Line Installation
Wetland H Extension	3.6				3.6	9	Fence Construction
Wetland JJ Extension	4,676.6				4,676.6	19	Fence, PV Array, and Access Road Construction
Wetland K	24.9				24.9	5	Collection Line Installation
Wetland K Extension			568.0		568.0	5	Collection Line Installation
Wetland KK Extension	3,036.4				3,036.4	19	Fence and Access Road Construction
Wetland MM	708.9				708.9	12	Collection Line Installation
Wetland MM Extension			547.8		547.8	12	Collection Line Installation
Wetland N Extension	95,080.2				95,080.2	4	Fence, PV Array, and Access Road Construction; Collection Line Installation
Wetland O Extension	111,650.1				111,650.1	21, 22, 23, 24	Fence, PV Array, and Access Road Construction
Wetland OO			146.3		146.3	11	Collection Line Installation
Wetland P Extension	57,466.8		1,680.5		59,147.3	18, 19	Fence, PV Array, and Access Road Construction; Collection Line Installation
Wetland Q Extension	12,668.6				12,668.6	20	Fence, PV Array, and Access Road Construction
Wetland QQ			300.5		300.5	3	Access Road Construction
Wetland QQ Extension			208.1		208.1	3	Collection Line Installation
Wetland RR			2,037.4		2,037.4	2	PV Array Construction

Wetland ID	Estimated Temporary Impact by Wetland Type (square feet [s.f.])				Total Estimated Impact (s.f.)	Corresponding Figure 3 Sheet Number(s)	Work Activity
	PEM[1]	PFO[1]	PSS[1]	POW[1]			
Wetland S Extension	115,532.0				115,532.0	32	Fence, PV Array, and Access Road Construction; Collection Line Installation
Wetland T			539.0		539.0	15	Collection Line Installation
Wetland T Extension	48,450.2		21,830.9		70,281.1	14, 15, 16	Fence and PV Array Construction; Collection Line Installation
Wetland X	206.9				206.9	16	Collection Line Installation
Wetland Z	1,138.7				1,138.7	17	Collection Line Installation
Total	**542,637.2**	**N/A**	**27,858.5**	**16.1**	**570,511.8**	Multiple (see above)	Construction/Installation of Facility Components
	12.457 ac	**N/A**	**0.640 ac**	**0.0004 ac**	**13.097**		

[1] Wetland community types noted are based upon the Cowardin et al. (1979) classification system: PEM = Palustrine Emergent; PFO = Palustrine Forested; POW = Palustrine Open Water; and PSS = Palustrine Scrub-Shrub.

Temporary construction-related stream impacts will include clearing of limited streamside vegetation, placement of temporary fill necessary to accommodate construction, and disturbance of stream beds and banks along the periphery of access roads and at buried collection line crossings. The location and extent of temporary construction impacts to federal jurisdictional streams are indicated in Table 4, below, and illustrated in Figure 3.

Table 4. Estimated Temporary Impacts to Federal Jurisdictional Streams

Stream ID	Stream Type(s)[1]	Estimated Temporary Impact (linear feet)	Estimated Temporary Impact (square feet)	Corresponding Figure 3 Sheet Number(s)	Work Activity
Stream 3C	R6	34	88.3	24	Access Road Construction
Stream 3M	R4	25	79.8	25	Collection Line Installation
Stream 4A	R6	328	370.2	5	Fence, PV Array, and Access Road Construction; Collection Line Installation
Stream FF	R4	50	413.7	30	Collection Line Installation
Stream FF	R6	44	121.9	31	Planting Module
Stream OO	R4	17	172.1	10	Access Road Construction and Collection Line Installation

Stream ID	Stream Type(s)[1]	Estimated Temporary Impact (linear feet)	Estimated Temporary Impact (square feet)	Corresponding Figure 3 Sheet Number(s)	Work Activity
Stream P	R4	6	131.2	18	Access Road Construction and Collection Line Installation
Stream PP	R4	21	61.9	3	Access Road Construction and Collection Line Installation
Total		**525**	**1,439.1** **0.033 acre**	Multiple (see above)	Construction/Installation of Facility Components

[1] Stream community types noted are based upon the Cowardin et al. (1979) classification system: R4 = Riverine Intermittent; R6 = Riverine Ephemeral.

Temporary construction-related impacts to wetlands and streams will be minimized and mitigated as described below in Section 6.

4.1.2 Permanent Federal Wetland and Stream Impacts

Although long-term or permanent impacts to water resources will generally be avoided, based on engineering plans, there will be limited permanent impacts to 11 wetlands and five streams within the Facility Site. These impacts will result from permanent gravel access road crossings of wetlands and streams and installation of a limited number of PV piers and perimeter fence posts requiring concrete footings for structural integrity. Estimated permanent wetland fill impacts associated with these activities total 16,351.1 square feet (0.375 acre). This estimated total includes up to 15,489.3 square feet (0.356 acre) of permanent impact resulting from gravel access road construction and up to 861.8 square feet (0.020 acre) of permanent impact resulting from PV piers and perimeter fence posts. Estimated permanent stream impacts resulting from gravel access road crossings total 322 linear feet (3,085.0 square feet or 0.071 acre). Estimated permanent jurisdictional impacts will also include 1,022.3 square feet (0.023 acre) of forested wetlands subject to soil disturbance that will also be converted to other wetland community types for the life of the Facility (i.e., permanent forested wetland conversion). These impacts are described in greater detail below:

Fill/crossing –The proposed permanent access road crossings at wetlands and streams will each consist of a 20-foot-wide gravel travel surface, plus 2-foot wide shoulders and additional fill/grading on both sides. To minimize impacts, the crossings will generally be located in previously disturbed areas, at narrow sections of the wetlands and streams, or along the edges of the wetlands. Prior to installation of each crossing, the top layer of hydric soils will be removed from the work site and stockpiled for re-use during post-construction wetland restoration efforts. Next, the subgrade will be compacted, geotextile fabric will be installed, and bank run gravel fill will be put in place as a road base. Properly sized culverts will be installed as necessary to provide for cross drainage, maintain an equalization of wetland hydrology, and/or maintain stream flows. Upon completion of construction, the travel surface will be topped with crushed stone and the side slopes (and any other disturbed

areas) will be dressed with topsoil, stabilized with native seed mixes and protected with straw, cellulose mulch, or biodegradable erosion control matting per the Facility's SWPPP.

Culvert Installation – Temporary access road stream and wetland crossings will utilize timber matting to support stream channels, stream banks, and above cut stumps in wetlands. Permanent access road stream and wetland crossings will utilize partially buried culverts sized to a minimum of 18 inches in diameter. All backfill will be compacted to 95% standard proctor to achieve the maximum dry density. They will be sized to fit into the existing channel without excavation or major approach fills of the waterway channel, be the largest pipe diameter equal to the undisturbed cross-sectional area of the bank full condition of the stream, and to not interfere with aquatic organisms. If a channel width exceeds 3 feet, additional pipes may be used until cross-sectional area of the pipes approaches the existing channel. Sections with the need for additional pipes will need to be placed a minimum of 12 inches from each other. New access road crossings will be located in previously disturbed locations (i.e., existing crossings) whenever possible. Stream and wetland crossing details are included in Figure 5.

PV Array Piers and Perimeter Fence Posts – Some PV array piers and perimeter fence posts will require pre-drilled holes and/or concrete encasement during installation. It is presumed that the use of concrete in pier and post holes represents permanent impacts (fills in federally regulated wetlands). The areas of impact from the installation of PV array piers and perimeter fence posts requiring concrete encasement was estimated using a geographic information system (GIS). A conservative approximation of the individual pier and post footprints based on a *maximum* assumed number of piers and posts to be installed in wetlands served as the basis of these impact calculations (i.e., it was assumed that all piers and posts installed in wetlands may require pre-drilled holes and/or concrete encasement). Based on these conservative assumptions, a total of 863 concrete-encased PV piers are assumed to be installed within regulated wetland areas, resulting in an estimated total permanent impact of 677.5 square feet (0.016 acre). Fence posts in wetlands were assumed to be installed one post per 10 linear feet of fencing. For both PV piers and fence posts, a conservatively large hole area of 0.785 square foot (12-inch diameter) was assumed. The conservative estimate of permanent wetland impacts from fence post installation, with concrete footings, totals 184.3 square feet (0.004 acre). It is important to note that 100% of the piers and posts located in wetlands are *not* expected to require concrete fill or encasement; therefore, the estimated permanent impacts to wetlands under federal jurisdiction resulting from piers and posts is conservatively much higher than the expected result from actual construction.

Permanent Forest Wetland Conversion – A total estimated 0.023 acre of forested wetland will be cleared and disturbed during construction from temporary soil disturbance and/or the placement of temporary fill. This impact

is likely to occur along construction access roads and buried collection lines (see Figure 3). These areas will be converted to emergent or scrub-shrub wetlands and maintained as such over the life of the Facility. Impacted areas will be maintained in early successional vegetation through periodic cutting or removal of taller growing tree species. In either case, restoration to a forested condition will not occur within the foreseeable future. Tree clearing that does not involve soil disturbance such as the grinding or grubbing of stumps is considered a non-jurisdictional activity; therefore, it is not addressed in the discussion of impacts to federal wetlands.

Estimated permanent impacts resulting from the placement of fill in federal jurisdictional wetlands and streams are summarized in Tables 5 and 6 below and depicted in Figure 3. Estimated permanent forest conversion impacts are summarized in Table 7 and depicted on Figure 3.

Table 5. Estimated Permanent Impacts to Federal Jurisdictional Wetlands

Wetland ID	Estimated Permanent Fill (square feet [s.f.])				Estimated Total Impact (s.f.)	Corresponding Figure 3 Sheet Number(s)	Work Activity
	PEM[1]	PFO[1]	PSS[1]	POW[1]			
Wetland 3P Extension	2.1				2.1	19	PV Pier/Fence Post Installation
Wetland 3E	482.4				482.4	6	Access Road Construction
Wetland 4A	832.0				832.0	27, 28	Access Road Construction, PV Pier/Fence Post Installation
Wetland 4C	4.0				4.0	31	PV Pier/Fence Post Installation
Wetland 4D	7.4				7.4	31	PV Pier/Fence Post Installation
Wetland 4J	2.9				2.9	21	PV Pier/Fence Post Installation
Wetland 4L	6.0				6.0	20	PV Pier/Fence Post Installation
Wetland 4M	2,945.3				2,945.3	20	Access Road Construction, PV Pier/Fence Post Installation
Wetland JJ Extension	15.4				15.4	19	PV Pier/Fence Post Installation
Wetland KK Extension	5.0				5.0	19	PV Pier/Fence Post Installation
Wetland N Extension	166.2				166.2	4	PV Pier/Fence Post Installation

Wetland ID	Estimated Permanent Fill (square feet [s.f.])				Estimated Total Impact (s.f.)	Corresponding Figure 3 Sheet Number(s)	Work Activity
	PEM[1]	PFO[1]	PSS[1]	POW[1]			
Wetland O Extension	751.7				751.7	21, 22, 23, 24	Access Road Construction, PV Pier/Fence Post Installation
Wetland OO		3,691.1			3,691.1	10	Access Road Construction
Wetland OO Extension		335.8			335.8	10	Access Road Construction
Wetland P Extension	1,251.2		4,498.8		5,750.0	18, 19	Access Road Construction, PV Pier/Fence Post Installation
Wetland PP		911.5			911.5	3	Access Road Construction
Wetland QQ			163.2		163.2	3	Access Road Construction
Wetland Q Extension	23.5				23.5	20	PV Pier/Fence Post Installation
Wetland S Extension	190.5				190.5	32	PV Pier/Fence Post Installation
Wetland T Extension	46.2				46.2	16	PV Pier/Fence Post Installation
Total	**6,750.6**	**4,938.4**	**4,662.0**	**N/A**	**16,351.1**	Multiple (see above)	Construction/Installation of Facility Components
	0.155 ac	**0.113 ac**	**0.107**	**N/A**	**0.375**		

[1] Wetland community types noted are based upon the Cowardin et al. (1979) classification system: PEM = Palustrine Emergent; PFO = Palustrine Forested; POW = Palustrine Open Water; and PSS = Palustrine Scrub-Shrub.

Table 6. Estimated Permanent Impacts to Federal Jurisdictional Streams

Stream ID	Stream Type[1]	Estimated Permanent Impact (linear feet)	Estimated Permanent Impact (square feet)	Corresponding Figure 3 Sheet Number(s)	Work Activity
Stream 3C	R6	95	269.4	24	Access Road Construction
Stream FF	R4	2	22.3	30	Access Road Construction
Stream OO	R4	67	1,421.7	10	Access Road Construction
Stream P	R4	54	984.6	18	Access Road Construction
Stream PP	R4	104	387.0	1, 3	Access Road Construction
Total		**322**	**3,085.0**	Multiple (see above)	Access Road Construction
			0.071 ac		

[1] Stream community types noted are based upon the Cowardin et al. (1979) classification system: R4 = Riverine Intermittent; R6 = Riverine Ephemeral.

Table 7. Estimated Permanent Forested Wetland Conversion (Federal Jurisdictional Wetlands)

Wetland ID	Impact Type[1]	Wetland Community Type[2]	Estimated Impact Area (square feet)	Corresponding Figure 3 Sheet Number(s)	Work Activity
Wetland BF-AA	Permanent Forest Conversion	PFO	208.5	26	Collection Line Installation
Wetland OO	Permanent Forest Conversion	PFO	117.0	10	Access Road Construction and Collection Line Installation
Wetland OO Extension	Permanent Forest Conversion	PFO	405.4	10	Access Road Construction
Wetland PP	Permanent Forest Conversion	PFO	291.4	3	Collection Line Installation
Total			**1,022.3**	Multiple (see above)	Access Road Construction and Collection Line Installation
			0.023 ac		

[1] Tree clearing in combination with temporary soil disturbance or temporary fill in forested wetlands.
[2] Wetland community type noted is based upon the Cowardin et al. (1979) classification system: PFO = Palustrine Forested.

4.2 State Jurisdictional Wetland Impacts

4.2.1 Temporary State Jurisdictional Wetland Impacts

Based on the NYSDEC's JD (see Section 2.3.4) and current Facility design, construction of one permanent access road and installation of two buried collection lines will result in a total of approximately 678.7 square feet (0.016 acre) of temporary impact to State-regulated wetlands (see Table 8).

Table 8. Estimated Temporary Impacts to State Jurisdictional Wetlands

NYSDEC Wetland	Wetland ID	Estimated Temporary Impact (square feet [s.f.])	Estimated Total Impact (s.f.)	Corresponding Figure 4 Sheet Number(s)	Work Activity
		PSS[1]			
C-18	Wetland OO	139.9	139.9	5	Access Road Construction and Collection Line Installation
C-18	Wetland T	538.8	538.8	8	Collection Line Installation
Total		**678.7**	**678.7**	5, 8	Access Road Construction and Collection Line Installation
		0.016 ac	**0.016 ac**		

[1] Wetland community type noted is based upon the Cowardin et al. (1979) classification system: PSS = Palustrine Scrub-Shrub.

4.2.2 Permanent State Jurisdictional Wetland Impacts

Based on the NYSDEC's JD (see Section 2.3.4) and current Facility design, construction of one permanent gravel access road and installation of multiple co-located buried collection lines will result in a total of approximately 3,691.0 square feet (0.085 acre) of permanent fill impact, and a total of approximately 121.6 square feet (0.003 acre) of permanent forest conversion impacts to State-regulated wetlands (see Table 9).

Table 9. Estimated Permanent Impacts to State Jurisdictional Wetlands

NYSDEC Wetland	Wetland ID	Estimated Permanent Fill Impact (square feet [s.f.])	Estimated Permanent Forest Conversion (s.f.)	Estimated Total Impact (s.f.)	Corresponding Figure 4 Sheet Number	Work Activity
		PFO[1]	PFO[1]			
C-18	Wetland OO	3,691.0	121.6	3,812.6	4	Access Road Construction and Collection Line Installation
Total		**3,691.0**	**121.6**	**3,812.6**	4	Access Road Construction and Collection Line Installation
		0.085 ac	**0.003 ac**	**0.088 ac**		

[1] Wetland community type noted is based upon the Cowardin et al. (1979) classification system: PFO = Palustrine Forested.

4.2.3 Impacts to State-regulated 100-foot Adjacent Areas

Based on the NYSDEC's JD (see Section 2.3.4) and current Facility design, impacts to State-regulated 100-foot adjacent areas will include a total of approximately 230,005.3 square feet (5.28 acres) of temporary impacts, approximately 35,412.1 square feet (0.813 acre) of permanent fill impacts, and 14,668.5 square feet (0.337 acre) of permanent forest conversion impacts (see Table 10).

Table 10. Estimated Temporary and Permanent Impacts to State-regulated 100-foot Adjacent Areas

NYSDEC Wetland	Associated Wetland ID	Estimated Temporary Impact (square feet [s.f.])	Estimated Permanent Fill Impact (s.f.)	Estimated Permanent Forest Conversion (s.f.)	Estimated Total Permanent Impact (s.f.)	Corresponding Figure 4 Sheet Number(s)	Work Activity
C-18	Wetland 3L	9,689.3				12	Collection Line Installation
C-18	Wetland DD	4,392.6				6	Collection Line Installation
C-18	Wetland H	18,840.3				2	Fence Construction
C-18	Wetland I			2,543.3	2,543.3	2	Collection Line Installation
C-18	Wetland OO	3,338.3	35,412.1	11,790.8	47,203.0	3, 4, 5	Access Road and Collection Line Installation
C-18	Wetland T	186,689.4		334.4	334.4	7, 8, 9, 10, 11	Collection Line Installation
C-18	Wetland TT	7,055.3				1	O&M Building Construction
Total		**230,005.3**	**35,412.1**	**14,668.5**	**50,080.6**	Multiple (see above)	Construction of Facility Components
		5.28 ac	**0.813 ac**	**0.337 ac**	**1.150 ac**		

As further described in Section 6 of this Joint Application, restoration of temporary impacts to state-regulated wetland adjacent areas and protected streams will include removal of all temporary fill from work areas, as well as the removal of any construction debris. Grading of the adjacent areas and stream banks will be limited to the minimum necessary to restore conditions consistent with those that existed prior to the initiation of construction in the area. Disturbed areas will be stabilized by replacing suitable stream bank and substrate material, and reseeding with a native seed mix. Only straw or cellulose mulch will be used as necessary to enhance stabilization and revegetation in state-regulated wetland adjacent areas and along the banks of state-protected streams.

4.3 Summary of Impacts

In summary, construction of the proposed Facility will result in an estimated permanent loss of up to 0.375 acre of federal jurisdictional wetlands, which includes permanent fill impacts to 0.085 acre of State jurisdictional wetlands. Total permanent forested wetland conversion impacts will total 0.023 acre (of which 0.003 acre will occur within State jurisdictional wetlands). These permanent wetland impacts will primarily result from filling and forest conversion activities associated with construction of permanent gravel access roads and installation of buried collection lines. Estimated temporary impacts to federal jurisdictional wetlands associated with the construction of Facility components will total up to 13.097 acres (of which 0.016 acre will occur within State jurisdictional wetlands). Impacts to streams will include 0.033 acre (525 linear feet) of temporary disturbance and 0.071 acre (322 linear feet) of permanent impact. In addition, the Facility will result in an estimated 5.28 acres of temporary impact, 0.813 acre of permanent impact, and 0.337 acre of permanent forest conversion impact within State-regulated 100-foot wetland adjacent areas.

Overall, estimated permanent impacts to federal jurisdictional wetlands and streams total up to 0.470 acre (0.399 acre of permanent fill and forest conversion impacts to wetlands and 0.071 acre of permanent impacts to streams).

Table 11 below provides a summary of all wetland and stream impact totals.

Table 11. Wetland and Stream Impact Summary

Impact Type	Federal Wetlands	Federal Streams	State Wetlands	State Wetland Adjacent Areas
Temporary Impact	13.097 acres	0.033 acre (525 l.f.)	0.016 acre	5.28 acres
Permanent Impact (Fill)	0.375 acre	0.071 acre (322 l.f.)	0.085 acre	0.813 acre
Permanent Forest Conversion	0.023 acre	N/A	0.003 acre	0.337 acre
Total Permanent	**0.399 acre**	**0.071 acre**	**0.088 acre**	**1.150 acres**

5.0 ALTERNATIVES ANALYSIS

Alternatives to the proposed action have been evaluated by the Applicant to determine ways to avoid and minimize impacts to wetlands and streams, while still achieving the purpose and need of the Facility. Specific alternatives that were evaluated included: Alternative Facility Sites, Alternative Facility Design/Layout, Alternative Power Generation Technologies, Alternate Construction Techniques, and No Action. Each of these alternatives is described below.

5.1 Alternative Facility Sites

This section provides background information on the selection of the Facility Site to facilitate understanding of the criteria that the Applicant employed.

The feasibility of developing a solar energy project is directly related to a number of factors, including a suitable solar resource, landowners willing to participate in the project, sufficient space, favorable topography, proximity to transmission lines with sufficient capacity for interconnection to the electric grid, and ability to obtain necessary permits to construct and operate.

- *Solar Resources*. Utilizing existing topography within the Facility Site, PV panels have been sited to optimize exposure to solar resource. PV arrays are therefore sited on generally flat or south-facing slopes to maximize exposure to solar resource. In addition, locating PV panels arrays higher on a slope reduces the potential for shading from other nearby topographic features, such as shadows cast by a nearby hill or ridge.
- *Topography*. Flat and open land is the key component to maximize the capture of solar energy. The proposed Facility Site is composed of large open agriculture fields to maximize the collection of each array and prevent the need for tree clearing or additional activity to render an area suitable for panels.
- *Sufficient Spacing*. Siting PV panels too close to one another can result in increased shading effects from adjacent rows. In addition, panel row spacing must be sufficient to allow maintenance activities as needed. The minimum feasible PV panel row spacing distance results in a fixed maximum generating capacity per unit area of land that hosts PV arrays.
- *Accessibility*. It is vital that a proposed site also possesses ease of transportation access, along with proximity and ease of connecting to the electric transmission grid. The Facility Site is easily accessible by public roads and includes a high voltage transmission line with adequate capacity to receive power from the proposed Facility.
- *Local Zoning*. A solar energy project should comply with local land use and zoning requirements, including setbacks from roads, residences, and/or property lines. If these requirements are too restrictive,

development of a project on a given site may not be feasible. The Facility Site includes many large, open fields and minimal rural residential development.

- *Natural Resources.* Solar energy project components need to avoid and/or minimize impacts to a variety of natural resources to the greatest extent practicable. Avoidance of impacts to forests, agricultural land, rare species habitat, as well as water resources, are important siting criteria. As indicated in Section 4 of this narrative the proposed Facility Site can accommodate a 90.5-MW Facility with minimal impact to water resources.
- *Cultural Resources.* Facility construction needs to be conducted in such a way that does not cause any significant impact to prehistoric or historic archeological resources. As indicated in Section 8 of this narrative, cultural resource studies conducted in support of the Article 10 application indicate that the Facility can be built and operated without adverse impacts to archaeological resources, and impacts to historic sites can be mitigated in a manner acceptable to the New York State Historic Preservation Office (SHPO).

The Applicant selected the proposed site for the Facility based on the presence of a good solar resource, open land, available land, willing landowners, and compatible land use and local zoning. In addition, the proposed site provides good vehicular access, proximity, and relative ease of connecting to the existing electric transmission grid, and the ability to avoid areas of high environmental or cultural sensitivity. These factors combined to make the proposed site desirable from the standpoint of commercial-scale solar power development. Given the unique nature and constraints associated with the siting of solar-powered electric generation facilities in New York, as discussed above, the Applicant did not conduct a detailed evaluation of the comparative advantages and disadvantages of alternate Facility Sites. It is simply not practicable to procure land contracts, perform environmental and engineering studies, enter into and progress through multiple interconnection permit processes, and conduct community outreach for alternative locations. Additionally, since this proposed Facility location meets the criteria for developing a viable solar energy project with relatively minor environmental impacts, the evaluation of alternate sites in the region was not considered necessary.

5.2 Alternative Facility Design/Layout

The preferred alternative for the Facility[1] is to construct a utility-scale solar project that can produce up to 90.5 MW of renewable energy within the Facility Site identified in this Joint Application. The Siting Board's regulations (16 NYCRR 1001.9), and the Article 10 stipulations agreed upon by the parties, recognize that it is not practicable to procure land

[1] As defined throughout this Joint Application, the Facility refers to all components of the proposed project, including PV panels and support structures, inverters, access roads, buried and above ground collection lines, a generation tie line (or "gen-tie"), a substation, a switching station, fences, and staging areas.

contracts, perform environmental and engineering due diligence studies, enter and progress through multiple interconnection permit processes, and conduct community outreach for alternative locations. Rather, the Siting Board's regulations and the stipulations provide that an applicant need only identify and describe alternative sites owned by, or under option to, the Applicant or its affiliates. In addition, the agreements the Applicant has developed with landowners within the Facility Site strictly limit the use of land to a solar energy generating facility, and as such, do not allow the Applicant to site other alternative energy production facilities (e.g., wind) within the Facility Site. These and other constraints sharply limit the alternatives that can be reasonably considered.

5.2.1 Alternate PV Panel Layouts

The process of determining Facility design and layout involved a continuous evaluation of alternatives that balanced environmental and regulatory concerns with design requirements. This process has been ongoing since 2015. Alternative layouts for PV arrays were evaluated, and adjusted where practical, based on the potential to avoid and minimize impacts to sensitive environmental resources such as, wetlands, waterbodies, wildlife habitat, archaeological sites, and other cultural resources. Steps were also taken during design to limit visual impacts, glare, and off-site sound impacts from the Project.

Alternative layouts and designs for the Facility's access roads were considered based on their location and purpose. Each PV array requires an approximate 60-foot corridor of disturbance to install access roads and fencing. Wherever possible, disturbances from access roads were minimized by laying out grass access roads within the fenced PV arrays, instead of graded gravel roads. Grass access road will be constructed at grade and maintained by regular mowing and will not require permanent impacts from cutting or filling.

An analysis of alternative Facility layouts is illustrated in Figure 7. This figure compares alternative Facility layouts with the current Facility layout. Specifically, this comparison shows the layout presented in the Facility's Article 10 Application and another alternative layout that was considered earlier in the development process superimposed with the current Facility layout. These comparisons demonstrate how PV array size, location, and overall number have changed over time as a result of efforts to avoid and minimize impacts to wetlands and streams.

5.2.2 Alternate Electrical Collection Line Routes

The Applicant has refined the design of the Facility within the Facility Site throughout the development process to avoid and minimize potential environmental impacts to the greatest extent practicable, which also improves the economic considerations of constructing the Facility. Measures the Applicant has taken to avoid and minimize impacts to sensitive resources in the site selection/refinement process included: conducting detailed studies of environmental and

cultural resources, relocating Facility components, co-locating Facility components (e.g., access roads and collection lines), routing Facility components along previously disturbance corridors (e.g., farm roads), establishing a Facility Site that is compact as possible, and designing access roads to work with the native topography and minimize the need for soil disturbance (e.g., avoiding steep slopes when possible).

As a matter of general economical design preference, the Applicant would prefer to build all electrical lines in the shortest, most direct alignment between PV arrays. However, the Facility's electrical collection system will be primarily following existing and proposed access roads and through active agricultural fields to consolidate and minimize crossing impacts to forested areas and wetland/stream communities. Given these considerations, the overall length of the proposed collection system has been minimized in order to reduce the amount of required trenching and cable installation.

5.2.3 Alternate Access Roads

Access road widths will be the minimum necessary to operate and maintain the Facility (a nominal 20 feet in width throughout the Facility). Access roads have been sited along existing farm roads whenever possible. Routing of access roads attempted to follow previously disturbed corridors and to work with the native topography and minimize the need for soil disturbance (i.e., avoid the need for cut and fill). As mentioned previously, the approximate length of all Facility access roads (both gravel and grass) is approximately 30 miles, with approximately 6 miles of gravel access roads requiring construction and grading activities. Shorter, more direct routes for these gravel access roads are a more desirable alternative from a Facility development/cost perspective. However, this alternative is inconsistent with the objectives of minimizing impacts to agricultural land, forests, and wetlands. Early site reconnaissance was used to identify all streams and wetlands that could potentially be impacted by the proposed Facility, and to avoid/minimize road crossings of streams and wetlands to the extent practicable.

5.3 Alternative Technologies

The PV panels proposed for the Facility will utilize the latest in solar power generation technology to enhance Facility efficiency, production, and safety. Alternative power generation technologies, such as fossil-fuel and biomass combustion, would not meet the objectives of the Facility, are not the area of expertise of the Applicant, and would pose more significant adverse environmental impacts, particularly on air quality but also on land use, aesthetics, and water resources. Most fossil fuel-fired generating facilities would require significant amounts of water to operate, the use of which would likely pose impacts to surface water or groundwater resources as well as fish and other aquatic organisms.

In regard to other renewable sources of generation, private landowner agreements for this Facility strictly limit the use of land to a solar power project, and as such, do not allow for the siting of other alternative energy production facilities (e.g., wind, hydro power, or biomass). Therefore, other renewable energy generation technologies are not considered to be reasonable alternatives.

5.4 Alternative Construction Techniques

5.4.1 Boring under Wetlands and Streams

As currently proposed, construction-related impacts have been reduced by employing the jack and bore trenchless crossing installation method for installing the electrical collection lines in select sensitive resource areas. One alternative to the current proposal would be to make greater use of jack and boring technology to further reduce wetland and stream impacts. However, while jack and bore may be a reasonable means of avoiding impacts to wider streams and forested wetlands, this technique is generally not warranted for crossings of emergent or scrub-shrub wetlands or narrower streams/ephemeral channels where impacts are anticipated to be both minor and temporary. Similarly, another alternative would be to use direct burial for all crossing; while more straightforward and economical, this alternative would result in more impacts to wetlands and streams. Therefore, the current Facility design reflects a targeted to approach to boring, with jack and bore proposed for some (i.e., the most sensitive), but not all, crossings. As discussed in Section 4, impacts from direct burial of cables will affect primarily emergent and forested wetlands and all temporarily disturbed areas will be fully restored to pre-construction conditions to the greatest extent practicable. Please refer to Figure 5 for stream and wetland crossing details, and Figure 6 for additional construction details.

5.5 No Action

The No Action alternative assumes that the Facility Site would continue to exist as-is. This No Action alternative would not beneficially or adversely affect current land use, ambient sound conditions, or traffic or public road conditions, and would maintain the area's existing community character, socioeconomic, and energy-generating conditions as they currently exist.

The No Action alternative is not best suited to promote public health and welfare because it would deprive the State and the region of a major source of clean, renewable electricity. As discussed above, electricity generated from solar energy facilities can displace electricity generated from conventional power plants, reducing emissions of both conventional and GHG pollutants. On a long-term basis, increasing the production of renewable generated power will reduce the need to construct and operate new fossil fueled power plants. In addition, the No Action alternative would deprive the State of a new source of renewable energy that would help achieve the objectives of the CLCPA, New York

State's Energy Plan, REV initiative and CES. The 2015 State Energy Plan contains a series of policy objectives to increase the use of energy systems that enable the State to significantly reduce GHG emissions while stabilizing energy costs. The CLCPA requires 40 percent greenhouse gas emissions reductions in absolute terms from 1990 levels by 2030 and 85 percent emissions reductions by 2050. The CLCPA also mandates that 70 percent of New York's electricity must come from renewable energy by 2030, and 100 percent of the State's electricity supply must be emissions free by 2040. The No Action alternative would not help advance the objectives of the CLCPA or State Energy Plan (i.e., it would not contribute toward reducing GHG emissions or assist the State in achieving the 70% renewable energy generation objective).

REV is a strategy to build a clean, resilient, and affordable energy system for all of New York. The Public Service Commission (PSC) issued their Order Adopting Regulatory Policy Framework and Implementation Plan on February 26, 2015 that outlines issues and tasks to resolve the technical, marketplace, and regulatory challenges necessary to achieve the REV plan and goals. As stated by the PSC in the REV Order, "A significant increase in the penetration of renewable resources is essential to meeting our objectives, state goals and proposed federal requirements" (PSC, 2015, p. 82). The REV Order recognizes that large-scale renewables (LSR), such as the proposed Facility, will be critically important to meeting GHG emissions reduction goals. In furtherance of the REV goals, on August 1, 2016 the PSC adopted the CES, which requires the procurement of at least 50% of the State's electric consumption to come from renewable resources by 2030 (PSC, 2016, p.78). The No Action Alternative would not contribute to State policy objectives, because it would not provide additional electrical capacity produced by renewable energy.

6.0 IMPACT AVOIDANCE, MINIMIZATION, AND MITIGATION

6.1 Summary of Avoidance and Minimization Measures

Design of the Facility, as currently proposed, has been guided by efforts to locate Facility components in a manner to avoid and minimize wetland impacts to the extent practicable. As described in Section 5.2 of this Joint Application, the Facility layout has been designed in response to on-site engineering and environmental studies of sites owned by, or under option to, the Applicant or its affiliates. Throughout the development of the current Facility layout and the concurrent Article 10 review, efforts have been made to remove or shift the location of various Facility components to avoid and minimize wetland and stream impacts. The current Facility layout achieves this by locating PV panels, access roads and collection system lines out of sensitive environmental resources, where practicable, and utilizing existing crossings. Where impact avoidance was not practicable, minimization of impacts was attempted by locating disturbing activities, such as crossings, in narrow or previously disturbed portions of the wetlands and streams.

The Applicant has made specific changes made to the Facility's layout to avoid and minimize wetland impacts when practicable. As evidenced by the list of Facility layout changes provided below, several resource areas were completely avoided or impacts to several areas were minimized:

- Shifted underground collection line and access road routes to Array 4D to reduce impacts to Wetland O.
- Shifted underground collection line and access road routes to Array 2E to reduce impacts to Wetland PP, Wetland QQ, and Stream PP.
- Shifted access road route to Array 2G to reduce impacts to Wetland 3O.
- Shifted access road and transformer serving Array 4K further east to avoid impacts to Wetland T.
- Updated underground collection line route from Array 4K to substation to reduce impacts to Wetland T.
- Utilized jack and bore method for underground collection line to Array 4J to avoid impacts to Wetland BF-AA, Stream BF-AA, and Wetland BF-B.
- Shifted access road to Array 1E to reduce impacts to Wetland OO (DEC Wetland C-18).
- Updated access road route to substation to reduce impacts to Wetland OO (DEC Wetland C-18) and Stream OO.
- Removed Array 4A and its associated permanent access road to significantly reduce impacts to Wetland O Extension.
- Removed Array 4L and its associated permanent access road to significantly reduce impacts to Wetland T (DEC Wetland C-18) and avoid construction in an identified conservation easement area.

Avoidance and minimization of wetland impacts will be incorporated into the various stages and activities of Facility construction. Construction activities will be guided by numerous federal and state environmental protection

requirements, which will be defined in the conditions of the Facility's Article 10 Certificate and issued permits. Of primary importance, the Applicant will provide for a designated Environmental Monitor to inspect work activities and provide corrective actions, when necessary, in order to maintain compliance with federal, state, and local environmental laws. Construction of the Facility will include the following requirements that serve to further minimize overall impacts to streams and wetlands:

- Except where crossed by permitted access roads, or through non-jurisdictional use of temporary matting, streams will be designated "No Equipment Access" thereby prohibiting the use of motorized equipment in these areas.
- A buffer zone of 100 feet, referred to as a "Restricted Activities Area", will be established with visible flagging, signage, and/or staking wherever construction activities intersects with wetlands and waterbodies. Restrictions in these designated areas will include the following prohibited activities:
    - No deposition of slash within or adjacent to a waterbody;
    - No accumulation of construction debris within the area;
    - Herbicide restrictions within 100 feet of a stream or wetland (or as required per manufacturer's instructions);
    - No degradation of stream banks;
    - No equipment washing or refueling within the area;
    - No storage of any petroleum or chemical material; and
    - No disposal of excess concrete or concrete wash water.
- Temporary, construction-related impacts to wetlands from vehicles and equipment will be avoided by the use of timber mats at specific crossing locations.
- Temporary dewatering of stream channels will be conducted (when necessary) to assure that culvert installation and road and collection line crossings are conducted "in the dry".
- A soil erosion and sedimentation control plan will be developed and implemented as part of the State Pollutant Discharge Elimination System (SPDES) General Permit for the Facility. Silt fences, wattles, erosion control blankets, and temporary siltation basins will be installed and maintained during Facility construction. Exposed soil will be seeded and/or mulched to assure that erosion and siltation is kept to a minimum along wetland boundaries. Specific control measures are identified in the approved SWPPP. The location of these measures will be indicated on construction drawings and reviewed by the contractor, and other responsible parties, prior to construction. Installed measures will be inspected on a regular basis to assure that they function properly over the entire construction period and until the completion of all restoration work.
- Invasive species control measures will be implemented in accordance with an Invasive Species Control Plan (ISCP). A current version of this ISCP is provided in Appendix F.

- Clearing of trees and shrubs along stream banks will be kept to the minimum necessary to minimize thermal impacts to aquatic organisms.
- Cleared vegetation and excess excavated soil will not be placed within wetlands or State-regulated 100-foot adjacent areas.
- Jack and bore installation method will be utilized for the installation of buried collection lines under certain streams and wetlands as depicted in Figures 3 and 4 (13 locations).
- Where vegetation removal from wetlands would cause additional impacts, cut vegetation will be dropped and lopped in place to minimize soil disturbance. Additionally, tree stumps in forested wetlands will not be grubbed to minimize soils disturbance.
- Where wetland soils are disturbed, any temporary fill will be removed at the completion of the construction. Stockpiled wetland topsoil will be redistributed, and these areas will be restored to their original grade and revegetated.

Some risk of indirect impacts to wetlands, mainly from runoff during storm events, may occur during construction. Typical indirect impacts to wetlands resulting from construction can include siltation and degradation of downstream water quality. However, the risks of these indirect impacts are considered low and mitigable because the Applicant will comply with the NYS Standards and Specifications for Erosion and Sediment Control and other requirements, as described in the Facility's SWPPP.

Post-construction Restoration Activities

Wetland restoration will include removal of all construction matting from temporary work areas, as well as the removal of any construction debris. Grading of wetlands will be limited to the minimum necessary to restore conditions consistent with those that existed prior to the initiation of construction in the area. Wetlands will be reseeded with a native wetland seed mix, and no fertilizer will be used in wetlands. Mulch will only be used if necessary, to enhance the revegetation or stabilization. Only straw or cellulose mulch will be used in wetlands and State-regulated 100-foot adjacent areas. In addition, the Applicant will comply with all Article 10 Certificate Conditions related to the protection of wetland and stream resources. Stream and wetland crossing details are provided in Figure 5, and additional construction details are provided in Figure 6.

Compensatory Mitigation

In addition to avoidance and minimization measures, the Applicant will also provide compensatory mitigation to offset unavoidable wetland impacts. Additional information pertaining to mitigation is provided in Section 6.3 below.

6.2 Environmental Compliance Monitoring

As anticipated to be required by the Article 10 Certificate, the Applicant will engage an independent, third party Environmental Monitor to oversee compliance with environmental commitments and permit requirements. The environmental compliance monitoring program will include the following components:

1. Planning – Prior to the start of construction, the Environmental Monitor will review all environmental permits and, based upon the conditions/requirements of the permits, prepare an environmental management document (Environmental Compliance Manual) that will be utilized for the duration of the construction and operation of the Facility. This document will distill and clearly present all environmental requirements for construction and restoration included in all Facility permits and approvals and will be designed to aid in the management of environmental issues and concerns that may arise during construction of the Facility.

2. Training – The Environmental Monitor or their designee will hold an environmental training session for all contractors and subcontractors before they begin working on the site. The purpose of the training session will be to distribute the Environmental Compliance Manual, explain the environmental compliance program in detail prior to the start of construction, and assure that all personnel on site are aware of the permitting requirements for construction of the Facility.

3. Preconstruction Coordination – Prior to construction, the contractor(s) and the Environmental Monitor will conduct a walkover of areas to be affected by construction activities. The limits of work areas, especially in and adjacent to sensitive resource areas such as wetlands, will be defined by flagging, staking or fencing prior to construction, as needed. This walkover will identify landowner concerns, sensitive resources, limits of clearing, proposed stream or wetland crossings, and placement of erosion and sediment control features.

4. Construction and Restoration Inspection – The monitoring program will include daily inspection of construction work sites by the Environmental Monitor. The Environmental Monitor is the primary individual(s) responsible for overseeing and documenting compliance with environmental permit conditions on the Facility. Activities with the potential to impact jurisdictional/sensitive resources, or with greater potential for environmental impact, will receive priority attention from the Environmental Monitor. The monitor will keep a log of daily construction activities and will issue regular reports.

By undertaking the impact avoidance and minimization measures described above, the Applicant believes the Facility as currently proposed is the least environmentally damaging practical alternative

6.3 Mitigation

As described in Section 4.0 above, impact estimates for the proposed Facility amount to 13.097 acres of temporary disturbance, 0.375 acre of permanent fill impact, and 0.023 acre of permanent forest conversion within federal jurisdictional wetlands. Estimated impacts to streams include 0.033 acre (525 linear feet) of temporary impacts and 0.071 acre (322 linear feet) of permanent impacts. Estimated permanent impacts to federal jurisdictional wetlands and streams total up to 0.470 acre (0.375 acre [wetland fill] plus 0.023 acre [forest conversion] plus 0.071 acre [stream fill]). Impacts to State jurisdictional wetlands are estimated to include 0.016 acre of temporary disturbance, 0.085 acre of permanent fill, and 0.003 acre of permanent forest conversion. Estimated impacts to State-regulated 100-foot adjacent areas include 5.28 acres of temporary impact, 0.813 acre of permanent fill, and 0.337 acre of permanent forest conversion.

To offset permanent federal jurisdictional wetland and stream impacts, the Applicant is in the process of purchasing an appropriate number of credits (anticipated to be 0.5 [one half] credit) from The Wetland Trust's USACE-approved in-lieu fee wetland mitigation program that operates in the Mohawk River watershed. This credit amount (0.5) is anticipated to offset the total estimated permanent impacts to both wetlands and streams for the Facility (including permanent fill and permanent forest conversion). Specifically, the purchase of 0.5 credit reflects a mitigation to impact ratio of more than 1:1 (0.5 acre of mitigation to offset up to 0.470 acre of permanent impacts to federal jurisdictional wetlands and streams). Though the purchase of in-lieu fee wetland mitigation credits typically occurs following submittal of a Joint Application, the Applicant has initiated this process early in order to demonstrate commitment to wetland mitigation during the State Article 10 settlement process, and because The Wetland Trust has indicated high demand for credits in the Mohawk River watershed and an inability to renew credit reservations for long periods of time.

With respect to mitigation for impacts to State jurisdictional wetlands and 100-foot adjacent areas, the Applicant is continuing to work with NYSDEC staff to determine the need for, or appropriate extent and location of, on-site mitigation activities, if necessary. During Article 10 settlement negotiations, EDR provided information to NYSDEC staff depicting a potentially suitable location for on-site wetland mitigation activities. However, given the substantial reductions in permanent impacts to State jurisdictional wetlands and the low total permanent impacts to State jurisdictional wetlands, the need for a substantial on-site wetland mitigation creation project is no longer anticipated. The Applicant acknowledges that limited wetland restoration and/or enhancement activities could be implemented to offset Facility impacts to NYSDEC wetlands and their respective State-regulated 100-foot adjacent areas, if necessary. EDR and the Applicant have identified two potential parcels that may represent particularly good candidates for these activities, one of which was shared with NYSDEC staff during Article 10 settlement negotiations. The specific details of on-site

wetland mitigation, if determined to be required through subsequent discussions with NYSDEC staff, will be provided in the form of an Article 10 *Wetland Mitigation Plan* compliance filing.

7.0 COMPLIANCE WITH THE FEDERAL AND STATE ENDANGERED SPECIES ACTS

The Applicant has evaluated potential impacts to federally and State-listed rare, threatened, and endangered species. Facility-related impacts to State-listed species, including associated avoidance and minimization actions and mitigation measures, have been evaluated through the Article 10 Application review process and will be addressed in the issued Certificate. Information pertaining to impacts to federally listed species is provided below.

The Applicant generated a list of federally threatened, endangered, and/or candidate species listed under the Endangered Species Act (ESA) that could occur in the vicinity of the Facility Site using the USFWS Information for Planning and Consultation (IPaC) database. The USFWS IPaC list identified one species, the northern long-eared bat (*Myotis septentrionalis*; NLEB), as potentially being present in the vicinity of the Facility (see Appendix D). A detailed description of the NLEB is provided below, along with a discussion of impact avoidance and minimization actions.

7.1 Northern Long-eared Bat

The NLEB is a medium-sized vesper bat with a typical body length of 3.0 to 3.7 inches and a wingspan of 9 to 10 inches that is distributed throughout much of Canada and the eastern/central United States. This forest-dependent insectivorous species' defining morphological characteristics (compared to other members of the genus *Myotis*) include especially large ears and particularly long, narrow tragi (NYSDEC, 2019a; Reid, 2006; USFWS, 2015; USFWS, 2019b).

During the summer months, NLEBs typically emerge at dusk and aerially forage for a wide variety of insect species along hillsides and ridges within temperate and boreal forest landscapes. This species typically prefers to feed near understory vegetation in upland forest habitats. When at rest during the daytime, male and female NLEBs tend to roost separately in small colonies, often utilizing the cavities, crevices, and hollows of both live and dead (snag) trees with a diameter at breast height (dbh) that is equal to or greater than 3 inches (Altringham, 1996; USFWS, 2014). In addition to trees, NLEBs sometimes use human-built structures for roosting (USFWS, 2015; Reid, 2006).

In the late summer and early fall, NLEBs migrate across the landscape to winter hibernacula, which typically include caves and mines of varying sizes. Breeding activity for this species typically occurs in late summer and/or early fall, and females experience delayed fertilization until the spring. When hibernating either alone or in small groups (typically from November 1 to March 31; NYSDEC, 2019b), NLEBs prefer small, tight crevices within hibernacula. After

hibernation and a return to summer habitat areas, female bats typically form maternity colonies in the spring and early summer, and most pups are born in June or July (NYSDEC, 2019b; Solari, 2018; USFWS, 2015).

Once common in forested landscapes throughout the northeastern United States, the NLEB has experienced a pronounced (more than 98%) decline since 2006 due to the effects of WNS, a fungal disease which compromises a bat's ability to survive the winter hibernation period (NYSDEC, 2019a). Though not as detrimental as WNS, human intrusion and disturbance associated with recreational activities (e.g., cave exploration), loss and/or degradation of hardwood forest habitat, and collision with vehicles and built structures represent additional sources of mortality for this species (USFWS, 2015). The NLEB was listed as threatened under the ESA and the New York Endangered Species Law on April 2, 2015 (NYSDEC, 2019a).

In order to avoid and minimize potential impacts to the NLEB during Facility construction, tree clearing restrictions will apply within 5 miles of known northern long-eared bat occurrences. Tree clearing within 5 miles of these known occurrences will take place between November 1 and March 31 (inclusive) to the maximum extent practicable, to minimize potential impacts to the NLEB. When these restrictions cannot be met, the Facility's designated Environmental Monitor will survey the trees for bats before they are felled. Facility-wide, forest clearing impacts are an estimated 36.1 acres[2], which is equivalent to approximately 1.5% of the area within the Facility Site. Within five miles of the nearest documented NLEB hibernaculum, forest clearing impacts are expected to total only 10.0 acres[2] (approximately 0.42% of the area within the Facility Site).

Through the Article 10 process, the Applicant is working with the NYSDEC to develop final Certificate conditions to avoid and minimize potential impacts to this species. With implementation of appropriate measures in compliance with the Certificate conditions, impacts to the NLEB will be avoided and minimized.

[2] Includes the sum of all forestland impact types: (1) permanent loss, where forested areas will be replaced with built Facility components (e.g., gravel access roads); (2) permanent conversion, where forested areas will be cleared and maintained as early successional communities for the life of the Facility (e.g., collection line rights-of-way); and (3) temporary, where forested areas will be initially cleared, but allowed to naturally reforest following construction (e.g., along access road construction clearing corridors).

8.0 COMPLIANCE WITH THE FEDERAL AND STATE HISTORIC PRESERVATION ACTS

Throughout the development of the Facility, the Applicant has conducted cultural resources surveys and engaged in regular coordination with anticipated Section 106 Consulting Parties, including the New York State Office of Parks, Recreation and Historic Preservation (per their role as State Historic Preservation Office [SHPO]), the Saint Regis Mohawk Tribe (see Appendix G). In addition, a preliminary *Cultural Resources Mitigation Plan* has been prepared for the proposed Facility and is included in Appendix G. A summary of cultural resources-related correspondence for Mohawk Solar is provided below in Table 12.

Table 12. Summary of Cultural Resources-Related Article 10 Correspondence for Mohawk Solar

Date	Summary of Submittal/Correspondence
March 31, 2017	The *Public Involvement Program* (PIP) *Plan* (EDR, 2017a) was submitted to parties identified as initial Facility stakeholders with potential interest in the Facility. Parties included the NYSOPRHP, NYS Department of Environmental Conservation (NYSDEC), NYS Department of Public Service (NYSDPS), and Saint Regis Mohawk Tribe, among others. The PIP outlines various public outreach and involvement efforts that would be implemented over the coming months to inform stakeholders about the Facility and the Article 10 process.
May 26, 2017	The *Public Involvement Program* (PIP) *Plan* (EDR, 2017a) was revised and resubmitted to the parties identified as Facility stakeholders with potential interest in the Facility.
August 9, 2017	The Applicant and EDR met with NYSOPRHP staff at the NYSOPRHP offices in Waterford, NY to introduce Mohawk Solar. The NYSOPRHP indicated that archaeological and historic architectural resources surveys for the Facility should be presented in separate reports, visual impacts should be assessed with the priority given to the public vantage points of each historic property, the Study Area for Indirect (Visual) Effects should be a five-mile radius, and that traditional vernacular landscapes should be evaluated in addition to buildings.
September 12, 2017	The Applicant initiated formal consultation with the NYSOPRHP via the online Cultural Resources Information System (CRIS). This submission included a copy of the meeting minutes from the August 9, 2017 meeting described above and a copy of the *Preliminary Scoping Statement* (PSS) Notice letter from Harris Beach, Attorneys at Law, dated September 14, 2017. This letter acknowledges the Applicant's request for authority to construct the Facility; describes the PSS process; and identifies and describes the amount of intervenor funding available to interested parties in relation to the Facility.
October 18, 2017	The *Preliminary Scoping Statement* (PSS) (EDR, 2017d) was submitted to parties identified as initial Facility stakeholders with potential interest in the Facility. Parties included the NYSOPRHP, NYSDEC, NYSDPS, and the Saint Regis Mohawk Tribe, among others. The PSS identified the proposed methodology and scope of the various studies that needed to be conducted in support of the Article 10 application.
October 20, 2017	The Applicant submitted the *Phase 1A Historic Architectural Resources Survey Work Plan* (EDR, 2017c) to NYSOPRHP via the CRIS website. The *Phase 1A Historic Architectural Resources Survey and Work Plan* included a review of architectural resources within and near the Facility and a work plan for identifying and documenting historic resources within the Facility's area of potential effect (APE) that appear to satisfy State/National Register of Historic Places (S/NRHP) eligibility criteria.
October 20, 2017	The Applicant submitted the *Phase 1A Archaeological Resources Survey & Phase 1B Work Plan* (EDR, 2017b) to NYSOPRHP via the CRIS website. The *Phase 1A Archaeological Resources Survey & Phase 1B Work Plan* included a review of archaeological resources within and near the Facility, as well as a work plan for a subsequent archaeological reconnaissance and a traditional Phase IB archaeological survey.

Date	Summary of Submittal/Correspondence
October 26, 2017	NYSOPRHP provided a response via the CRIS website to the *Phase 1A Historic Architectural Resources Survey Work Plan* (EDR, 2017c) and concurred with the historic architectural survey methodology and APE proposed by EDR.
November 8, 2017	On behalf of the Applicant, EDR submitted the *Identification of Visually Sensitive Resources Official Request for Information* (Robinson, 2017) letter to the NYSOPRHP and the Saint Regis Mohawk Tribe, as well as other municipal planning and state agency representatives. This letter included a list of visually sensitive resources and requested feedback pertaining to additional resources that would need to be accounted for during EDR's Visual Impact Assessment (VIA).
November 24, 2017	NYSOPRHP provided a response via the CRIS website to the *Phase 1A Archaeological Resources Survey & Phase IB Work Plan* (EDR, 2017b) and concurred with the archaeology survey methodology presented by EDR, stating "if Facility-related development is proposed in the location of the eight previously reported archaeological sites located wholly or partially within the Facility Area, additional consultation with the OPRHP will occur" (Herter, 2017).
February 28, 2018	The Applicant submitted the *Historic Architectural Resources Survey* (EDR, 2018) to NYSOPRHP via the CRIS website. The results and recommendations of this report included: • The historic resources survey area covered 156.18 square miles and included the inventory of 74 resources. • Based a on a review of CRIS, a total of 33 previously identified properties (12 NRHP-listed properties, one NRHP-eligible district, and 20 properties whose NRHP eligibility was previously undetermined) are located within the APE for Indirect (Visual) Effects. • The 12 extant NRHP-listed properties within the APE for Indirect (Visual) Effects are: the John Lehman House, the John Smith Farm, the Kilts Farmstead, the Jacob Nellis Farmhouse, the Nelliston School, Palatine Church, the Reformed Dutch Church of Stone Arabia, the Teepee, Trinity Lutheran Church and Cemetery, the Daniel Van Wie Farmstead, the Walrath-Van Horne House, the Lindesay Patent Rural Historic District. • Of the 21 previously identified properties whose NRHP-eligibility was undetermined, five properties are recommended by EDR to be NRHP-eligible and 14 properties are recommended to be not NRHP-eligible. The potential NRHP eligibility of two historic cemeteries could not be determined due to location on private property without obvious public access. • A total of 19 newly identified properties within the APE for Indirect (Visual) Effects are recommended by EDR to be NRHP-eligible. • No new potentially NRHP-eligible historic districts were identified by EDR. • Two NRHP-listed resources were found to have been demolished. • 21 NRHP-listed properties are located within the Study Area, but were outside of the APE for Indirect (Visual) Effects viewshed for potential facility visibility, and therefore are not anticipated to be visually impacted by the Facility.
March 27, 2018	NYSOPRHP provided a response via the CRIS website to the *Historic Architectural Resources Survey* (EDR, 2018), in which additional information was requested in the form of additional photographs for four potentially historic properties in the Town of Canajoharie.
April 10, 2018	The Applicant provided a response via the CRIS website to NYSOPRHP's request for additional information by uploading supporting photographs and information regarding the properties in question (Roblee, 2018).
May 7, 2018	NYSOPRHP provided a response via the CRIS website to the results and recommendations of the *Historic Architectural Resources Survey* (EDR, 2018), which included final determinations of eligibility for the S/NRHP (Davey, 2018).
May 10, 2019	The Applicant submitted the *Historic Resources Effects Analysis* report (EDR, 2019a) to NYSOPRHP via the CRIS website. The results and recommendations of this report included:

Date	Summary of Submittal/Correspondence
	• There are 52 historic properties (i.e., properties listed on or determined to be eligible for listing on the S/NRHP) located within the Historic Resources Study Area. Of these, 31 (18 S/NRHP-listed resources, 11 S/NRHP-eligible resources, and 2 National Historic Landmarks) will not have views of the Facility. The remaining 21 historic properties (which include 10 S/NRHP-listed and 11 S/NRHP-eligible properties) are located within the APE for Indirect Effects (i.e., there are 21 historic properties that will have potential views of the Facility). • There are 10 S/NRHP-listed properties that are anticipated to have views of the PV panel arrays (from some portion of the property), and four are anticipated to have views of the substations and gen-tie poles. These S/NRHP-listed properties with potential visibility of the Facility are located between 1.8 to 5.1 miles from the Facility fence. • Of the 22 properties determined by NYSOPRHP/SHPO to be eligible for listing on the S/NRHP, 11 are anticipated to have views of the PV panel arrays, and three are anticipated to have views of the substations and gen-tie poles. • The closest property eligible for listing on the S/NRHP is 122 G. Bowerman Road (USN 05702.000152), which is located on a parcel that is hosting a PV array, and is the only S/NRHP-eligible property located within the Facility Site. • The remaining S/NRHP-eligible properties with Facility visibility are located between 2.6 to 5.2 miles away from the Facility.
May 24, 2019	The Applicant submitted the *Phase IB Archaeological Survey* report (EDR, 2019c) to NYSOPRHP via the CRIS website. The results and recommendations of this report included: • The archaeological survey involved the excavation of 2,482 shovel tests from which 1,053 artifacts were collected. • The pedestrian reconnaissance covered approximately 254 acres. • The Phase IB survey resulted in the identification of 57 pre-contact archaeological sites, 3 historic-period archaeological sites, and 1 multi-component pre-contact and historic-period archaeological site.
May 30, 2019	NYSOPRHP provided a response via the CRIS website to the *Historic Resources Effects Analysis* report (EDR, 2019a), which requested additional documentation of potential impacts to the S/NRHP-eligible farmstead at 122 G. Bowerman Road (Davey, 2019).
June 4, 2019	On behalf of the Applicant, EDR submitted Exhibits 20 (Cultural Resources) and 24 (Visual Impacts) (EDR, 2019b) of the Article 10 application to the NYSOPRHP via the CRIS website. These exhibits include a summary of all the results and recommendations from cultural resources surveys and the VIA completed to date. The *Visual Impact Assessment* report (EDR, 2019d) was also submitted at this time via the CRIS website. The results and recommendations of this report included: • Due to the proposed Facility's geographic location on the south side of the ridge that defines the Mohawk Valley (i.e., facing away from the valley), the Facility will not be visible from the nearby Village of Canajoharie or other densely populated areas. In addition, because of the rolling topography in the immediate vicinity of the Facility and its low-profile, visibility of the Facility components is for the most part be limited to areas within 0.5-mile of the proposed Facility. • There are 52 historic properties (i.e., properties listed on or determined to be eligible for listing on the S/NRHP) located within the Historic Resources Study Area. Of these, 31 will not have views of the Facility (these include 18 S/NRHP-listed resources and 2 National Historic Landmarks). The remaining 21 historic properties (which include 10 S/NRHP-listed and 11 S/NRHP-eligible properties) are located within the APE for Indirect Effects (i.e., there are 21 historic properties that will have potential views of the Facility).

Date	Summary of Submittal/Correspondence
	• There are 10 S/NRHP-listed properties that are anticipated to have views of the PV panel arrays (from some portion of the property), and four are anticipated to have views of the substations and gen-tie poles. These S/NRHP-listed properties with potential visibility of the Facility are located between 1.8 to 5.1 miles from the Facility fence. • Of the 22 properties determined by NYSOPRHP/SHPO to be eligible for listing on the S/NRHP, 11 are anticipated to have views of the PV panel arrays, and three are anticipated to have views of the substations and gen-tie poles. • The closest property eligible for listing on the S/NRHP is 122 G. Bowerman Road (USN 05702.000152), which is located on a parcel that is hosting a PV array, and is the only S/NRHP-eligible property located within the Facility Site. • The remaining S/NRHP-eligible properties with Facility visibility are located between 2.6 to 5.2 miles away from the Facility.
June 21, 2019	NYSOPRHP provided a response via the CRIS website to the *Phase IB Archaeological Survey* report (EDR, 2019c), stating: "We look forward to continuing consultation regarding avoidance measures or a Phase II Site Evaluation Study for site A18-002 (05702.000185). In regard to those archaeological sites proposed for avoidance, we recommend that an *Avoidance Plan* be submitted once a final project design is available" (Herter, 2019a).
September 11, 2019	The Applicant submitted the *Supplemental Phase IB Archaeological Survey* memorandum (Freeland, 2019) to NYSOPRHP via the CRIS website.
September 13, 2019	NYSOPRHP provided a response via the CRIS website to the *Supplemental Phase IB Archaeological Survey* report (Freeland, 2019), and concurred that "the proposed redesign of the underground collection lines and access road will avoid project impacts to A18-001 and A18-002. The OPRHP looks forward to receiving project design drawings documenting avoidance of potentially significant sites identified during the Phase IB archaeological survey once a final Facility design is available" (Herter, 2019b).
September 16, 2019	EDR provided a memorandum to SHPO in response to review correspondence received May 30, 2019, including photographic documentation of existing conditions, two visual simulations and one axonometric view were prepared to demonstrate the potential effect of the Facility on the property at 122 G. Bowerman Road, and a summary of visual mitigation proposed as part of the *Visual Impact Assessment* (VIA) prepared for the Facility (EDR, 2019d).
October 4, 2019	NYSOPRHP provided a response to the memorandum submitted on September 16, 2019, stating: "The rows are relatively low in profile reaching at the upper edge less than 11-12 feet in height from the ground. However, the concern will be the regimented linear industrial-looking rows that may be visible from the National Register listed and eligible properties. The project area's landscape is generally open and agricultural in character. This rural setting is an important character-defining feature associated with the historic properties. The proposed long regimented rows of black, semi-reflective panels may be highly visible in the areas of the historic resources. We found that the large solar arrays with their industrial form and scale will be incongruous with the surrounding natural agricultural setting. In addition, potential glare and reflectivity at various times of the day are also of concern. As such, our office has found that the undertaking will have adverse impacts on historic resources within the project's area of potential impact. Our office believes that large alternative energy projects such the Mohawk Solar project offer few viable options that might avoid or minimize visual impacts associated with their scale and industrial character. As such, we recommend that the involved parties proceed with the development of an appropriate historic preservation mitigation plan. The plan should establish specific preservation/history projects and/or funding intended to offset what this office believes will be significant visual impacts associated with this

Date	Summary of Submittal/Correspondence
	undertaking. Once a mitigation plan is developed and agreed upon, it would then be memorialized in a Letter of Resolution as required by Section 14.09" (Bonafide, 2019).
November 4, 2019	The Applicant and EDR met with John Bonafide, SHPO Director of Technical Preservation Services Bureau, to discuss the type and scope of potential mitigation projects that should be investigated to offset the Facility's visual impacts with respect to historic properties. Mr. Bonafide noted that the visual impacts are not as significant for solar projects as they are for wind projects, are largely limited to the rural setting in the immediate vicinity of solar panels, and discussions around potential mitigation projects should focus on offsetting the change in the rural landscape from agricultural to solar infrastructure. Mr. Bonafide also suggested that since the potential impact of the Facility is greater in rural areas, potential mitigation projects should be sought from organizations whose focus is the rural areas of the Towns of Canajoharie and Minden.
April 9, 2020	The Applicant submitted the preliminary *Cultural Resources Mitigation Plan* (EDR, 2020) to the NYSOPRHP via the CRIS website. The results and recommendations of this report included: • The Town of Canajoharie will receive $25,000 to fund maintenance and repair projects at the S/NRHP-listed town office building at 12 Mitchell Street in the Village of Canajoharie. All work performed on the town-owned building would need to be conducted in accordance with the Secretary of the Interior's Standards for Historic Preservation, as applicable. • The Town of Minden will receive $15,000 to establish a cemetery stabilization fund to be administered by the town (with input from the Town of Minden historian) that would allow for maintenance and restoration to be undertaken on historic cemeteries in the town that are in need of work that cannot currently be performed due to lack of funds or oversight. All work performed would need to be consistent with accepted standards for care of historic cemeteries and conducted in accordance with the Secretary of the Interior's Standards for Historic Preservation, as applicable.

The Applicant will continue to engage with SHPO, NYSDPS, NYSDEC, USACE, and local stakeholders as the Article 10 and Section 106 processes progress to further refine the proposed mitigation projects discussed in the *Cultural Resources Mitigation Plan*, leading to the drafting of a Memorandum of Agreement between the host communities, USACE, and NYSOPRHP that will define the terms and period of time under which the mitigation projects are to be undertaken.

9.0 REFERENCES

Altringham, J. 1996. *Bats: Biology and Behavior*. Oxford University Press, New York, New York.

Bonafide, John A. 2019. Re: *PSC Mohawk Solar Project/90.5 MW/2,361-530 Acres Canajoharie & Minden, Montgomery County 17PR06371/17-F-0182*. Correspondence from John A. Bonafide (NYSOPRHP) to Joseph Green (Community Energy, Inc.). October 4, 2019.

Bryce, S.A., Griffith, G.E., Omernik, J.M., Edinger, G., Indrick, S., Vargas, O., and Carlson, D., 2010, Ecoregions of New York (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey, map scale 1:1,250,000.

Burgess, Kathleen A. 2016. Re: Second Notice of Availability of Pre-Application Intervenor Funds and Deadline for Submitting Funding Requests. Correspondence from Kathleen A. Burgess (Siting Board) to Article 10 Stakeholders. New York State Board on Electric Generation Siting and the Environment, Albany, NY. October 12, 2016.

Cowardin, L.M., V. Carter, F.C. Goblet, and E.T. LaRoae. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* U.S. Fish and Wildlife Service, OBS-79/31, Washington, D.C.

Davey, Weston. 2018. Re: *PSC Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, NY, 17PR06371/17-F-0182*. Correspondence from Weston Davey (NYSOPRHP) to Joseph Green (Community Energy Solar). May 7, 2018.

Davey, Weston. 2019. Re: *PSC Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, NY, 17PR06371/17-F-0182*. Correspondence from Weston Davey (NYSOPRHP) to Joseph Green (Community Energy Solar). May 30, 2019.

Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR). 2017a. *Public Involvement Program (PIP) Plan, Case 17-F-0182: Mohawk Solar Project, Town of Canajoharie & Town of Minden, Montgomery County, New York.* Prepared for Mohawk Solar LLC, Radnor, PA by EDR, Syracuse, NY. May 2017.

EDR. 2017b. *Phase 1A Archaeological Resources Survey & Phase 1B Work Plan, Mohawk Solar, Towns of Canajoharie and Minden, Montgomery County, New York*. Prepared for Mohawk Solar LLC, Portland, OR by EDR, Syracuse, NY. September 2017.

EDR. 2017c. *Phase 1A Historic Architectural Resources Survey Work Plan, Mohawk Solar, Towns of Canajoharie and Minden, Montgomery County, New York*. Prepared for Mohawk Solar LLC, Portland, OR by EDR, Syracuse, NY. September 2017.

EDR. 2017d. *Preliminary Scoping Statement (PSS), Mohawk Solar, Montgomery County, New York*. Prepared for Mohawk Solar LLC, Portland, OR by EDR, Syracuse, NY. October 2017.

EDR. 2018. *Historic Architectural Resources Survey, Mohawk Solar, Towns of Canajoharie and Minden, Montgomery County, New York.* Prepared for Mohawk Solar LLC, Portland, OR by EDR, Syracuse, NY. February 2018.

EDR. 2019a. *Historic Resources Effects Analysis, Mohawk Solar, Towns of Canajoharie and Minden, Montgomery County, New York*. Prepared for Mohawk Solar LLC, Lowville, NY by EDR, Syracuse, NY. May 2019.

EDR. 2019b. *Mohawk Solar, Case No. 17-F-0182 1001.20 Exhibit 20, Cultural Resources* and *Mohawk Solar, Case No. 17-F-0182 1001.24 Exhibit 24, Visual Impacts*. Documents submitted to NYSOPRHP by EDR, Syracuse, NY.

EDR. 2019c. *Phase IB Archaeological Survey, Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, New York*. Prepared for Mohawk Solar LLC, Lowville, NY by EDR, Syracuse, NY. May 2019.

EDR. 2019d. *Visual Impact Analysis, Mohawk Solar (Case No. 17-F-0182), Towns of Canajoharie and Minden, Montgomery County, New York.* Prepared for Mohawk Solar, LLC, Lowville, NY by EDR, Syracuse, NY.

EDR. 2020. *Cultural Resources Mitigation Plan, Mohawk Solar, Towns of Canajoharie and Minden, Montgomery County, NYSDPS Case 17-F-0182, SHPO Project Review Number 17PR06371*. Prepared for Mohawk Solar LLC, Lowville, NY by EDR, Syracuse, NY. April 2020.

Freeland, Nick. 2019. Re: *Supplemental Phase IB Archaeological Survey, PSC: Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, NY, NYSOPRHP Project Review No. 17PR06371, NYSDPS Case No. 17-F-0182.* Correspondence from Nick Freeland (EDR) to Nancy Herter (NYSOPRHP). September 11, 2019.

Herter, Nancy. 2017. Re: *PSC Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, NY, 17PR06371, 17-F-0182*. Correspondence from Nancy Herter (NYSOPRHP) to Joseph Green (Community Energy Solar). November 24, 2017.

Herter, Nancy. 2019a. Re: *PSC Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, NY, 17PR06371/17-F-0182*. Correspondence from Nancy Herter (NYSOPRHP) to Joseph Green (Community Energy Solar). June 21, 2019.

Herter, Nancy. 2019b. Re: *PSC Mohawk Solar Project, Towns of Canajoharie and Minden, Montgomery County, NY, 17PR06371/17-F-0182*. Correspondence from Nancy Herter (NYSOPRHP) to Joseph Green (Community Energy Solar). September 13, 2019.

New York State Department of Environmental Conservation (NYSDEC). 2016a. *Controlling Sources of Toxic Air Pollutants*. Available at: https://www.dec.ny.gov/chemical/89934.html (Accessed April 2020).

NYSDEC. 2016b. *Mitigation of Climate Change: Rethinking Our Energy Sources*. Available at: http://www.dec.ny.gov/energy/99223.html (Accessed April 2020).

NYSDEC. 2019a. *Northern Long-eared Bat*. Available at: https://www.dec.ny.gov/animals/106713.html (Accessed April 2020).

NYSDEC. 2019b. *Protection of Northern Long-eared Bats*. Available at: https://www.dec.ny.gov/animals/106090.html (Accessed April 2020).

New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP). 2005. *New York State Historic Preservation Office (SHPO) Phase 1 Archaeological Report Format Requirements*. New York State Office of Parks, Recreation, and Historic Preservation, Waterford, NY.

Reid, F.A. 2006. *A Field Guide to Mammals of North America, Fourth Edition*. Houghton Mifflin Company, Boston/New York.

Robinson, Matthew. 2017. Re: *Mohawk Solar Identification of Visually Sensitive Resources Official Request for Information*. Correspondence from Matthew Robinson (EDR) to NYSOPRHP and Municipal Planning Representatives. October 18, 2017.

Roblee, Andrew. 2018. Re: *17PR06371 Mohawk Solar, Towns of Canajoharie and Minden, Montgomery County, New York*. Correspondence form Andrew Roblee (EDR) to Linda Mackey (NYSOPRHP). April 10, 2018.

Solari, S. 2018. *Myotis septentrionalis*. The IUCN Red List of Threatened Species. Available at: https://www.iucnredlist.org/species/14201/22064312 (Accessed April 2020).

U.S. Fish and Wildlife Service (USFWS). 2014 *Northern Long-eared Bat Interim Conference and Planning Guidance*. January 6, 2014. USFWS Regions 2, 3, 4, 5, & 6. Available at: http://www.fws.gov/northeast/virginiafield/pdf/NLEBinterimGuidance6Jan2014.pdf (Accessed April 2020).

USFWS. 2015. *Northern Long-eared Bat Fact Sheet*. Available at: https://www.fws.gov/midwest/endangered/mammals/nleb/pdf/NLEBFactSheet01April2015.pdf (Accessed April 2020).

USFWS. 2016. *Wetlands Code Interpreter.* National Wetlands Inventory. Available at: https://fwsprimary.wim.usgs.gov/decoders/wetlands.aspx (Accessed April 2020).

USFWS. 2019a. *Wetlands Mapper Documentation and Instruction Manual*. National Standards and Support Team, Madison, Wisconsin. Available at: https://www.fws.gov/wetlands/documents/Wetlands-Mapper-Documentation-Manual-May-2019.pdf (Accessed April 2020).

USFWS. 2019b. *Northern Long-eared Bat Range Map.* Available at: https://www.fws.gov/midwest/Endangered/mammals/nleb/nlebRangeMap.html (Accessed April 2020).