Attachment P

Revised Exhibit 14. Wetlands

BROOKSIDE SOLAR, LLC

Matter No. 21-00917

900-2.15 Exhibit 14

Wetlands

Contents

Tables

Figures

Appendices

Acronym List

AES	The AES Corporation, Inc.
ECL	NYS Environmental Conservation Law
FGDC	Federal Geographic Data Committee
HDD	horizontal directional drilling
JD	Jurisdictional Determination
kV	kilovolt
LOD	limit of disturbance
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDPS	New York State Department of Public Service
NYSEG	New York State Electric and Gas
ORES	Office of Renewable Energy Siting
PEM	Palustrine Emergent
PFO	Palustrine Forested
PJD	Preliminary Jurisdictional Determination
PSS	Palustrine Scrub-Shrub
PUB	Palustrine Unconsolidated Bottom
REPH	Riverine Ephemeral
RIN	Riverine Intermittent
RUP	Riverine Perennial
USACE	United States Army Corps of Engineers
USCs	Uniform Standards and Conditions
USDA	United States Department of Agriculture

Glossary Terms

Applicant	Brookside Solar, LLC, a subsidiary of The AES Corporation, Inc. (AES), the entity seeking a siting permit for the Facility from the Office of Renewable Energy Siting (ORES) under Section 94-c of the New York State Executive Law.
Facility	The proposed components to be constructed for the collection and distribution of energy for the Brookside Solar Project, which includes solar arrays, inverters, electric collection lines, and the collection substation.
Facility Site	The parcels encompassing Facility components, which totals 1,471 acres in the Towns of Burke and Chateaugay, Franklin County, New York (Figure 2-1).
Limits of Disturbance	The area to which construction impacts will occur, totaling approximately 645 acres.
Study Area	In accordance with the Section 94-c Regulations, the Study Area for the Facility includes a radius of 5 miles around the Facility Site boundary, unless otherwise noted for a specific resource study or Exhibit. The 5-mile Study Area encompasses 69,963 acres, inclusive of the 1,471-acre Facility Site.
Wetland Survey Area	The 1,286 acres of leased area within the 1,471-acre Facility Site where wetland and stream delineations were conducted.

Exhibit 14: Wetlands

This Exhibit provides information required in accordance with the requirements of Section 900-2.15 of the Section 94-c Regulations.

14(a) Map Depicting Wetland Boundaries

Field surveys were conducted to identify wetlands and streams within the Wetland Survey Area and within 100 feet of areas to be disturbed by construction of the Facility. The Wetland Survey Area is composed of the 1,286 acres of leased area within the 1,471-acre Facility Site. Surveys were performed in accordance with the *United States Army Corps of Engineers* (*USACE) 1987 Wetland Delineation Manual* (Environmental Laboratory, 1987) and the *2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)* (USACE, 2012), the *New York State Freshwater Wetlands Delineation Manual* (Browne et al., 1995), and the New York State Department of Public Service (DPS) Staff interpretation dated May 31, 2018, concerning the delineation of all federal, state, and locally regulated wetlands present within the Wetland Survey Area and within 100 feet of areas to be disturbed by construction, including the interconnections.

TRC conducted onsite wetland surveys for the 1,286 acres of Wetland Survey Area. The area delineated is referred to as the Wetland Survey Area throughout this exhibit and is shown on Figure 14-1. Wetland and stream delineations took place in June, October, and December 2020, and May 2021. Figure 14-1 includes wetlands and their adjacent areas within 100 feet of the limit of disturbance (LOD). Table 14-2 below summarize proposed impacts to mapped wetlands and regulated adjacent areas within the Wetland Survey Area due to construction activities associated with the solar array and appurtenant facilities installation.

Table 14-1. Delineated Wetland and Regulated Adjacent Area Acreages

Feature Type	Acres
Total Delineated Wetlands within Wetland Survey Area	73.15 acres
Total State-Jurisdictional Delineated Wetlands	28.64 acres
Total State-Jurisdictional 100-foot Adjacent Areas	42.72 acres

Table 14-2. Impacts to State-Jurisdictional 100-Foot Adjacent Areas

Field ID	Wetland Class[1]	Impact Type	State Wetland Class	State Mitigation Requirements[5]	Impact Acres	Total Impacts		Page Number from Civil Drawing
						Sq Ft	Acres[3]	
W-JJB-14	PEM/PSS	Tree Clearing	Unmapped >12.4 acres	A	0.13	51,158.14	1.17	PV-C.00.12
		LOD		A	0.34			
		Fence line		A	<0.01			
		Fenced Area		A	0.11			
		Tree Clearing[2]		A	0.52			
		Array Area		A	0.50			
W-JJB-2	PEM/PSS	Access	Unmapped >12.4 acres	A	0.07	33,456.67	0.77	PV-C.00.06
		Array Area		A	0.03			
		Fenced Area		A	<0.01			
		Fenced Line		A	<0.01			
		Grading		A	0.01			
		LOD		A	0.51			
		Laydown Yard		A	0.02			
		Culvert/Riprap		A	<0.01			
W-NSD-3	PEM	HDD Pits	Unmapped >12.4 acres	A	0.01	37,677.30	0.86	PV-C.00.07
		LOD		A	0.84			
		Fenced Area		A	<0.01			
		Fenced Line		A	<0.01			
Totals	-	-	-	-	**2.81**	**122,292.11**	**2.81**	-

14(b) Wetland Delineation Survey Reports

A description of wetland and stream cover types delineated within the Wetland Survey Area associated with the Facility Site are described in detail below and in the Wetland and Stream Delineation Report included herein as Appendix 14-1. Each wetland was assigned cover types based on the Cowardin classification system (Federal Geographic Data Committee, 2013). In some instances, a delineated wetland or stream contained multiple cover types due to its size and/or a more complex community character. Boundaries were demarcated and data plots were collected for each specific cover type. This method was used to establish a more complete depiction of wetlands and a more informative approach to any potential future mitigation efforts. Further information regarding the results of the Wetland Survey Area is included in Appendix 14-1. Additionally, total delineated wetland acreage and regulated adjacent area acreage is provided in Table 14-1.

Palustrine Emergent wetlands (PEM) – Within the Wetland Survey Area, 25 wetlands delineated contain characteristics representative of the PEM classification. PEM wetlands are dominated by an herbaceous layer of hydrophytic (water-tolerant) plant species. PEM wetlands typically contain deep, nutrient rich soils that remain heavily saturated or even inundated throughout the year.

PEM wetlands encountered in the Wetland Survey Area were typically dominated by reed canary grass (*Phalaris arundinacea*), narrowleaf cattail (*Typha angustifolia*), white meadowsweet (*Spiraea alba*), common fox sedge (*Carex vulpinoidea*), lamp rush (*Juncus effusus*), single-vein sweet flag (*Acorus calamus*), and sensitive fern (*Onoclea sensibilis*). Evidence of wetland hydrology for these resource areas includes saturation, water-stained leaves, drainage patterns, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. Observed soils reflected hydric soil indicator features outlined in *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.2* (Natural Resources Conservation Service [NRCS], 2018). Although hydric soil indications were variable, PEM wetlands within the Wetland Survey Area typically displayed silty clay loam, clay loam, and clay soils. Variations of characteristics in the soil matrices generally demonstrated Depleted Matrix (F3) and/or Redox Dark Surface (F6) hydric soil indicators.

Palustrine Scrub-Shrub wetlands (PSS) – Within the Wetland Survey Area, 10 wetlands delineated contained characteristics representative of a PSS wetland community. PSS wetlands

are dominated by woody shrub vegetation that stands less than 20 feet tall. Shrub species dominating the wetland could include true shrubs, a mixture of young trees and shrubs, or trees that are small or stunted due to stressors from environmental conditions.

PSS wetlands encountered in the Wetland Survey Area were typically dominated by speckled alder (*Alnus incana*), gray willow (*Salix bebbiana*), nannyberry (*Viburnum lentago*), and black willow (*Salix nigra*). Evidence of wetland hydrology for these resource areas includes saturation, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. PSS wetlands typically displayed clay loam and silt loam soils. Variations of characteristics in the soil matrices generally demonstrated Depleted Matrix (F3) and/or Redox Dark Surface (F6) hydric soil indicators.

Palustrine Forested wetlands (PFO) – Within the Wetland Survey Area, nine wetlands encountered contained characteristics representative of a PFO wetland. PFO wetlands are sometimes referred to as swamps and are dominated by tree species 20 feet or taller with an understory of shrub and herbaceous species. Understory vegetation presence readily varies, as the upper canopy of tree species may block light needed for extensive vegetative growth in the understory. Coniferous swamps, lowland hardwood swamps, and floodplain forests are common types of PFO wetlands. Soils in PFO wetlands are typically inundated or saturated early spring into summer. Some PFO wetlands may dry up entirely, which reveal water stain marks along the trunks of exposed tree species and shallow, buttressed root systems indicative of periods of heavy inundation events.

PFO wetlands encountered in the Wetland Survey Area were typically dominated by green ash (*Fraxinus pennsylvanica*), black willow, and black spruce (*Picea mariana*) in the tree stratum, and gray dogwood (*Cornus racemosa*) and Morrow's honeysuckle (*Lonicera morrowii*) within the shrub stratum. Evidence of wetland hydrology for these resource areas includes saturation, high water table, saturation visible on aerial imagery, geomorphic position, and the FAC-neutral test. PFO wetlands typically displayed silty clay loam and clay loam soils. Variations of characteristics in the soil matrices generally demonstrated Depleted Matrix (F3) and/or Redox Dark Surface (F6) hydric soil indicators.

Palustrine Unconsolidated Bottom (PUB) wetlands – Within the Wetland Survey Area, one wetland encountered was observed to contain characteristics representative of PUB wetland communities. PUB wetlands are characterized by surface water and have less than 30 percent

vegetative cover and at least 25 percent cover of particles less than stones. As these are bodies of standing water, evidence of wetland hydrology was decisively present with standing water ranging from approximately 2 to 4 feet in depth. Dominant vegetation near the perimeter of the PUB wetlands included narrowleaf cattail, devil's pitchfork (*Bidens frondosa*), and black willow. Evidence of wetland hydrology included surface water, high water table, saturation, inundation visible on aerial imagery, geomorphic position, and the FAC-neutral test.

Riverine Streams (RUP, RIN, REPH) – Within the Wetland Survey Area, 25 streams were delineated. Classification of streams were dependent on a temporal description of their usual level of flow regimes. Riverine perennial streams (RUP) tend to flow all year, except during severe drought conditions. RUP streams can flow below the water table and receive groundwater flow sources from springs or groundwater seepages on slopes. Riverine intermittent streams (RIN) flow only during certain times of the year from alternating springs, snow melts, or from runoff from seasonal precipitation events. RIN streams can flow above or below the water table. Riverine ephemeral steams (REPH) flow sporadically and are entirely dependent on transient precipitation from storm events or from periodic snow melts. These streams tend to flow above the water table and are often found as drainage features adjacent to, or within, the headwaters of a more major stream system.

Streams encountered within the Wetland Survey Area were mostly intermittent in nature along gentle to moderate gradients (0 to 4 percent). Stream widths ranged from 2 to 6 feet. Streams generally contained channel substrates of silt, clay, cobble, gravel, and sand with probed stream depths in the range of 0 to 6 inches. Most streams were determined to lack substantial features to permit the prevalence of aquatic ecologies. Only a small number of streams within the Facility were determined to contain significant aquatic habitat to establish and support fish and wildlife populations. Most of the stream systems supporting aquatic habitats were found to be perennial, as an annual flow regime allows for a more readily established life cycle.

Further characterization of the wetlands and streams can be found in Appendix 14-1, the Wetland and Stream Delineation Report.

Mapping by the New York State Department of Environmental Conservation (NYSDEC) depicts no NYSDEC-mapped wetlands within the Wetland Survey Area. Therefore, none of the wetlands delineated by TRC within the Wetland Survey Area would fall under NYSDEC jurisdiction pursuant to Article 24 of the NYS Environmental Conservation Law (ECL).

Therefore, the only regulated wetlands identified, are unmapped wetlands greater than 12.4 acres which ORES has asserted jurisdiction under 94-c. All regulated wetlands located within the Wetland Survey Area are listed in Table 3 of Appendix 14-1. All features delineated during the onsite wetland surveys and their State regulated adjacent areas are shown in Figure 14-1. The Applicant received the Jurisdictional Determination (JD) from ORES on July 27, 2021 (Appendix 14-3). The ORES JD identified five wetlands to fall under State jurisdiction. Three wetlands (W-JJB-14, W-JJB-2, and W-NSD-3) will be impacted as seen in Table 14-2 and two wetlands (W-JJB-22 and W-JJB-23) will be avoided.

The Applicant also requested a Preliminary Jurisdictional Determination (PJD) from the USACE on July 27, 2021, and had a USACE site visit on November 10, 2021. The PJD and AJD were submitted December 20, 2021 and received the PJD from the USACE on July 15, 2022. The Applicant will comply with all permit requirements for any impacts to USACE jurisdictional wetlands. All wetland features delineated during the onsite wetland surveys are shown on Figure 14-1, while the existing mapped wetlands are shown in Figure 13-2 in Exhibit 13.

14(c) Qualitative and Descriptive Wetland Function Assessment

Past efforts to use best professional judgements to interpret wetland functions and values would often be unorganized, unpredictable, and legally difficult to document and defend. In response, the USACE developed a supplement to the *Highway Methodology Workbook entitled Functions and Values: A Descriptive Approach* (Supplement) (USACE, 1999). This assessment example was created to collect and describe the functions and values assessment of wetlands in a measurable and un-biased perspective. It is for these reasons that the Applicant elects to use elements of the USACE, Highway Methodology, and processes outlined in the Supplement, to conduct a qualitative assessment of the physical characteristics of the wetlands and identify the functions and values they exhibit.

The functions and values of wetlands are the favorable services that a wetland provides to its surrounding environment and towards the benefit of human society (USACE, 1999). Functions and values operate as the result of specific biological, chemical, and physical characteristics within the wetland, and are the basis of many complex relationships maintained between the wetland, the watershed, and the local ecological and human environments.

Assessing a specific wetland's functions and values is needed to determine the overall effects an impact or alteration may have on a wetland feature. Ultimately, such a measurement aids in establishing the appropriate type and amount, if any, of possible mitigation after impacts to a wetland occur. More recently, the assessment of the functions and values for wetlands have been used to consider wetland features for their value and functional significance, to better ensure that wetlands with specific and higher functions or values receive proper vindication. Toward that end, a wetland functions and values assessment was undertaken for the Wetland Survey Area. A comprehensive description of the functions and values of all wetlands delineated follows.

The thirteen functions and values that are considered by the USACE through their Supplement are listed below. The list includes eight functions and five values. Although the functions and values are not the only wetland functions and values possible, they do represent the current working suite provided by the USACE for regulatory consideration and do match with the wetland benefits described within the ECL under Article 24. As such, they are thought to provide an objective and meaningful representation of the wetland resources associated with the Facility. Based on processes outlined in the Supplement, a spreadsheet was created to include several basic considerations ("qualifiers") that help identify the functions and values provided by wetlands. These considerations are numerous, but include observed vegetation conditions, hydrologic conditions, size, adjacent area conditions, and the availability of public access. To see the spreadsheet and receive more detail on the functions and values assessment, See Appendix 14-2 for the Brookside Wetland Functions and Values Assessment. Each wetland's functions and values were evaluated based on data collected during the wetland delineation, meeting specific conditions. Various wetland characteristics were identified for each wetland. Based on these data, the functions and values provided were determined.

Wetland Functions

Wetland functions are the properties or process of a wetland ecosystem, which aid in promoting a homeostatic natural environment in the absence of human interference. A wetland's specific function(s) results from both organic and inorganic components, including physical, geologic, hydrologic, chemical, and biological systems. These components include all processes necessary for the self-maintenance of the wetland ecosystem and relate to the ecological significance of wetland properties without regard to subjective human values. The eight

functions defined by the Supplement, including short descriptions defining each function, are as follows:

1. Flood-flow Alteration – This function applies to the effectiveness of the wetland in reducing flood damage by containing an enhanced ability to store floodwaters for an extended period following heavy precipitation events.
2. Groundwater Recharge/Discharge – This function defines the potential for a wetland to act as a source of groundwater recharge and/or discharge. Recharge describes the potential for the wetland to contribute water to an underlying aquifer. Discharge relates to the potential for the wetland to act as a source of groundwater transfer to the surface i.e., springs and hillside seeps.
3. Sediment/Pollutant Retention – This function describes the ability of a wetland to hinder the degradation of water qualities downstream. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens based on its geomorphic position, connectivity, soil thickness, and other physical characteristics.
4. Fish and Shellfish Habitat – This function defines a wetland's ability to contain or influence suitable habitats for fish and shellfish species.
5. Sediment/Shoreline Stabilization – This function defines a wetland's ability to effectively stabilize streambanks and shorelines against future erosion events.
6. Production Export – This function relates to a wetland's ability to produce food or usable products for organisms, including humans, within the trophic levels associated with the watershed.
7. Nutrient Removal/Retention/Transformation – This function relates to the wetlands containing the ability to prevent excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.
8. Wildlife Habitat – This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Resident and migrating species were considered along with the potential for any state or federally listed species occurring within the target wetland.

Wetlands within the Wetland Survey Area displayed multiple functions based on their specific site characteristics. All delineated wetlands were determined to have the ability to provide some

function of flood-flow alteration, sediment/toxicant/pathogen retention, and nutrient removal/retention/transformation. The primary functions displayed by wetlands within the Wetland Survey Area include:

- Wildlife Habitat
- Groundwater Recharge or Discharge
- Production Export
- Sediment/Shoreline Stabilization

Wetland Values

Values are the societal benefits stemming from one or more of the functions associated with a wetland. Most wetlands have a corresponding public value to an assessable degree. The value of a wetland function, or a combination of functions, is based on the interpretative judgement of the significance attributed to the wetlands through various functions it provides. The five values defined by the Supplement and adopted for use in this assessment, including short descriptions defining each value, are documented below.

1. Recreation – This value indicates whether the wetland is effective in providing or assisting in the establishment of recreational opportunities such as boating, fishing, hunting, and other leisurely pursuits. Recreation in this capacity includes both consumptive and non-consumptive activities. Consumptive activities consume or diminish the plants, animals, or other resources that are naturally located in the wetland, whereas non-consumptive activities do not.
2. Education/Scientific – This value considers the effectiveness of the wetland as a site for public education or as a location for scientific research.
3. Uniqueness/Heritage – This value applies to wetlands that contain a singular or rare quality. Special qualities may include such things as the wetland's history and the presence of archaeological sites, historical events which may have taken place at the wetland, or unique plants, animals, or geologic features located within, or supported by, the wetland feature.
4. Visual Quality/Aesthetics – This value relates to the visual and aesthetic qualities of the wetland.

5. Threatened or Endangered Species Habitat – This value related to the effectiveness of the wetland or associated waterbodies to specifically support threatened or endangered species.

Values, providing societal benefits, are limited within this Study Area due to the wetlands being largely inaccessible to the public. The primary values displayed by wetlands within the Wetland Survey Area include:

- Recreation, and
- Visual Quality and Aesthetics.

For more detail on the functions and values assessment, please see the Wetland Functions and Values Assessment in Appendix 14-2.

14(d) Offsite Wetlands Hydrological and Ecological Influence Analysis

Wetlands outside the Facility Site were approximated within at least 100 feet of the LOD using aerial imagery, review of wetland mapping databases maintained by the National Wetlands Inventory (NWI) and NYSDEC, reference to onsite observations, and an analysis of publicly available topographic contour mapping. The approximation of wetlands within at least 100 feet of the LOD was used to determine hydrological connections to these offsite wetlands, including possible offsite State-jurisdictional wetlands protected by the NYSDEC that are located outside the Facility Site. There were 13 approximated offsite wetlands identified. TRC delineated these wetlands onsite during wetland and stream surveys, and by using aerial imagery and publicly available data to identify approximate wetland boundaries where property access was not granted. All approximated wetlands were extensions of field-delineated wetlands within the Wetland Survey Area as noted by TRC during onsite survey efforts. As such, these specific approximated wetlands would likely be considered federally jurisdictional by the USACE. Additionally, none of the wetlands appear to have offsite hydrological connections to any State-jurisdictional wetland.

14(e) Avoidance of Impacts to NYS Wetlands and Adjacent Areas

TRC delineated a total of 38 wetlands within the Wetland Survey Area, five of which are State-jurisdictional. ORES provided the Applicant with a JD regarding State-regulated wetlands and

streams on July 27, 2021 (Appendix 14-3). The Facility avoids impacts to all Article 24 wetlands due to there being no mapped NYSDEC features within the Facility Site.

The Facility design process used information from the wetland and stream delineation to place components where they would avoid and/or minimize impacts to State-jurisdictional wetlands (and their 100-foot adjacent areas) and waterbodies wherever possible. The current Facility layout avoids permanent impacts to all of the five State-jurisdictional wetlands and waterbodies by locating Facility solar array structures and other Facility components outside the delineated features to the maximum extent practicable. In addition, haul roads and collection lines were routed around delineated features. The Facility is designed to avoid/minimize impacts to these wetlands by siting solar arrays, racking systems, collection lines, and all other Facility components at least 75 feet away from wetland boundaries which is required for undisturbed adjacent areas (Appendix 5-1 Design Drawings). Instances where the 75-foot setback could not be met are further detailed in Table 14-2 above. Where non-jurisdictional wetlands are encountered and must be impacted by Facility components, the narrowest and/or smallest portion of the wetlands will be used.

14(f) Minimization of Impacts to NYS Wetlands and Adjacent Areas

Impacts to State-jurisdictional wetlands have been minimized to the maximum extent practicable. The Applicant carefully designed the Facility to avoid and minimize impacts to State-jurisdictional wetlands and the adjacent areas. Through avoidance and minimization efforts including a thorough design process and multiple drafts and revisions of the Facility, the Applicant will not be permanently impacting any State-jurisdictional wetlands through haul road construction and culvert installation. Haul roads are necessary for the construction of the Facility and have been sited in the narrowest point of the wetland to minimize impacts. Impacts to State-regulated adjacent areas total 2.81 acres which are primarily in agricultural areas. Facility components sited in regulated adjacent areas include solar panels, a horizontal directional drilling (HDD) bore pit, and security fences. Vegetation clearing in these areas is also necessary to prevent shading on nearby solar arrays.

(1) Limitations for Avoidance

The Facility is designed to avoid/minimize impacts to wetlands and regulated adjacent areas by siting solar arrays, racking systems, collection lines, and all other Facility components at least

75 feet away from wetland boundaries, as practicable (Appendix 5-1, Design Drawings). There will be 2.81 acres of State-jurisdictional wetland impacts to adjacent areas. The three State-jurisdictional wetlands that will have adjacent area impacts are W-JJB-14 (1.17 acres), W-JJB-2 (0.76 acres), and W-NSD-3 (0.87 acres). There will be 0.03 acres of wetland impacts to one State-jurisdictional wetland, W-JJB-14. These impacts to the adjacent areas and wetlands are a result of tree clearing to prevent shading of facility components, installation of collection trenches, HDD pits, LOD, haul roads, grading, fence lines, fenced areas, and the array area in managed agricultural fields (Table 14-3).

Panel Layout Design Constraints and Further Impact Avoidance

The Applicant has taken an iterative design approach to, by and large, avoid wetlands within the Project Site through project design changes. A more compact project improves economics so it is in the best interest of the developer to maximize utilization of available land and minimize "orphan areas" within the fence-line since those areas are leased for the Project. However, invariably, a number of constraints emerged in project design which left open areas of land without panels that might otherwise appear usable. Environmental constraints, such as larger wetland complex impacts, cultural impacts, habitat impacts, and leased landowner preferences were initial constraints on the location of components. On a more "micro" level, additional constraints that must be considered include:

1. Technical Feasibility and Fixed String Length – Single axis tracking hardware has emerged as the most cost competitive configurations (as opposed to fixed tilt) for PV panels. Panels are not "plug and play" in small segments. "Trackers" come in fixed string lengths and anticipated module designs for this Project have fixed those lengths at 200 and 300 feet, as shown in the design plans. Consequently, if there is an area that has room for a 290- foot string, it must be truncated to 200-feet, and if there is an area with room for a 190- foot string, that string must be dropped entirely. The result is that while a developer will seek to maximize land utilization, a panel layout will often have a jagged saw tooth edge leaving areas, often in a triangular shape without panels.

2. Slope and Topography – Trackers are limited to changes in elevation along the length of the string. An area may otherwise look available for panels, but variation in elevation may be above what is practical to accommodate with tracking hardware.

3. Shading – Trees with considerable canopy height can cast shadows on panels limiting their energy capture. Typically, panels would be set back from tree lines at least 2 times canopy height to avoid or minimize shading losses.

4. Setbacks – The Applicant had to adhere to various setbacks required by 94-c or local ordinances, or to address specific landowner concerns or preferences. Section 94-c has several requirements that dictate setbacks to roads, property lines etc. Those may not be evident simply by looking at panel layouts at a micro level, but the broader design must accommodate those setback requirements.

5. Inverter Size – Panels in an array are collected as Direct Current (DC) and then aggregated at an inverter and converted to Alternating Current (AC). Inverters come in various sizes, but they are step functions and not a continuous range of sizes. There can be instances where usable panel area in a given area exceeds the capacity of the nearby inverter and it is not practical to increase the size of the inverter for a marginal increase in panel count. Similarly, there can be areas that are not large enough to support an inverter on their own. In either case, this can result in residual locations of land without panels.

(2) Minimization Measures

The Applicant has avoided all routing and siting options for State-jurisdictional wetland crossings, using narrow crossing locations and existing crossings wherever possible to access Facility components. All alternatives regarding Facility design were examined and the current design incorporates these alternatives. State-jurisdictional wetland impacts have been eliminated through careful design and study of the Wetland Survey Area.

(3) Wetland Function Considerations in Design and Siting

The Facility was designed and sited to minimize impacts to State wetlands based on the functions and values of the wetlands. As detailed in Table 14-2, impacts to scrub-shrub wetlands will be minimized through selective tree clearing, which will not involve any grading or grubbing of tree stumps. Impacts to wetlands that are seasonally saturated/inundated will be minimized. Facility components sited within wetlands were predominantly sited in PEM and PSS wetlands within agricultural fields, which typically have lower functions and values.

(4) Wetland Function in Adjacent Areas

The Facility layout and siting will improve the functions and values of the adjacent areas on-site. Adjacent areas provide a valuable protection adjacent area for the wetlands and often share the functions and values of the wetlands they surround. According to 19 NYCRR §900-2.15(g), the proposed Facility components sited within State-regulated adjacent areas are all classified as "Allowable" for State-jurisdictional wetlands classified as "Class III, IV, or Unmapped > 12.4 acres". Facility components sited within State-regulated adjacent areas are primarily limited to solar panels, security fencing, HDD pits, access roads, culverts, selective tree clearing, tree clearing, and laydown yards. Selective tree clearing is also proposed which will not result in ground disturbance. Existing functions in adjacent areas are minimal due to historical farming. Within adjacent areas of delineated State-regulated wetlands, the majority of impacts will occur within existing disturbed areas (i.e. active hay/row crops). The primary functions and values of the impacted wetlands are sediment, toxicant, pathogen retention; nutrient removal, retention, and transformation; and flood flow alteration, respectively. The functions and values are expected to be increased by the Facility because all impacted adjacent areas will be removed from agricultural production and planted with a native seed mix which will stabilize the ground, minimize erosion, increase biodiversity and wildlife habitat, and restore the land post-construction. This will also improve the ecological richness and vegetative cover density leading to an increase in the various functions and values associated with impacted State-regulated adjacent areas. Additionally, there are no impacts to PSS wetlands or their associated adjacent areas within the Facility Site. Therefore, habitat functions and values and resource connectivity will remain intact. Adjacent areas that fall outside the LOD will act and function naturally without disturbance from agriculture, which will likely improve the presently limited functions and values.

Table 14-3. Avoidance and Minimization of Temporary and Permanent Wetland Impacts

Field ID	Avoidance and Minimization Efforts	Total Impacts[1]		Page Number from Civil Design
		Sq Ft	Acres	
State Jurisdictional Delineated Wetland 100-foot Adjacent Area Impacts				
W-NSD-3	HDD pits, LOD, fence, collection trench,	1,037,217.31	24.006	PV-C.00.11 PV-C.00.12 PV-C.00.13 PV-C.00.14 PV-C.00.15
W-JJB-2	Fence, LOD, array, access road, grading, laydown yard, culvert,	19864.71	0.456	PV-C.00.01
W-JJB-14	Selective tree clearing, tree clearing, LOD, fence, array	73278.90	1.682	PV-C.00.03 PV-C.00.04
Totals[2]	**-**	**1158318.99**	**26.845**	**-**

[1] Total impacts were calculated by intersecting delineated wetland polygons with each impact type. Impact calculations are subject to rounding errors and may differ slightly from calculations provided in the shapefiles.
[2] Total amount of delineated wetland is 73.15 acres, and the total amount of adjacent area within the Facility Site is 31.52 acres.

14(g) Wetland Restoration and Mitigation Plan

As described throughout this Exhibit, impacts to wetlands and streams have been avoided and minimized to the extent practicable. Wetland impacts are limited to 0.03 acres (1,447.14 square feet). This type of impact (selective tree clearing) does not require any enhancement or mitigation due to the type of tree removal; therefore, this impact requires no compensatory state mitigation. The wetland mitigation requirements set forth in 19 New York Codes, Rules and Regulations (NYCRR) Section 2.15(g) do not require a 1:1, 2:1, or 3:1 mitigation ratio for impacts related to selective tree clearing.

Conclusions

TRC delineated a total of 38 wetlands within the Wetland Survey Area of the Facility Site. The Facility design process used information from the wetland and stream delineation to place components where they would avoid and/or minimize impacts to State-jurisdictional wetlands (and their 100-foot adjacent areas) wherever possible. Impacts to State-jurisdictional wetlands total 0.03 acres and will not require compensatory mitigation. A wetland mitigation and restoration plan will be developed in accordance with Section 900-2.15(g). This plan will detail the wetland mitigation or enhancement, with an intent to reduce the presence of invasive species and increase the wetland's biodiversity. If possible, the Applicant may use a mitigation bank located within the same watershed. The Applicant will provide the full wetland mitigation and restoration plan as a pre-construction compliance filing after further consultation with ORES and NYSDEC. Additionally, the Applicant intends on planting native vegetation with a wetland plant mix that includes local species to ensure impacts to wetlands are minimal. The Facility has been designed to comply with 19 NYCRR Section 900-2.15 and the Uniform Standards and Conditions (USCs) and impacts related to wetlands have been avoided and minimized to the maximum extent practicable.

References

Browne, S., Crocoll, S., Goetke, D., Heaslip, N., Kerpez, T., Kogut, K., Sanford, S., and D. Spasa. 1995. New York State Freshwater Wetlands Delineation Manual. New York State Department of Environmental Conservation (NYSDEC), Division of Fish and Wildlife, Bureau of Habitat, Albany, NY.

Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1. U.S. Army Corps of Engineers (USACE): Waterways Experiment Station; Vicksburg, MS.

Federal Geographic Data Committee (FGDC). 2013. The Classification of Wetlands and Deepwater Habitats of the United States, Second Edition.

New York State Department of Environmental Conservation (NYSDEC). 1993. Freshwater Wetlands Regulation Guidelines on Compensatory Mitigation.

United States Army Corps of Engineers (USACE). 1999. The Highway Methodology Workbook *Supplement.* Wetland Functions and Values A Descriptive Approach.

USACE. 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0). U.S. Army Engineer Research and Development Center, Vicksburg, MS, 162 pp.

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2018. Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soil.