EIGHT POINT WIND, LLC

115kV Transmission Line Project

Case No. 18-T-____

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Exhibit 4: ENVIRONMENTAL IMPACTS

4.1 Introduction

Eight Point Wind, LLC (Eight Point Wind or Applicant) is planning to construct, operate and maintain a new overhead 115 kV transmission line (Project or Facility). The approximately 16.5 miles transmission line is proposed to begin at the proposed Eight Point Wind Energy Center collection substation in Greenwood and interconnect to new Point of Interconnection (POI) facilities within the New York State Electric and Gas Corporation (NYSEG) existing 115 kV Bennett substation in Hornellsville, New York. A right-of-way (ROW) of approximately one hundred (100) feet will be established along the transmission line, although there are relatively short segments where the ROW could be seventy-five (75) feet or one hundred fifty (150) feet. This transmission line and its ROW and POI are collectively referred to as the Project or Project facilities. When the term Project Area is used, the document will define the relevant area of interest.

As the transmission line is greater than 100 kV and the length exceeds 10 miles, the Applicant is seeking a Certificate of Environmental Compatibility and Public Need (Certificate) from the Public Service Commission (Commission) under Article VII of the Public Service Law (PSL) in this Case 18-T-____ for the construction of the approximately 16.5 miles of 115 kV transmission line, and associated upgrades to the existing Bennett substation. This Application applies only to the Article VII jurisdictional facilities, and does not include the EPWEC.

The Project has been conceived and the engineering design has been developed in a manner that represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations. Extensive field investigations, literature reviews, and agency consultations have been and/or are being conducted to identify and assess existing environmental conditions within the vicinity of the Project. This Exhibit summarizes the results of environmental impact studies undertaken by the Applicant to date under the following categories:

- Land Uses, including Agricultural;
- Visual and Aesthetics Resources;
- Historic and Archaeological Resources;
- Vegetative and Wildlife Resources;
- Wetlands and Water Resources;
- Geology, Topography, and Soils;
- Noise; and
- Invasive Species.

The environmental impact studies results describe existing conditions; methodologies used in the investigation; the anticipated environmental effects of the proposed transmission line and associated facilities; and, the identification of measures that, if necessary or deemed appropriate, would be implemented so that the Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations. The unit of analysis for this assessment was an assumed ROW of one hundred (100) feet.

4.2 Project Description

The proposed transmission line will pass through the towns of Greenwood, Hartsville, and Hornellsville in Steuben County, New York. The route begins as the line exits the proposed 115-34.5 kV collection substation located in Greenwood, at the corner of Town Line Road and Christian Hollow Road. The proposed collection substation is located on the EPWEC site and is being permitted as part of the EPWEC Article 10 Application. An environmental assessment has been completed for the entire line including wetland surveys, aerial drone high-resolution photography, site walkdowns, and LIDAR.

The transmission line will terminate at new POI facilities within NYSEG's existing Bennett substation. The Bennett substation is located on the east side of NY-36 in the Town of Hornellsville, New York. The existing Bennett substation will be modified to accommodate the new 115 kV transmission line. The Applicant has been in consultation with NYSEG regarding the Project and the required upgrades.

4.2.1 Construction of the Project

The following construction plan provides an overview of the transmission line construction techniques that are proposed to be implemented during the construction phase of the Project. This plan focuses on construction methods, best management practices and other measures that will be employed when traversing uplands, agricultural land, streams, and wetlands and also during clearing operations and the building of Project components so that the Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations. The plan has been designed to provide sufficient flexibility to allow the application of the most appropriate construction methods based on current site-specific conditions. All construction activities will be conducted in accordance with the approved Project's Environmental Management and Construction Plan (EM&CP) including any Certificate Conditions and Best Management Practices, once approved by the Public Service Commission. All contractors will be required to adhere to these requirements and in addition to the Applicant's health and safety requirements, which will be detailed in the EM&CP.

Inclusive to the EM&CP, all provisions of the Certificate and also orders approving any revisions to the EM&CP shall be accommodated in any design, construction, ownership or maintenance contracts associated with the Project. If required, any conditions arise in provision of the Certificate will be incorporated into a revised EM&CP, and filed accordingly. If no revisions are necessary then the Applicant will compose a letter to the Commission certifying that no changes are required.

This plan is designed to minimize impacts to natural resources and facilitate construction activities so that adverse environmental impacts are minimized, considering available technologies, alternatives and pertinent considerations. The plan addresses the physical and biological processes of plant life and wildlife concerning any permanent or significant temporary changes in the hydrology, topography or soil in the project area. Construction will be performed in such a manner that: 1) natural resources will be have minimum adverse impact, 2) construction crews can safely install the transmission line, and 3) erosion and sedimentation events will be minimized considering available technologies, alternatives and pertinent considerations. As a result, the Project as proposed will not interfere with any natural water flow regime, violate any water quality law, create adverse erosion or sedimentation events, or unreasonably cause or increase atypical flooding events. In addition, this plan helps to ensure there will

be no unreasonable harm to wildlife habitats, including fisheries. In addition, selection of the proposed centerline attempts to balance potential impacts to vegetation, including trees, wetlands and agricultural land, to so that there will be the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations.

A soil erosion and sedimentation control plan will be developed and implemented as part of the stormwater pollution prevention plan (SWPPP) for the Project. The final SWPPP will be submitted to DEC as part of the EM&CP. Specific control measures are identified in the Preliminary SWPPP, which can be reviewed in Appendix 4-7 of this Application. The location of all approved control features will be indicated on the final construction drawings, as part of the EM&CP process, and will be reviewed with the contractor and other appropriate parties prior to construction. In keeping with certificate conditions issued for other recent Article VII applications, through coordination with an on-site Environmental Monitor, and applicable state agency staff, these control features will be inspected on a regular basis and after significant storm events to assure that they function properly throughout the period of construction, and until completion of all restoration work.

Facility construction will require the operation of heavy equipment for activities such as right-of-way clearing, access road construction, material and component delivery, transmission pole erection, installation of electrical interconnect, and site restoration. The noise generated by these activities will be associated with gasoline and diesel-powered engines as well as noise from jackhammers and/or rock drills, or localized blasting, if required due to geotechnical conditions. It is expected that construction noise will be similar to that of typical road or utility construction projects. Construction is only anticipated to take place during daylight hours. Furthermore, construction will take place at different locations along the ROW so any impacts to one area will be temporary.

Temporary, local, and minor impacts to air quality could result from the operation of construction equipment and vehicles. Impacts from fugitive dust created during site preparation and travel on newly created access roads and unpaved town roads could occur. Additionally, engine exhaust emissions from construction vehicles will occur. Fugitive dust and exhaust emissions would be at low levels and for limited durations, and would not significantly impact local air quality. Any impacts from fugitive dust emissions are anticipated to be short-term and localized, and will be mitigated using dust control measures such as spraying water on dirt roadways during extended dry periods and allowing dust to settle when encountered before traversing with a motor vehicle. The dust control water supply will come from approved local surface water sources. Any required municipal approvals will be obtained by the Applicant.

4.2.1.1 Transmission Line Construction

The proposed transmission line will require installation of steel monopoles, steel 3-poles, wood H-frame, and wood 3-pole structures at 143 locations along the route. The majority of the line will consist of the monopole structures, which limit the overall visual and land impacts. The predominant use of monopoles will also help reduce the width of the ROW over the use of wood H-frame structures. Based on the topography, existing roads and other difficult terrain issues, steel is the preferred material for these features. Wooden H-frames are only used on one small section where the landowner specifically requested it. All tangent structures will be direct embedded avoiding the need for typical concrete

caisson foundations. If soils, geology and topography are unfavorable, an alternative foundation will be proposed during detailed design, consistent with minimizing any potential environmental impacts to the maximum extent practicable. The medium angle and deadend structures will be guyed. Where guying is not feasible or not allowed per land agreements, site-specific, specialty structures on caissons will be evaluated on a per location basis.

The construction contractor will generally follow the established transmission line construction sequence listed below.

Establish construction yards and on-site staging areas;

The contractor will typically establish at least one principal working construction yard, office, and staging area in the vicinity of the ROW. This area is used to stage the bulk of construction materials such as poles, wire, and equipment and as a central point of communication. A secondary yard may be established to store some materials closer to their area of application. Site specific staging areas are established at strategic locations along the ROW, often where the line crosses existing public roads. These staging areas will be established away from protected natural resources, wetlands and other sensitive resources including scenic, recreational and historic areas. The staging areas will be cleared of vegetation as needed and include a prepared gravel base for vehicle use. Appropriate stormwater controls and security fencing will be included.

In addition to this primary construction yard, the Applicant will establish an estimated three staging areas along the Project route. It is anticipated that these laydown areas will be natural extensions of access roads and will result in the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations. Potential locations based on available land area are shown on Figure 2-2 contained in Exhibit 2, but the final siting of these areas will be subject to extensive landowner consultation as well as site- specific environmental assessments. A guiding principle will be to work with participating landowners as will be done with the temporary/permanent access roads. The Application will provide final locations for the laydown yards in the EM&CP, together with applicable mitigation measures.

Transmission Line Installation

The installation of the transmission poles and hanging of the transmission lines will generally involve the following BMPs:

- Complete the initial program “walk-through” with the environmental inspector, Third Party Inspector, engineer, and construction personnel as appropriate; they will also attend any pre-construction meeting(s) requested by DPS Staff.
- Plan and install erosion controls and access at protected resources such as streams, wetlands, areas of saturated soils, and areas susceptible to erosion as identified in the SWPPP;
- Establish temporary short-term (typically eighteen months or less) and temporary longer-term (typically more than eighteen months) construction access ways;
- Clear canopy vegetation and perform grading as necessary to accommodate construction equipment;
- Deliver poles and materials to structure and laydown locations;

- Complete test digging/drilling at various pole locations;
- Install erosion controls at structure locations;
- Excavate structure holes;
- Install structures;
- Complete restoration and grading around the structures;
- Establish "pull-pad" locations and move tensioning and pulling equipment into place;
- Thread and install pull ropes, conductor, and fiber optic wire;
- Clip conductor and remove blocks;
- Complete the construction inspection, clean-up, and restoration, and then energize the line; and
- Complete the final program "walk-through" and restoration.

Based upon applicable PSC precedent, the Applicant will propose BMPs in the EM&CP for all construction activities that will serve as a "tool box" for construction techniques and mitigation measures, based upon the specific field conditions that will be encountered on the ROW and for construction access roads. Measures that could be proposed include but are not limited to such activities as:

- Selectively retain low-growing trees and shrub species that do not have the potential to violate the minimum clearing distance for the transmission line (e.g. less than 20 feet in potential height);
- Establish clearing and disposal methods to accomplish ROW clearing and include location and extent of each clearing on maps;
- Establish laydown and equipment storage areas away from streams and wetlands;
- Vehicular access across wetlands or waterbodies shall be prohibited where alternative access can be provided.
- Access to wetlands should be limited to defined paths on temporary matting or snow pack;
- In wetlands, slash that is cut may be left in place (drop and lop) with a low ground cover and no piling. Any slash that is not left in place shall be removed from the wetland. No slash shall be collected and permanently piled in the wetland or adjacent area.
- Water from dewatering operations shall be pumped into a temporary straw bale/silt fence barrier or filter bag protected area to settle suspended silt material prior to discharge.
- The Project will identify, to the extent possible, the location of subsurface drain tiles on agricultural lands and conduct repair and restoration activities that accommodate future drainage installation;
- In agricultural areas, logs, stumps, brush, or chips shall not be piled or buried in active agricultural fields or improved pasture.

Vegetation Management

Initial vegetation management prior to and during construction utilizes manual and/or mechanical methods such as chainsaws, pruners or other heavy machinery. Portions of trees and other vegetation that extend into the clearing regions are typically trimmed. Vegetation that is completely within the clearing regions may be trimmed down such that they are classified as low lying growth, or may be removed completely (up-rooting, removal, etc.). Stump and root removal may be necessary to allow vehicles to traverse the temporary access roads and the transmission line right-of-way (ROW).

Continued maintenance may include a variety of manual trimming methods, as well as environmentally friendly and regulatory accepted herbicide treatments used to inhibit vegetation growth, where permitted. The frequency of inspection and management will depend on the rate of growth at the particular location along the lines. Low-lying growth and vegetation extending into the clear cut boundary will be checked regularly each year.

For typical details associated with vegetation management see the attached Vegetation Management Operations Manual as Appendix 4-1. Exhibit 5 contains drawings of the proposed ROW clearing extents.

While conducting vegetative management activities as well as routine maintenance measure, the Applicant will confirm that there have been no encroachments into the ROW by landowners or others. The Applicant's lease agreements prohibit any type of landowner construction or other activities that conflict with the safe operation and maintenance of the line within the Project ROW.

Access Roads

Installation of temporary construction roads will be required to allow equipment to access the proposed ROW. These roads will be primarily used during construction and are, therefore, temporary in nature. It is anticipated that the temporary construction roads will be 16 to 20 feet wide, depending on the terrain. The roads would be cleared to a stable ground level, avoiding the use of gravel or fill where possible. To the maximum extent practicable, the temporary access roads will be located so as to avoid and or minimize potential impacts to environmentally sensitive features. In addition, if existing logging roads and trails are available and environmentally appropriate, then efforts will be made to use such disturbed areas. The general areas where temporary construction access roads are proposed to be located are depicted in Exhibit 2 Location of Facilities. As a governing principle, the temporary access roads contemplated at this time would all be with participating landowners. Further discussions with landowners will continue in order to support temporary construction access and what individual requirements and concerns they may have. Final positioning of the temporary access roads will be presented in the EM&CP, together with design and mitigation measures tailored to each proposed access road. Permanent access roads may be required in some locations where there are features in the ROW that prevent continual movement of maintenance vehicles and equipment. The Applicant envisions that the need for permanent access roads will be determined as final engineering for the EM&CP is completed and would likely involve using one or more of the temporary access roads, with the concurrence of the participating landowners.

Structure Design and Installation

The transmission line as currently sited is designed to locate poles outside of wetlands and streams and on existing topographic contour lines so as to result in the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations. During the planning phase of the Project, the transmission line route was sited in such a way as to minimize any fragmentation of forestland and avoid wetland and stream impact. Transmission line routing and structures were sited on the edges of farm fields and away from residential areas.

Specifically in reference to the placement of individual pole structures, once a hole is prepared to the proper depth, a small crane is used to place the pole base tower sections in proper alignment. The construction crew aligns and plumbs each pole before filling the hole. Backfill will satisfy ASTM C33 size #57 material or approved equivalent for crushed rock. Some direct-embed structures will also be anchored with guy-wires of a type and design yet to be determined. A limited number of structures will be "self-supporting" structures that require a drilled caisson-type concrete foundation. In wet areas, crushed rock is used to replace some of the soil. In these circumstances, the spoil is removed and disposed of in an upland site, spread out, and mulched. In areas where more than one pole is required (e.g., specific transmission line designs and certain angle structures), the area of disturbance for the poles will overlap. Angle poles require guy wire anchor placement, which may slightly increase the area of disturbance around these locations.

For the mono pole structures, davit arms are attached before the pole is set in place. For structures with multiple poles, cross braces are hoisted into place using a crane; the braces are then affixed by workers climbing each pole. In each case, the insulators and blocks are subsequently attached. Figures showing basic pole designs are provided in Exhibit 5 of this Application.

A limited number of self-supporting steel structures will require a concrete caisson foundation for geo-tech or non-guyed locations.

Clean-up and Restoration

Following construction, clean-up and restoration activities will be conducted as required at all disturbed sites. Sites requiring restoration as a result of the construction work will be identified and the appropriate restoration measures applied in accordance with the EM&CP to be submitted for this Project. This work may include: regrading; temporary and permanent seeding and mulching for erosion control; and tree and shrub plantings in the vegetative buffer strips. Restoration of agricultural lands will be in compliance with existing New York State Agriculture and Market Department guidelines and could include measures such as seeding and mulching, and removal of timber matting used to prevent impacts to agricultural land. Restoration will also be completed in accordance with agreements with the landowners. All permanent seeding and tree and shrub planting work will be conducted during the growing season. Site restoration monitoring will continue for a time period proposed in the EM&CP and a notice will be provided when full restoration is complete. All impacted roadway surfaces will be restored to the proper condition as agreed to in road use agreements with the affected municipality.

4.2.1.2 Environmental Compliance and Monitoring Program

In an effort to maintain environmental compliance and the integrity of the Project, the Applicant will provide funding for an independent, third-party environmental monitor to oversee compliance with environmental commitments and Article VII certificate requirements. In addition, the Applicant has an established environmental compliance construction team that will also actively monitor the all construction activities. All certificate/permit conditions will be tracked to ensure compliance and oversight of the construction effort. Finally, the Applicant has a corporate environmental auditing team that will conduct periodic environmental audits during operations. The environmental audits are conducted generally once every three years at the site by a trained team of environmental auditors

assessing permit condition compliance and general operating standards and procedures. Audit findings are provided in confidential reports to management and corrective actions and good management practices are all reported as well.

The environmental compliance and monitoring program will be implemented in five phases which are summarized below.

Preparation Phase

Established environmental monitors (EMs) will review all environmental certificate/permits and prepare an environmental management document (Environmental Compliance Manual) that will be utilized in support of permit guidelines for the duration of the construction and operation of the Project. This document will depict all environmental requirements for construction and restoration included in all Project related certificate/permits and approvals, and will be utilized as a resource for the management of environmental issues which may occur.

Training Phase

Environmental monitors will conduct mandatory environmental training sessions for all contractors and subcontractors before they begin working on the site. The purpose of the training sessions will be to distribute the Environmental Compliance Manual, explain the environmental compliance program in detail, prior to the start of construction, and to assure that all personnel on site are aware of the permitting requirements for construction of the Project. Likewise, the corporate environmental compliance team will provide construction staff training concerning permit conditions and compliance requirements.

Coordination Phase

Prior to construction, environmental monitors along with associated contractors and interested state agency staffs will conduct an on-site walk down of areas to be impacted by construction operations. Work area limits will be defined by flagging, staking, or fencing prior to construction. This walk down will aid in the identification of any landowner preferences and concerns. This walk down will also locate sensitive resources, clearing limits, and proposed wetland and waterbody crossings and impacts. The placement of sediment and erosion control features will also be located. The pre-construction site review will serve as a critical means of identifying any required changes in the construction of the Project in a timely manner in order to avoid future delays to project construction timeframes.

Construction Phase

The EM will conduct daily inspection of active work areas. The environmental monitor will conduct inspections of all areas requiring environmental compliance during construction activities, with an emphasis on those activities that are occurring within or close proximity to jurisdictional/sensitive areas. The EM will conduct daily operation meetings with contractors to coordinate scheduling, establish daily monitoring priorities, and address compliance issues.

Restoration Phase

When the construction phase of the Project is nearing completion, the monitor will work with the contractors to locate areas which require restoration. The EM will define and coordinate the proper restoration of specific areas and incorporate the monitoring of these potential restoration areas in their daily task list. As areas approach full restoration, the EM will document the results and determine if further restoration effort is needed or if the site can be removed off of the daily investigation list.

Agricultural Areas

No long term impacts on farming or agricultural activities are anticipated as a result of this Project; however, during construction, agricultural operations on the Project ROW may be disrupted for a single season, depending upon the timing of construction. The Applicant will make every effort to coordinate constructions activities with ongoing farming activities in effort to minimize disruption to their operations. Construction in agricultural areas will be managed so as to minimize erosion, compaction, and soil mixing. BMPs adopted by the Commission in other relevant Article VII certificates, will be proposed in the EM&CP. These measures typically include timber mats to minimize topsoil disturbance, grading and restoring topsoil conditions when soil rutting occurs, and the rehabilitation of drainage tile as necessary and appropriate. The Applicant will comply with the Department of Agriculture and Markets' guidelines for working on agricultural lands and incorporate site specific recommendations in the EM&CP. The Project will not adversely impact active agricultural lands or designated Agricultural Districts.

The Applicant will conduct a monitoring and remediation period of no less than two years in agricultural areas after completion of the construction phase of the Project. This two year period will be utilized to collect and document the temporal response of agricultural lands post-construction with influence of nominal climatic conditions throughout the year. This phase will be used to identify any remaining agricultural impacts associated with construction that are in need of further restoration effort. General conditions to be monitored include topsoil thickness, topsoil compaction level, topsoil texture and rock content, crop production, drainage ability, and the return to pre-existing operational conditions (fence work, tiling etc.), amongst other characteristics. The environmental monitor will identify any issues through on-site monitoring of all agricultural areas impacted by construction and will keep open correspondence between contacts with respective farmland operators and the NYSDAM in order to properly mitigate issues.

4.3 Land Use

In accordance with PSL §122(1)(c) and 16 NYCRR §86.5(b)(2)(iv), this section evaluates existing land uses traversed by the Project and explains how construction and operation of the Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations.

4.3.1 Existing Land Use

Land uses in the vicinity of the Project were identified from several sources, including field reconnaissance surveys, wetland delineations, drone high-resolution aerial photography, inventories and maps of land use, cultural, visual, and recreational resources. In addition, state, county, and town parks and conservation areas were identified as well as scenic rivers, trails and parkways.

Broad categories of local land uses for parcels that the transmission line corridor traverses have been inventoried through site visits and the use of aerial photography. Land cover type definitions are based on the classifications developed by the United States Geological Survey (USGS) as part of the National Land Cover Dataset (NLCD) (2011) and Reschke, 1990 and are as follows:

- ***Agricultural*** includes pasture/hay and cultivated crop fields; some of which are designated as New York Agricultural Districts.
- ***Developed Land*** includes all former quarry pits and unpaved access roads. These areas are typically lacking or have limited vegetation with bare soil exposed.
- ***Forest*** includes deciduous, evergreen and mixed forested areas. At least five of the participating landowners conduct logging activities or have the rights to do so.
- ***Open Water*** includes open bodies of waters such as oceans, lakes and ponds generally with less than 25% cover of vegetation or soil.
- ***Successional Old Field*** is defined as "a meadow dominated by forbs and grasses that occurs on sites that have been cleared and plowed (for farming or development), and then abandoned." (Reschke, 1990)
- ***Successional Scrubland*** is defined as "a scrubland that occurs on sites that have been cleared (for farming, logging, development, etc.) or otherwise disturbed." (Reschke, 1990)

The existing land uses within 50 feet on either side of the transmission line are summarized in Table 4.3-1 and shown in Figure 4.3-1.

Table 4.3-1 Summary of Land Cover Types along the Transmission Route Corridor

Land Cover Types	Acres	Percentage
Agricultural Land	38.53	19.8%
Developed Land	0.50	0.3%
Forest	141.95	72.8%
Open Water	0.57	0.3%
Successional Old-Field	9.20	4.7%
Successional Scrubland	4.14	2.1%

As demonstrated above, the dominant cover type within the vicinity of the transmission line is forested, followed by different categories of grass, scrub, and crop vegetation. The Project is not located in near proximity to a significant acreage of developed lands. Landowner agreements have been established with all private property crossed by the Project.

4.3.2 State Land Use Planning and Policies

4.3.2.1 2009 New York State Open Space Conservation Plan

In terms of consistency with land use planning, the *2009 New York State Open Space Conservation Plan* (NYSOSCP, 2009) encourages various state and local stakeholders to take advantage of opportunities to implement conservation recommendations as these stakeholders develop strategies for achieving conservation goals. The conservation plan focuses on four major areas: responding to climate change; fostering green, healthy communities; connecting New Yorkers with nature and recreation; and safeguarding the state's natural and cultural heritage. The state conservation goals include measures to protect plant and animal habitats and the State's surface and ground water quality; combat global climate change; maintain an interconnected network of protected lands and waters for wildlife use; improve community quality of life and health; maintain critical natural resource industries; protect hunting, fishing, trapping and wildlife viewing habitats; provide outdoor recreation, open space, and education and research opportunities; and protect and enhance scenic, historic and cultural resources (NYSOSCP, 2009). The conservation plan includes a list of over 100 regional priority conservation projects across the State, one of which is in Steuben County:

- Project 109 – Chemung River Greenbelt is located in the Chemung River watershed greenway and focuses on protection of important wildfire habitat, recreational access, and scenic vista preservation. Recreational resources will be expanded and enhanced while protecting important wildlife habitat.

The Project does not cross the Chemung River and the Project's proposed erosion control measures will be in place for the four ROW crossings of tributaries of this water body. As such, the Project is consistent with the local land uses covered in the Conservation Plan.

4.3.3 County Land Use Planning and Policies

4.3.3.1 Steuben County

Steuben County has the following adopted plans actively in place:

- Steuben County Agricultural & Farmland Protection Plan (June 22, 2015)
- Steuben County Economic Development Plan (2014-2015)

Steuben County Agriculture & Farmland Protection Plan (June 22, 2015)

The Steuben County Agriculture & Farmland Protection Plan (Steuben County Planning Department et al., 2015) was adopted by the Steuben County Legislature on June 22, 2015 and was developed with

funding and support from the New York State Department of Agriculture and Markets (NYSDAM). The document encompasses conditions within Steuben County at both the local and state level to provide goals for agricultural protection and the agricultural economy. Through public participation, analysis of land use and review of the economic profile of the County, the following five goals have been established:

- Goal 1. Economic Development
- Goal 2. Agribusiness Development
- Goal 3. Farmland Preservation
- Goal 4. Agri-Tourism
- Goal 5. Education, Outreach and Partnerships

The Project is consistent with the goals and objectives of the Steuben County Agriculture & Farmland Protection Plan. One of the objectives under the Economic Development goal is to "develop local wind and solar power ordinances to encourage farmers to implement projects on portions of their agricultural land." The accompanying text notes that "wind and solar energy are compatible with agricultural land uses" and farmers "are harvesting these resources while simultaneously raising crops and livestock, and providing long-term financial stability." Timber management and harvesting is an important activity in the Project area and all timber revenue for the Project will be retained by the landowner. In addition, improved access roads will also allow landowners to potentially better utilize their lands for forestry, agriculture and natural resource protection. The lease payments provided by the Applicant will provide a potentially important stable source of income for the property owners, from a use that is compatible with agricultural land uses, thereby providing them with the means to continue operation even in difficult years.

Steuben County Economic Development Plan (2014-2015)

The Steuben County Economic Development Plan (Steuben County IDA, 2014) was adopted in 2011; the result of a planning process that involved an extensive economic overview and analysis of the County. This planning document outlines specific action items to further implement a county-wide economic development strategy for Steuben County that will increase support of existing businesses, attract new businesses, develop an enhanced business environment, and promote regional collaboration and strategic objectives to increase employment, facilitate the growth and expansion of industry and business, improve the quality of life of all residents, grow the tax base, further promote and develop the County, and position Steuben County as a great place to live, work, and develop wealth.

The Project is consistent with the goals and objectives of the Steuben County Economic Development Plan (2014-2015). In describing opportunities for the County, the report notes that it is "…estimated that there is potential for 200 megawatts of additional wind power development in Steuben County." The list of the greatest opportunities for economic development includes "leveraging the county's natural resources for renewable energy, including wind, natural gas and biomass." Renewable energy, including wind, is listed as an area for business and retention under "Strategic Priority #1: Retain and Grow Steuben County's Business Base" (Steuben County IDA, 2014, page 8).

Southern Tier Regional Economic Development Council – 2016 Progress Report

Steuben County is also a member of the Southern Tier Regional Economic Development Council. Regional Economic Development Councils were formed in New York State in 2011 by Governor Andrew Cuomo to focus resources for regional strategic investments and community regeneration specific to each area. The Southern Tier Regional Economic Development Council covers eight counties: Broome, Chemung, Chenango, Delaware, Schuyler, Steuben, Tioga and Tompkins Counties. As described in the 2016 Progress Report (Report), 15% of the region's population lives in Steuben County, with major municipalities in Steuben County being Bath, Corning and Hornell. The transportation structure in the Southern Tier consists of multiple highways which allow goods produced in the region to be easily distributed outside of the region throughout the state.

The Report includes energy jobs as a potential growth area, including inspections and installation. The Project supports this job category as the Applicant understands the value of local construction employment, primarily with construction trades, including equipment operators, truck drivers, laborers, and electricians. Steuben County, with its established wind projects, has the experience and understanding of the economic issues and opportunities for this Project to improve the local economy.

As described in Exhibit 6 (Economic Effects), a Job and Economic Development Impact (JEDI) model was used to determine the overall socioeconomic effects of the Project. JEDI uses project-specific inputs combined with default data to estimate the number of jobs and other economic impacts to a local area from the construction and operation of a new transmission line in support of an energy project. See Exhibit 6 for further details on jobs created from construction and operation of this project.

In further support of the Southern Tier Regional Economic Development Council's goals, economic benefits will be experienced to a large degree by the local tax base, including local school districts and other taxing districts that service the area where the proposed Facility is to be located, and direct lease payments to participating landowners. The Project, therefore, will support the existing workforce and will not adversely affect tourism, second homes, or small businesses in the area but instead will increase revenues to the local economy while providing clean renewable energy and eco-tourism opportunities.

Based on a review of the Project in light of the Southern Tier Regional Economic Development Council Plan (2016 Progress Report), the Project is consistent with the goals and objectives of the larger region.

4.3.4 Local Land Use Planning and Policies

4.3.4.1 Town of Hornellsville

The Town of Hornellsville prepared a shared Comprehensive Plan with the villages of Arkport and North Hornell (Herbert H. Smith Associates, 1970). The report states that commercial development is "relatively limited and local serving." The Plan also states notes that "agriculture will remain an important factor in the local economy in the future." The authors offer that there is "some potential for recreational activity" and that "the community's more scenic areas should be preserved." There is no indication at this time if the Comprehensive Plan or an implementation plan was adopted. Due to the

minimization of impacts to agricultural land and scenic resources, the proposed Project is consistent with the goals of the Town of Hornellsville Comprehensive Plan as prepared.

4.3.4.2 Town of Hartsville

The Town of Hartsville has not adopted a Comprehensive Plan with respect to land use planning.

4.3.4.3 Town of Greenwood

The Town of Greenwood has not adopted a Comprehensive Plan with respect to land use planning.

4.3.5 Floodplains

The Federal Emergency Management Agency (FEMA) flood hazard maps (Figure 4.3-2) indicate that portions of the transmission line route are located within Zone A (i.e., an area inundated by 100-year flooding), in 2 locations. The route is located within the floodplains of Purdy Creek and Slate Creek. An AE flood hazard zone associated with Canisteo River is located in proximity to the POI. However, the installation of transmission line will have no permanent impact on flood zones.

All Project construction activities will utilize widely-accepted stormwater and erosion control measures, as specified in by the Project's SWPPP, and all disturbed areas will be returned to preconstruction conditions. All disturbed areas within floodplains, therefore, will be restored after construction. Because there will be no permanent change in topography within the designated floodplains following construction of the Project, construction and operation of the Project will not have any permanent impacts on the floodplains or other upstream and downstream properties.

4.3.6 Agricultural Districts

Article 25-AA of the Agriculture and Markets Law authorizes the creation of local agricultural districts pursuant to landowner initiative, preliminary county review, state certification, and county adoption. These districts encourage improvement and continued use of agricultural land for the production of food and other agricultural products. An important benefit of the Agricultural Districts Program is the opportunity provided to farmland owners to receive real property assessments based on the value of their land for agricultural production rather than on its development value. The Agricultural Districts Law and the Agricultural and Farmland Protection programs have influenced municipal comprehensive plans and zoning regulations. County agricultural and farmland protection boards may develop protective plans in collaboration with county soils and water conservation districts. The Project will traverse 4.9 miles of Agricultural District lands (see Figure 4.3-3) and there are 47 transmission line structures proposed in mapped Agricultural Districts. Access road and ancillary facilities calculations will be provided in the EM&CP.

Transmission lines are commonly located within Designated Agricultural Districts in New York State and can be constructed and operated in a manner which allows for continued agricultural production and minimal soil impacts. Any access roads through agricultural areas will be coordinated with participating landowners and will typically be located on construction mats or, in certain situations, on crushed stone over geotextile fabric may be employed. If crushed stone is employed, topsoil will be removed and

stored and protected nearby. Geotextile fabric will be placed on the subsoil and then overlain with crushed stone. After construction the stone and geotextile fabric will be removed and the topsoil will be replaced, followed by the application of a seed mix approved by the landowner and New York Ag and Markets and stabilized with straw mulch. Poles are sited in consultation with farmers and it is expected that agricultural activities will continue with minimal impact. Nevertheless, if there is any adverse impact to agricultural fields during the growing season, the Applicant will compensate the landowner an appropriate fair market value.

4.3.6.1 Effects of State and Local Parks/Public Lands

No state or local parks, state forests or other public lands are crossed by the transmission line.

4.4 Visual Resources

In order to determine the extent and assess the significance of the visibility of the built Project, a Visual Impact Assessment (VIA) has been conducted. The Visual Impact Assessment (VIA) describes the viewshed analyses, percent visibility, Landscape Similarity Zones (LSZs), and simulations developed for the Project as well as the generation facility in Appendix 4-2 and will be referred to in the discussion below. The Project and the EPWEC were both evaluated in the same VIA. In this fashion, the transmission line can be assessed within a larger regional area as well as in context with the EPWEC. A designated visual resource study area (VSA) of ½ mile around the proposed transmission line centerline was studied.

4.4.1 Visual and Aesthetic Resources

The Project is largely located in forested areas which provides significant screening for a large portion of the transmission line structures, which average approximately 100 feet in height. General tree height in the area range between 40 and 65 feet. The Applicant is using monopole structures for the majority of the transmission line, whose relatively narrow profile will help to reduce the overall footprint and visual impact of the transmission line.

4.4.2 Existing Landscape Description

The Project is within the Major Land Resource Area (MLRA) of the Glaciated Allegheny Plateau and Catskill Mountains. This MLRA is primarily in the southern New York section of the Appalachian Plateaus Province of the Appalachian Highlands. The plateau itself is mature and eroded. In the area of Steuben County, topography is hilly and rolling generally characterized by numerous valleys and troughs. Streams dissecting the plateau have created steep valleys that are as deep as 300-600 feet.

Landscape Similarity Zones (LSZ) have been developed for the Project (see Section 4; Figures 3 and 7 of VIA, Appendix 4.2). Five LSZs have been designated:

Zone 1 – Agricultural/Open Field - Agricultural and open fields predominantly consist of large farm complexes with cultivated crops, hay, or pasture.

Zone 2 – Forested - Views from inside the Forest Zone are highly limited since it is assumed that tree canopy precludes outward views unless there are intermittent gaps in trees. Forested areas may include roadway segments where there are permanent residents.

Zone 3 – Developed - This zone includes small villages and towns with low to moderate-density residential (and limited commercial) development, generally oriented along a primary road that is typically a county road. The Developed Zone also includes the major roadways where residential development is intermittently established along the existing road network as well as accounting for roadway travelers.

Zone 4 – Ridge/Plateau (areas at or above 2200 feet mean sea level) - Those areas that are 2200 feet mean sea level (msl) or higher are delineated out as high point ridges or plateaus within rolling terrain marked out as Zone 4 areas. A cutoff elevation of 2200 feet msl was chosen based on GIS terrain analysis and the geomorphological characteristics in the landscape; it is a general elevation where typically, steeper valley walls begin a descent from a plateau or ridge-type landform.

Zone 5 – Open Water - There are few open water bodies in the area.

Table 4.4.1 shows the percentage of each LSZ within the ½ mile VSA.

Table 4.4.1. Percentage of Landscape Similarity Zones within ½ Mile Transmission Line VSA

LSZ	Lands < 2200' MSL		Ridge-Plateau => 2200' MSL		Total Square Miles	Total Percent of 1/2 Mile
	Square Miles	Percent of 1/2 Mile	Square Miles	Percent of 1/2 Mile		
Agriculture/Open Field	2.2	13.4%	2.1	12.3%	**4.3**	**25.7%**
Developed	0.6	3.6%	0.1	0.8%	**0.7**	**4.4%**
Forested	8.2	48.6%	3.6	21.3%	**11.7**	**69.9%**
Open Water	0.0	0.0%	0.0	0.0%	**0.0**	**0.0%**
Total	**11.0**	**65.5%**	**5.8**	**34.5%**	**16.8**	**100.0%**

Zone 2 Forested is the dominant LSZ found within the ½ mile transmission line VSA, comprising 69.9% of the land area. Zone 1 Agricultural accounts for 25.7%. Zone 3 Developed areas consist of 4.4%. Approximately 34.5% of the ½ mile VSA is in the Zone 4 Ridge-Plateau LSZ.

4.4.3 Visual Resource Inventory of Historic Areas, Parks, and Preserves

Local, state, and federal visual resources were reviewed and an inventory of publicly available and accessible visual resources within the VSA was explored through the acquisition of GIS data, review of town, county, and agency reports, topographic data, and site visits. For the details of the study, please refer to Appendix 4-2.

For historic sites, the New York State Cultural Resource Information System (CRIS) was used to identify eligible historic and National Register of Historic Places (NRHP) sites for this report. Please refer to Section 4.5 (Cultural Resources) for a discussion of historic sites that also include CRIS designated Not

Eligible and Undetermined eligibility status as well as a listing of potentially new eligible historic sites as a result of a Historic Architecture Reconnaissance Survey conducted in the spring of 2017.

For historic sites, listed NRHP and previously identified historic properties obtained from CRIS are addressed in this report. In addition, as part of the Section 106 cultural resources investigation, between March 21 – 24 and April 3 – 7, 2017 EPW completed a Historic Architecture Reconnaissance Survey for the Project. There are no historic sites within the ½-mile transmission line VSA.

In addition, there are no State parks managed by the Office of Parks, Recreation and Historic Preservation found within the ½-mile transmission line VSA. The Project is not within or near the Adirondack Park. There are no State Forest Preserves found within the ½-mile transmission line VSA. However the Greenwood State Forest and a small portion of Rock Creek State Forest both managed by NYDEC are within the VSA located east of the proposed line. Additionally, there are no Urban Cultural Parks found within the ½-mile transmission line VSA.

There are no National Wildlife Refuges or National Natural Landmarks found within the ½-mile transmission line VSA. Neither are there National Recreation Areas, Seashores, or Forests found within the ½-mile transmission line VSA. There are no state designated or eligible scenic by-ways, reservoirs, lakes, or sites within the ½-mile transmission line VSA. There are also no Scenic Areas of Statewide Significance or state or federal designated or proposed trails found within the ½-mile transmission line VSA. No State Nature or Historic Preserve Areas found within the ½-mile transmission line VSA and no Bond Act Properties found within the ½-mile transmission line VSA. The Project also is not within or near the Palisades Park.

The Canisteo River is within the ½-mile transmission line VSA and is listed in the Nationwide River Inventory (NRI) with a recreational “outstanding remarkable value” (ORV) designation. The NRI river reach includes 46 miles between the confluence of the Tioga and Canisteo Rivers in Erwin to South Hornell Road in Hornell.

One local resource, Veteran’s Memorial Park is located in Hornell in the northern section of the VSA approximately 0.3 miles north of Bennett Substation.

Table 4.4.2 lists the visual resources found within the ½ mile VSA as well as the potential for visibility of structures. Visibility results are discussed in further detail in the VIA Appendix 4.2 as well as summarized in Section 4.4.4.

Table 4.4-2. Inventory of Visual Resources Within 1/2 Mile of Transmission Centerline

Resource	Distance to Nearest Structure (feet)	Potential Visibility* (S, U)	Town
S = transmission structure visible, U = unlikely/no expected visibility			
Federal-State-Recreation Lands			
Greenwood State Forest**	1161	S	Greenwood
Rock Creek State Forest (access road crosses Project)**	1818	U	Greenwood
Scenic River			
Canisteo River, Nationwide Rivers Inventory listing**	175	S	Hornellsville
Local			
Veteran's Memorial Park	1717	S	Hornell

** Represents potential visibility of transmission structures as a result of viewshed analysis with 50 ft. trees incorporated. Including the trees contributes to a more realistic representation of landscape. A topography only analysis without trees was not performed. It is reasonable to assume that the transmission structures would be highly visible in nearly all of the ½ mile VSA if trees were not present, as the topographic profile would be less variable over so short a distance.*

*** Representative photosimulation was produced for this resource*

4.4.4 Visibility Analyses and Results

A viewshed analysis on proposed transmission poles was performed with tree vegetation incorporated into the model (Figure 4.4-1). The analysis was performed according to industry standards and best available data. This viewshed analysis does not include building heights and uses tree data that was extracted from the most recent 2011 National Land Cover Dataset (NLCD). The NLCD is a USGS spatial dataset derived from Landsat Thematic Mapper satellite data that exists as areal data without tree heights. An average tree height of 50 feet was assigned to this NLCD tree data. Because variable tree and building heights do not exist in the type of data available, there may be more visual impediments occurring in the landscape than is represented in the model. The assumptions associated with the computer analysis are explained in further detail in the VIA in Appendix 4.2.

The viewshed results presented in the maps show predictive visibility that is classed by the estimated number of structures that might be visible in a given geographic area. Within the ½ mile VSA, Table 4.4.3 summarizes the potential percent visibility of each structure as classed in Figure 4.4-1. In total, approximately 28.4% of the land area within the VSA may have a full or partial view of the Project. Because an area may show visibility, it does not mean the entirety of the Project or even an entire structure will be seen. The viewshed analysis depicts areas of visibility over a regional area and assumes leaf-on conditions. It can only predict geographically on a map areas where some part of a transmission pole might be seen. In terms of number structures that may be visible, the model does not and cannot

determine if it is seeing a full on view or a partial view of just an upper portion of one structure or several structures. By nature of the software model and available parameters, the trees are treated as an opaque object and therefore leaf on conditions are assumed. Transparency predictions through something similar to bare-branched trees under leaf off conditions cannot be made. Additionally, if visibility is occurring in an area, it may sometimes only be a result of glimpsing a portion of the Project over undulating treetops or between gaps of trees and not a full-on view. Likewise, there may be understory tree gaps not depicted in the model where there may be visibility of the Project.

Table 4.4.3 Potential Visibility Within VSA Classed by Number of Structures*

No. of Structures	Square Miles	Percent Visibility Within 1/2 Mile VSA
1-3	1.18	7.0%
4-6	1.22	7.3%
7-10	0.89	5.3%
>10	1.48	8.8%
Total	**4.78**	**28.4%**

* *Represents potential visibility of transmission structures as a result of viewshed analysis with 50 ft. trees incorporated.*

In addition to tabulating visibility by structure class, the percent visibility within each LSZ was also calculated as presented in Table 4.4.4.

Table 4.4.4. Visibility within Landscape Similarity Zones for Transmission*

LSZ	< 2200' MSL		Ridge\Plateau => 2200' MSL		Total Square Miles	Total Percent Within 1/2 Mile
	Square Miles	Percent Within 1/2 Mile	Square Miles	Percent Within 1/2 Mile		
Agriculture/Open Field	1.69	10.0%	1.49	8.8%	**3.17**	**18.9%**
Developed	0.45	2.7%	0.11	0.6%	**0.55**	**3.3%**
Forested	0.72	4.3%	0.32	1.9%	**1.04**	**6.2%**
Open Water	0.01	0.0%	0.00	0.0%	**0.01**	**0.0%**
Total	**2.87**	**17.1%**	**1.91**	**11.4%**	**4.78**	**28.4%**

* *Represents potential visibility of transmission structures as a result of viewshed analysis with 50 ft. trees incorporated.*

Tables 4.4-3 and 4.4.4 shows that only approximately 28.4% of the land area in the ½ mile transmission VSA will have a view of some portion of one or several poles. Accordingly, the Project will be screened from more than 70% of possible viewpoints within the ½ mile VSA. That is because much of the transmission ROW is proposed to be routed through forested areas (see Figures 4.4-1 in this document and Figure 7 in VIA Appendix 4.2). A 100 foot permanent ROW width is proposed. As the majority Project structures are located in a ROW corridor embedded in forested areas and from general field

review, it can also be reasonably expected that many views may consist only of the upper portions of structures when they appear higher than the tree canopy.

Viewshed results for the transmission line depicted in Figure 4.4-1 indicate that the majority of full or partial visibility of the transmission poles in the southern 2/3 of the line is expected to occur in open fields that are adjacent to the ROW and along open roadway corridors that cross perpendicular to the ROW. Table 4.4.4 reflects that the agricultural/open field LSZ expects to contain the highest potential visibility at 18.9% of the land area within the VSA. For the most part, these open fields are not accessible to the viewing public and therefore visibility is expected to be limited primarily to landowners that have granted easement rights in the ROW, and adjacent landowners.

Viewshed results indicate that approximately 3.3% of the land area within the VSA consisting of developed areas (includes roadways) will have visibility of the Project. By nature of the viewer type (motorists), vehicular traffic views are expected to be intermittent and of short duration. Roadways that cross the ROW that will have some expected full views to travelers at road crossings include Van Campen Road, Purdy Creek Road, Call Hill Road, State Creek Road, O'Hargan Road, Brown Hollow Road, Dryden Hill Road, County Road 60, and Town Line Road. A few roads parallel to the ROW may have intermittent visibility due to fields providing open views. These include County Road 64, Cook Hill Road, Hinkley Hill Road, Clair Road, and South Hornell Road. Visibility of structures are expected in the northern terminus of the transmission line near the Bennett substation as it is already fairly open due to Route 36 and existing cleared commercial developed areas, in addition to adjacent open field.

Federal-State Recreation Lands

Rock Creek State Forest - A small portion of Rock Creek State Forest in Greenwood is within the transmission line VSA but there will be no expected views of poles as noted in Figure 4.4-1. O'Hargan Road provides access to Rock Creek State Forest. The Project crosses this access road at the junction with County Road 62 and there will be full visibility of at least one transmission structures from this access road.

Simulation VP1 (Figure 4.4-2) is located at County Road 62 looking at the proposed transmission line as it crosses O'Hargan Road outside of the forest boundary. This vantage point was chosen to illustrate the nature of the area in the vicinity of Rock Creek State Forest and the section where the proposed transmission crosses the Forest access road. It is also an example of a view from an open field adjacent to the ROW. (The photo was taken from a publicly accessible roadway adjacent to an open field in order to respect private property). Most of the state forest lies outside of the ½ mile transmission line VSA where views will either be highly blocked or obscured by tree rows or forest. However County Road 62 intersects with O'Hargan Road (seen as the distant road that turns to the right), which is the main access road to the Forest. The County Road 62 photo vantage point provides a clear view of the proposed transmission line in relation to the access road. Because of the span of the structures (ranging between 400 and 800 feet in this area) in addition to the vegetation seen to the left of the photo as well as the camera extents, only one structure in the simulation is visible where a full view is acquired. The immediate vicinity of the road crossing is fairly isolated. Limited road traffic occurs at this location as well as from County Road 62. The intersection of County Road 62 and O'Hargan Road is present in the photo but not visible due to foreground terrain but occurs where the yellow "Caution Right Turn"

warning sign is located. Visually impacted viewer types are limited to motorists consisting of local travelers or those traveling to the Forest. There are at least 5 houses in the vicinity behind the viewer, some of which may have partial views of structures.

The transmission structure in view is proposed to be 99.5 feet and will offer a new vertical element in what is currently a rural location. Tree clearing will occur in various areas to allow for structure installation and line clearance, also. The structure in view is approximately ¼ mile from the photo viewpoint and remains subordinate to the view with respect to scale and lean profile. Foreground roadside trees to the left in the photo and the utility pole in front contrast as larger shapes. The top of the proposed structure remains slightly lower than the hillside in the background and the horizon line is preserved. This would change as one proceeds closer to the ROW and for those drivers approaching the intersection of County Road 62 and O'Hargan Road.

Greenwood State Forest - As noted on the Figure 4.4-1 viewshed map, visibility of the Project will occur at the southwestern border near the tree line of Greenwood State Forest as well as from Brown Hollow Road, the state forest access road. The transmission information previously submitted in the Article 10 describing the Project reflects structure locations from a March 2017 alignment. Changes have been made to the alignment as of January 2018 and are incorporated in this Article VII submittal.

Simulation VP18b (Figure 4.4-3) shows a view along a representative viewpoint on Brown Hollow Road in Greenwood. At the photo location, this road into the state forest travels west to east; the state forest proper is north of the road (behind viewer). As part of the view in the simulation, an open field not part of the forest is on the south side of the access road. The overall impression to the viewer is one of pastoral open land with forested hills in the background.

Structure views that are potentially visible along the access road and immediate vicinity vary depending on where one stands along the road. The previous simulation (VP18 in Appendix 4.2) showed two structures that were clearly visible where the Project bisected the field in a southeast direction much closer to the viewer. Figure 4.4-3 VP18b shows a new simulation. Due to routing changes, structures have been moved westerly down the hill embedded in trees and farther from the viewer where there is a reduction in visual impacts as compared to the March 2017 alignment. As a result of the re-alignment, now only the upper portion showing one davit arm of the closest visible structure can be seen from this location. Thus, impacts have been further minimized at this location. Furthermore, because the road crosses the line, visual impacts will be of limited and of short duration since travel to the actual state forest would resume once passing the transmission line. Additional areas of the forest where higher use occurs, along with views from within the interior parts of the forest are not expected as noted in Figure 4.4-1.

Simulation VP26 (Figure 4.4-4) is located on Kelly Road, approximately 50 feet south of the corner of the Brown Hollow Road access to Greenwood State Park. Figure 4.3-3 VP18b depicts the view of the Project from a higher elevation adjacent to the Forest. In contrast, Simulation VP26 in Figure 4.4-4 shows the Project from a vantage point lower down the hill looking up the ROW with a clear view of structures. Simulation VP26 illustrates cleared ROW within a mix of field and forest groups. Kelly Road is a short and fairly isolated dead end road branching off from Highway 417. Traffic and viewers in this vicinity are generally lower, and consist of a few residents along with those traveling to Greenwood State Forest.

Therefore, visual impacts to the general population would be minimized considering available technologies, alternatives and pertinent considerations.

Scenic Rivers

The Canisteo River falls within a half-mile of the proposed transmission line VSA. The Canisteo River is listed in the Nationwide River Inventory with a recreational "outstanding remarkable value" designation although the main reach of river for whitewater recreation is outside of the half-mile VSA. The Canisteo to Addison section of the Canisteo River is 20 miles long. The whitewater canoe and raft put-in is approximately 2.25 miles east of the VSA in the Village of Canisteo and the take-out is in Addison, approximately 22 miles east of the VSA.

In South Hornell and Hornellsville within the VSA, the river generally flows parallel to the proposed Project up to Bennett Substation. The river lies approximately 250 feet east of Bennett Substation at its most proximal point to the Project. The river is also separated by a large earthen berm with a sewage treatment plant located just north of the Substation. South of the Bennett Substation, river distances to the Project are between 0.3 and 0.4 miles within the VSA and the river curves easterly and away from the Project north of the Bennett substation. Trees occur frequently in the riparian zone however the river also flows through open fields with anticipated views to the Project from adjacent lands and from the river itself as noted in Figure 4.4-1. Viewshed results in Figure 4.4-1 show that visibility of the structures varies along the river. Full views of structures in some areas might occur especially as the transmission line emerges up the hill from Bennett Substation, or if there happens to be a cleared area along the adjacent ridge where the Project is proposed. It is expected that most views of structures will be partial views of upper parts above the treetops since the trees along the ridge will likely block views of lower portions. Surrounding roadside trees or buildings in the area will also mitigate or preclude views. Where the river passes east of Bennett Substation there is open land where there are currently clear views of existing substation components from the top of the earthen berm.

Simulations VP24 (Figure 4.4-5) & VP25 (Figure 4.4-6) are representative viewpoints of the transmission line from the Canisteo River.

Figure 4.4-5 VP24 is located on a bridge along County Road 64 that crosses the Canisteo River, situated 838 feet southeast of the existing Bennett Substation. The purpose of this viewpoint is to show the proposed Project at the NYSEG Bennett substation from a location on the Canisteo River. The view from this direction shows the river and open field with a maintained grassy berm/bank in the photo foreground, the substation in the photo middle ground, and forested hills in the mid-to background along with upper views of existing NYSEG transmission line towers on a ridge. The overall impression to the viewer is a mixture of commercial/industrial facilities with forested area further away. Although the viewpoint location is on a publicly accessible roadway, similar views can be obtained from nearby riverbanks.

At this location, there is roadside vegetation that blocks views of the Project as it heads westward up the hill in the view. However a new Project H frame transmission line tower will be fully visible. The structure is in the same general location as the substation and is similar in size and height to the other NYSEG transmission structures nearby. The visual change will be negligible as the new structure is visually absorbed against the existing substation components. Viewers that are limited to motorists

along the roads with open views to the substation will have intermittent but short duration views. Commercial areas adjacent or across from the substation will likely have short duration views from parking lots.

Figure 4.4-6 VP25 is located on County Road 64, on a bridge that crosses the Canisteo River (same as VP 24), close to the junction with Route 36 in Hornellsville. Similar to VP24, the purpose of this photo is to show the proposed Project from a publicly accessible vantage point along the Canisteo River in a high-use area. As noted with VP24, although the vantage point is from a publicly accessible road, similar views of the Project can be obtained from river or riparian areas in the vicinity.

VP25 is situated 0.25 miles east of the Project's proposed transmission line at elevation 1123' msl. This picture shows Route 64 itself in the foreground that leads to the intersection with highly travelled Route 36 which runs north-south across the photo. Behind the commercial parcels in view, forested hills rise up from the river valley. This view also shows an existing transmission line running parallel to Route 36. The overall impression to the viewer is commercial in the foreground (existing road, guard rails, signage, building, and transmission lines) and forested in the photo mid and backgrounds.

At this location within the camera view extents, the simulation shows a substantial portion of the upper parts of two poles that are proposed adjacent to the existing transmission line located up on the hill side. The Project is a taller vertical element in the landscape but it is also in-kind utility development similar to transmission poles that currently exist. Motorists, who currently have views of the existing poles in this area, will have short duration views of the Project poles as well as possible views from the nearby commercial areas.

Local Sites

Veteran's Memorial Park is located in South Hornell 0.3 miles north of Bennett substation on Park Drive. It is a municipal park with picnic pavilions, playground, a pool, playing fields, tennis courts and a perimeter pathway and a fishing area at the spillway of the Canisteo River. Much of the area is open but intermittent trees are located along the perimeter path. Partial views of transmission structures are predicted from the southern perimeter path as well as from the open water and fishing area at the spillway location. These views are not new from this vantage point because there are currently views to the existing Bennett Substation from the southern perimeter path and fishing area.

4.4.5 Summary of Potential Visual Impact from Operation

In conclusion, potential visual impacts of the Project are minimized as it is sited in approximately 70% forested areas where existing trees act as a mitigative visual impediment to many full or partial views of structures. Monopoles with slender, uniform profiles are being proposed for most of the ROW and non-specular material is proposed for conductors. The Project was also sited to avoid visibility from Rock Creek and Greenwood State Forests. No additional mitigation is proposed as the Applicant has proposed to minimize adverse environmental impacts, considering available technologies, alternatives and pertinent considerations.

4.4.6 Project Visual Effects During Construction

Visual impacts during construction are anticipated to be minor and temporary in nature. Construction activities for a transmission line are site and project dependent; however, construction of a typical facility would normally involve the following major actions with potential visual impacts, typical of a construction project: building/upgrading roads; grading the site; removing vegetation from construction and laydown areas; constructing laydown areas; and installing transmission structures.

4.5 Cultural Resources

4.5.1 Introduction and Record of Consultation

The New York Historic Preservation Act (NYHPA) of 1980 (Chapter 354 of Parks, Recreation and Historic Preservation Law) established a process for State agency activities affecting historic or cultural properties, requiring consultation with the Commissioner of the Office of Parks, Recreation, and Historic Preservation (OPRHP), who serves as the State Historic Preservation Office (SHPO). The NYHPA requires project sponsors to consult with OPRHP if it appears that a proposed project may cause any change, beneficial or adverse, in the quality of any historic, architectural, archaeological, or cultural property that is listed in the NRHP or in the State Register of Historic Places (SRHP), or that is determined by the Commissioner to be eligible for listing in the NRHP or SRHP.

Consistent with the OPRHP *Guidelines for Wind Farm Development Cultural Resources Survey Work* (*Guidelines*; OPRHP, 2006), the Applicant, through its consultant, TRC Environmental Corporation (TRC), initiated formal consultation with the OPRHP to develop the scope and methodology for cultural resources studies for the Project. To date, formal consultation with the OPRHP has included telephone and e-mail communications and submissions through OPRHP's Cultural Resources Information System (CRIS) website consisting of the following four technical documents for OPRHP review:

- *Request for Consultation Letter of February 4, 2016 : Proposed Eight Point Wind Energy Center, Towns of Canisteo, Greenwood, Hartsville, Hornellsville, Jasper, Troupsburg, and West Union, Steuben County*;
- *Research Design for Phase IA/IB Cultural Resources Survey of Proposed Eight Point Wind Energy Project Steuben County, New York (submitted February 4, 2016, revised February 29, 2016);*
- *Area of Potential Effects for Historic Properties Letter of March 6, 2017: Eight Point Wind Energy Center, Steuben County, New York; and*
- *Project shapefiles that present the preliminary Project layout.*

On February 29, 2016, the OPRHP provided comments on the Research Design and requested that the methodology for conducting the Phase IA/IB archaeological survey be modified to include selection of a subsample of each probability zone which would be tested at 16.4 feet (5-meter) intervals, citing the importance for the identification of small upland sites, which are expected to predominate in the Project Area. Additionally, the OPRHP requested that, prior to historic architectural fieldwork, the Project's Architectural Historian meet with the OPRHP to delineate the Area of Potential Effects (APE) and Study Area, and discuss the methodology proposed for the study. On February 29, 2016, the Revised Research

Design reflective of these changes was submitted to OPRHP via CRIS. In its March 29, 2016 review letter, the OPRHP concurred with the Revised Research Design for the cultural resources survey. Correspondence with OPRHP is provided in Appendix 4-3.

4.5.2 Study of the Impacts of Construction and Operation on Archaeological Resources

4.5.2.1 Phase IA Archaeological Study

This section addresses the archaeological/cultural resources review completed for the APE for the Project, which was within a half-mile of the transmission line. The work completed and reports generated included Project as well as the generation portion of the EPWEC.

Phase IA Study Methods

Background research included examination of the site files and archives at the OPRHP, online CRIS database, New York State Library, New York State Museum (NYSM) in Albany, and the NRHP database. This research yielded information on recorded sites and previous cultural surveys in the surrounding area. Local histories, cartographic data, and other relevant information on the prehistoric and historic archaeological sites in the area were also reviewed. The USDA NRCS Soil Survey Geographic Database (SSURGO) was also examined to obtain information on soil types in the Project Area. The historical assessment of the Project Area included a review of historical maps, aerial photographs, a literature search, and a review of county historical documents located at the New York State and County repositories. This work was conducted in order to develop historic and prehistoric contexts of the Project Area which are presented in detail in the Phase IA survey report (see Appendix 4-4). Because this report contains detailed and sensitive information regarding the location, nature, and character of reported archaeological sites and historic properties located within the Project's vicinity, it is presented as a confidential appendix to this application. A synopsis of its findings is provided in the following section.

The OPRHP CRIS database indicates that the Project and the greater surrounding area are located within an archaeologically sensitive area. The OPRHP records confirm, however, there are no NRHP-listed or eligible archaeological sites within the APE for archaeological resources, which is defined as all potential ground-disturbance areas of the Project.

As part of the Phase IA study, a search of OPRHP records indicated that eight archaeological investigations have been conducted and 18 archaeological sites (NYSM and SHPO sites) have been previously recorded in the vicinity of the Project (see Table 4.5-1 below).

Table 4.5-1. Previously Recorded Archaeological Sites in the Vicinity of the Project Area

Site Number	Site Name	Description	NRHP Status
A10114.000018	n/a	Historic foundation	Unevaluated

Source: OPRHP site files February 2016.

The following section presents an overview of the prehistory and history of the Project region to provide a general context for archaeological sites and cultural resources that may exist in the general Project vicinity.

Cultural Synopsis

A synopsis of the prehistoric and historic periods is presented to provide a context for interpreting cultural resources of the Project APE. The west-central region of New York State has been occupied or used by humans since about 12,500 years ago. The prehistory of this region is conventionally divided into the Paleoindian, Archaic, Woodland, and Contact cultural periods. The history of the region ranges from early exploration and contact with the Iroquois, particularly the Seneca, through to modern-day development.

Prehistoric Overview

The term "Paleoindian" has been used since the 1930's to describe the earliest known inhabitants of North America. Paleo-Indian populations, who occupied the Susquehanna River drainage at the end of the Pleistocene, were highly mobile hunter-gatherers who specialized in hunting large game (Funk, 1976). Subsistence patterns included hunting of a variety of smaller game, as well as fishing and the exploitation of available plant foods (McNett, 1985; Nicholas, 1983, 1987). Fluted projectile points are characteristic of Paleoindian peoples. Paleoindian sites in this region have been classified as either camps or quarry workshops, although many "sites" consist merely of isolated fluted point finds (Ritchie and Funk, 1973:333).

The Archaic Period denotes the early cultures in the New York region that had not yet developed ceramic technology, and were dependent on hunting, gathering, and fishing for subsistence (Ritchie, 1980:31; Ritchie and Funk, 1973:37). The subsistence and technological changes associated with the end of the Pleistocene are reflected in new technologies and tool types that define the increasing resource utilization of the Archaic Period. The Terminal Archaic, which some researchers date from 1700–700 BC, was a transitional period in which subsistence and settlement systems changed and new artifact types were introduced.

The Woodland Period is denoted by the appearance of new cultural traits, such as the widespread use of ceramics as well as the intensification of older traits that were carried over from the Late and Terminal Archaic subperiods (Ritchie, 1980:179; Ritchie and Funk, 1973:48). During the Woodland period (1000 BC – AD 1600), the adoption of horticulture played an integral part in population growth, subsistence, and settlement systems as well as in the establishment of large villages in mostly riverine settings.

The Iroquoian Seneca tribe inhabited the area that would become Steuben County at the time of European contact. Powerful both politically and economically, the Seneca hunted and traded throughout the mid-Atlantic colonies and played a significant role in colonial affairs and commerce from Virginia to New York with the English, French, Dutch, and Swedish colonies. The replacement of tools and other materials manufactured by Native American technologies by those manufactured by Europeans (brass kettles, iron knives, glass beads, etc.) defines the Contact Period. These sites are difficult to locate and often cannot be clearly distinguished as a result of scant material remains (Wray, 1973).

Historic Overview

The Seneca retained control of their traditional lands until after the Revolutionary War. Generally allied with the British, the Iroquois relationship with the French colony to their north was often strained leading to decades of hostilities. The Seneca allied with the British during the French and Indian War and again during the American Revolution. The Sullivan Expedition, an American offensive designed to destroy the Seneca homeland during the Revolution, broke the power of the Iroquois League and, combined with the American victory, opened the area to American settlement.

The area now known as Steuben County was purchased from the Iroquois by land speculators Oliver Phelps and Nathaniel Gorman by the Treaty of Buffalo Creek in July 1788 (Clayton, 1879). Steuben County was formed through an act of the Ontario County legislature on March 18, 1796 and was named after Frederic William Augustus "Baron Von Steuben", a German drill master in the Revolutionary War. Settlement was slow until the development of improved transportation such as railroads and canals. The completion of the Erie Canal in 1825 spurred the construction of several branch canals including the Chemung Canal, the origin of which was in the city of Corning in Steuben County.

Primarily rural, the region saw little industrial development in the nineteenth century. At the time of settlement the region was densely forested and lumbering formed the basis of the local economy. Agriculture did not play a major commercial role in the county until after about 1850 when the lumbering industry collapsed due to over-production. After that date, the raising of grain crops became increasingly important (Near, 1911). At the close of the nineteenth century, Steuben County was known for the raising of sheep and poultry. Although agriculture was still the foundation of the local economy, the region became more industrialized during the early twentieth century. In addition to saw mills and the lumber industry, carding and woolen mills were established and many of the smaller villages were extensively engaged in the making of woolen products. As of the 2010 Census (US Census) there were roughly 98,000 residents of Steuben County which remains primarily rural.

4.5.2.2 Phase IB Archaeological Survey

In November and December 2016, and April, May, June, and October 2017, TRC on behalf of the Applicant conducted Phase IB archaeological survey on the transmission line ROW as well the generation facilities (which is not part of the Project but is being permitted separately under Article 10 of the New York PSL).

Phase IB Study Methods

Field Methods

Phase IB field methods consisted of both pedestrian and shovel test pit (STP) survey to locate all archaeological resources within the Project APE. In areas of High and Moderate Probability, TRC excavated STPs at 15-meter (49.2 feet) intervals along survey transects in all proposed construction impact areas. In its Research Design, TRC identified areas of High Probability as areas in close proximity to previously recorded cultural resources or historic features, floodplains, stream confluences, areas adjacent to water sources (within 100 meters [328.1 feet]), headwater zones, prominent knolls, ridge fingers, benches, wetland edges, and rock overhangs. Areas of Moderate Probability included relatively

level uplands displaced from perennial water sources (greater than 100 meters [328.1 feet]). Low Probability areas included moderate to steeply sloping surfaces and areas of existing ground disturbance.

To help ascertain the viability of the probability-defined field methods, TRC examined between 5 and 10 percent of all areas identified as High and Moderate Probability with a 5-meter (16.4 feet) STP interval. The locations of the smaller subset of close interval testing in High and Moderate Probability areas are based on suitable areas as determined in the field. The selection of size of the subset was determined by individual parcel configuration.

In areas of Low Probability, which consist predominantly of areas of steep slope, a combination of pedestrian survey and judgmental STP excavation was conducted. Pedestrian survey was conducted in lieu of shovel testing where steep slope, exposed bedrock, wetlands, and/or ground disturbance precludes the utility of shovel testing. Judgmental STPs were excavated in areas of micro-topography, such as small level benches on steep slope, possible rock shelter locations, and narrow, ephemeral stream crossings.

Per OPRHP *Guidelines*, all STPs measured 30-50 centimeters (11.8-19.7 inches) in diameter, and were excavated to sterile subsoil. All excavated soil was screened through ¼-inch hardware cloth over tarps or plastic sheeting. Soil strata within each shovel test were recorded on standardized forms describing Munsell color and USDA soil types. All shovel tests were backfilled after completion. All shovel tests were recorded using a *Trimble* sub-meter accurate GPS unit and plotted on aerial photographs and Project maps. Per OPRHP *Guidelines*, when artifacts are discovered in an isolated shovel test context, a minimum of eight additional shovel tests at 1-meter (3.3 feet) and 3-meter (10 feet) intervals are excavated. All work was conducted inside the Project APE. No deep testing is anticipated for this Project based on the absence of deep alluvial floodplains in the Project footprint.

Laboratory Methods and Curation

Photographs, field form records, field notes and maps were returned to TRC's Lanham, Maryland office for processing. Although no artifacts have yet been recovered, should artifacts be recovered during the remaining survey, they will be cleaned, catalogued, and analyzed according to the *New York Archaeological Council Standards*, and selected items illustrated. All analysis will be conducted according to the OPRHP *Guidelines*, and the Secretary of the Interior's *Standards and Guidelines for Curation* (36 CFR 79). Lab work will be undertaken to determine the age, function, cultural affiliation and significance of the identified sites. Deeds of gift will be obtained for any collections derived from this investigation prior to submittal to the NYSM or other identified repository for permanent curation at a state-approved facility (to be identified via consultation with the OPRHP).

Phase IB Study Results

Based on shovel tests excavated following the field methodology outlined in the previous section, one historic archaeological site was identified in the Project APE. This archaeological resource is summarized in Table 4.5-2 and as follows.

Table 4.5-2. Summary of Archaeological Resources Identified during Phase I Survey and Potential Impacts

Site Name	Description	Location	Potential Impacts	Avoidance Measures
EPW-TRC-1 (10114.000028)	Historic Domestic Site and Outbuilding	Intersection of Kelly Road and Brown Hollow Road in Greenwood Township; approximately 1-mile south of Rock Creek	No potential impacts	Site avoided by Project design

Site EPW-TRC-1 (10114.000028)

Site EPW-TRC-1 (10114.000028) is near the intersection of Kelly Road and Brown Hollow Road in the Town of Greenwood, approximately 300 feet from ROW to the east. The site contains the remains of at least two structures dating to the mid- nineteenth to early twentieth century. One structure is represented by a field stone foundation built into the side of a man-made terrace. The second foundation is located approximately 100 meters (328 feet) from the first foundation. It consists of a partially intact concrete slab surface and disarticulated field stones.

Following site identification, Supplemental Phase IB Investigations were conducted to obtain additional information to assist with site interpretation. This fieldwork consisted of close-interval shovel testing and excavation of three 1-x-1-meter test units. The combined field effort yielded a total of 555 artifacts, consisting of 361 Architectural items (machine-cut nails, window glass, hardware, and brick fragments), 145 Domestic items (historic ceramics and vessel glass), four Activity items (domestic implements), and one unidentified item; the remaining items (n=44) consist of modern and organic material. Eight different types of historic ceramics were identified including whiteware, American stoneware, and ironstone. Ceramic dating was conducted on the sample to provide a tentative mean ceramic date (MCD) of 1851.1, though almost 75 percent of the ceramics are commonly found throughout the mid nineteenth to early twentieth century.

Review of historic maps from 1857 and 1873 depict a structure in this approximate location associated with the name *A. J. Miller*; the structures continue to appear on 1926 and 1965 topographic maps and on a 1952 aerial photo. Initially, the site was interpreted as possible outbuilding remains associated with a domicile east of the survey corridor. However, artifact analysis indicates a domestic occupation with the foundations likely representing a house site and barn. Artifacts collected are consistent with a mid to late nineteenth-century time frame. The Project has been rerouted in this area to avoid this resource. The nearest structure is Tower 124, approximately 300 feet to southwest.

4.5.2.3 List of All Recovered Artifacts

Artifacts Recovered During Phase IB Survey

TRC collected a total of 555 artifacts during the Phase 1B archaeological survey of EPW-TRC-1. When artifacts were collected in the field, TRC archaeologists recorded standard provenience information and placed artifacts in sealed plastic bags per standard archaeological field practices. All recovered artifacts were washed, dried, and cataloged per standard archaeological laboratory procedures. Recovered artifacts were described to a level of detail sufficient to prepare an artifact inventory for inclusion in the Phase 1B archaeological report, which includes descriptions of each artifact's material, temporal or cultural/chronological associations (when possible to ascertain), style, and function. In addition, a selection of representative artifacts was photographed for inclusion in the report.

The Applicant understands that all artifacts recovered during this contract are the property of the land owner from which the artifacts were recovered. The Applicant also anticipates that the Project's cultural resources consultant will curate any recovered artifacts in a manner consistent with professional standards. If appropriate, the consultant may identify local repositories (such as local historical societies or archaeological museums) for disposition of recovered artifacts. Collected artifacts have been processed in a manner consistent with professional standards, such as the New York Archaeological Council's (NYAC) Standards for Cultural Resource Investigations and Curation of Archaeological Collections in New York State (NYAC, 1994; the NYAC Standards).

A complete list of all recovered artifacts is included in the Phase 1B Archaeological Survey Report, included with this Application as Appendix 4-4.

4.5.2.4 Unanticipated Discovery Plan

It is possible that archaeological resources could be discovered during construction phases for the Project. As such, this Unanticipated Discovery Plan presents the approach that would be employed to address such emergency discoveries to ensure that any potentially significant archaeological resources discovered are dealt with in full accordance with State and Federal requirements, including the most recent *Standards for Cultural Resource Investigations and Curation of Archaeological Collections in New York State*. This approach would also ensure that procedures and lines of communication with the appropriate government authorities are clearly established prior to the start of construction so that discoveries can be addressed in a timely manner, minimizing the impacts to the construction schedule to the extent possible.

Both the environmental inspectors and the construction personnel would be provided with a preconstruction briefing regarding potential cultural resource indicators. These indicators would include items such as recognizable quantities of bone, unusual stone deposits and ash deposits, or black-stained earth that could be evident in spoil piles or trench walls during construction. In the event that potentially significant cultural resources or human remains are discovered during construction, the environmental monitors and construction personnel would be instructed to follow the specific requirements and notification procedures outlined below. Cultural resource discoveries that require

reporting and notification include any human remains and any recognizable, potentially significant concentrations of artifacts or evidence of human occupation.

If cultural resources indicators are found by construction personnel, the construction supervisor would be notified immediately. The supervisor, in turn, would notify the environmental inspector, who would notify a professional archaeologist who would be available to respond to this type of find. Based on the information provided, the archaeologist would determine if a visit to the area is required and, if so, would inform the construction crews. No construction work at the site that could affect the artifacts or site would be performed until the archaeologist reviews the site. The site would be flagged as being off-limits for work, but would not be identified as an archaeological site per se in order to protect the resources. The archaeologist would conduct a review of the site and would test the site as necessary. The archaeologist would determine, based on the artifacts found and on the cultural sensitivity of the area in general, whether the site is potentially significant and would consult with the OPRHP regarding site clearance.

Discovery of Human Remains

If Native American human remains are encountered, procedures for such discoveries would be followed in accordance with State and Federal regulations, including the *Native American Graves Protection and Repatriation Act of 1990* and its implementing regulations (43 CFR § 10). This will involve consultation with the SHPO or Tribal Historic Preservation Officer (THPO) and appropriate interested parties in an effort to identify and notify next of kin, closest lineal descendant, or the Indian tribes who may be culturally affiliated with the remains, and to determine appropriate treatment and disposition of the remains.

4.5.3 Study of the Impacts on Historic Architectural Resources

This section provides for the identification, evaluation, and assessment of effects (if required) from the construction and operation of the Project on architectural historic properties listed in or eligible for listing in the NRHP. TRC completed one Historic Architecture Reconnaissance Survey covering both the Project and the associated generation facility (which is not part of the Project and is being permitted separately under Article 10 of the New York PSL), The goal of the survey was to document all previously recorded and newly identified above-ground architectural resources 50 years of age or older within the Project APE and evaluate their eligibility for listing in the NRHP in consultation with OPRHP, consistent with Section 106 of NHPA and OPRHP *Guidelines*. The final report document was submitted through the CRIS website on September 5, 2017. In response to an OPRHP request dated September 18, 2017, TRC submitted an addendum containing information on identified cemeteries on September 25, 2017. To date, the OPRHP has prepared findings regarding eligibility of certain historic properties but has not issued a formal consolidated response. A copy of the complete reconnaissance survey report and addendum is provided as Appendix 4-5. A summary of the survey methods, findings, and recommendations pertaining to the proposed transmission line follows.

Consultation

Consultation with local organizations and individuals familiar with historic preservation took place in coordination with the preparation of the concurrent Visual Impacts Assessment (see Appendix 4-2). Only one response pertained to architectural historic properties located approximately 4.5 miles outside the boundary of the Project APE in adjoining Allegany County. To date, TRC has received no other public comment.

Definition of Area of Potential Effects (APE)

In consultation with the OPRHP, TRC received approval of its revised Research Design and survey methodology (dated February 29, 2016) on March 29, 2016. On January 24, 2017, TRC presented its approach to delineating separate APEs for both direct and indirect visual impacts for both the Project and the associated generating facility in a telephone conversation with OPRHP staff. Following this discussion, and confirmed via email on January 25, 2017, the OPRHP agreed to waive both the in-person APE review meeting and the one-mile "ring" survey provisions of its *Guidelines.*

TRC delineated the APE for direct effects pursuant to 36 CFR § 800.16(d). This comprises the Project's area of physical disturbance in the transmission line corridor. For the visual effects APE for the transmission line corridor, TRC adopted a 0.5-mile-radius APE standard employed by the Federal Communications Commission (FCC) for cellular tower construction.

To locate and plot areas of visibility for transmission line, TRC conducted a viewshed analysis utilizing several computerized Geographical Information System (GIS) desktop analyses based on both straight topography and an average 50-foot tree cover. Coarsely plotted tree data, a result of the scales involved, was checked and refined using modern aerial photography. The results of the viewshed analyses were then plotted on the APE maps to facilitate identification of historic resources within the direct line of sight of the Project.

Background Research

In order to locate previously identified historic resources, TRC conducted an initial desktop analysis utilizing the OPRHP's CRIS and NRHP online database. This review found no listed or eligible historic properties inside the APEs for the transmission line. An additional 3 resources were previously recorded but unevaluated. The remainder of the previously identified resources listed in the CRIS system were determined not eligible and therefore not addressed during further investigation.

TRC submitted the APE maps to OPRHP for review and approval via an upload to CRIS on March 6, 2017. The OPRHP approved the APE delineation, and affirmed TRC's one-time special exception to utilize both vegetation and topography for conducting its viewshed analysis in conjunction with delineating the APE for visual effects on March 20, 2017.

Following OPRHP initial approval of the APEs, subsequent revisions of the Project design resulted in a reduced overall survey area and revised APE. The revised APEs were then utilized to complete the architectural survey. A second review of OPRHP records revealed no change in the number of previously

recorded listed, eligible and unevaluated resources. Table 4.5-3 lists all previously identified architectural historic properties.

Table 4.5-3. Previously Identified Unevaluated Architectural Resources Within the Transmission Line APE

Item No.	USN# (Alt. USN#)	Type	Name	Address	Current NRHP Status
1	10115.000007	Residence		5400 CR 28 Purdy Creek Rd, Hartsville, NY	Unevaluated
2	10117.000004	Farmstead		South Side, Van Campen Rd, Hornellsville, NY	Unevaluated
3	10117.000003	Greenhouse		CR 64, Hornellsville, NY	Unevaluated

Architectural Field Survey

Consistent with OPRHP *Guidelines*, the historic architecture reconnaissance Survey re-examined the 3 previously recorded but unevaluated resources, and all newly identified districts, sites, buildings, structures, and objects 50 years of age or older within the Project APEs as determined by the viewshed analysis. Preparatory to fieldwork, TRC compared historic aerial photographs, 1960s-era USGS maps, and modern aerial photographs to pinpoint and plot the locations of all extant resources over 50 years of age using GIS. Building ages were then confirmed or corrected during the reconnaissance effort through a combination of visual observations and analysis of stylistic evidence, construction materials, historic photographs, personal communications with property owners, and the Steuben County and Allegany County tax assessor's records.

Each resource was documented via photography and with field notes recording dates, form/style, current conditions, and locations. Generally, resources not in the line of sight were excluded from the visual effects APE and were not surveyed, subject to verification in the field. Resources located partially within the viewshed or adjoining the line-of-sight boundary were typically included in the survey out of an abundance of caution. In cases of potential historic districts or cultural landscapes, the reconnaissance survey recorded all potential contributing elements and identified general justifiable boundaries. If the boundaries of a potential historic district extended outside the visual effects APE, the architectural survey identified an overall general district boundary but limited survey efforts only to resources located inside the viewshed.

The architectural survey examined 117 newly identified individual historic resources and 1 potential historic districts (South Hornell Historic District, Hornellsville) inside the 0.5-mile transmission line APE. The investigation also looked for, but did not identify, potential agricultural historic districts with the

required integrity for eligibility under the NRHP Criteria. TRC concluded that the potential South Hornell Historic District lacked sufficient significance and/or integrity for NRHP eligibility.

Identification of Historic Properties

Significant historic properties include districts, sites, buildings, structures, and objects that are at least 50 years old and meet at least one NRHP criterion. For a property to be eligible for listing in the NRHP, it must possess the quality of significance in American history, architecture, archaeology, engineering, or culture present in districts, sites, buildings, structures, and objects and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of persons significant in our past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded, or may be likely to yield, information important in prehistory or history.

Several additional Criteria Considerations can apply. These pertain to religious properties, moved properties, birthplaces or gravesites, cemeteries, reconstructed buildings, commemorative properties, and properties that have achieved significance within the past 50 years.

In addition to significance, a historic property must also possess integrity to convey its significance. The seven aspects of integrity include location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity, a property will always possess several, and usually most, of the seven aspects. Historic properties either retain integrity (that is, convey their significance) or they do not.

Of the three previously identified unevaluated resources surveyed, two (USN# 10117.000004; USN# 10117.000003) could not be located and are presumed demolished. The third (USN# 10115.000007) lacked the required significance and/or integrity under the NRHP Criteria. TRC recommended the latter resource not eligible for listing in the NRHP and the OPRHP concurred in a determination of eligibility on September 18, 2017.

Of the 117 newly identified resources, one, a farmstead located off Van Campen Road in Hornellsville (TRC# 1363) was not accessible and could not be surveyed. It remains unevaluated. The remaining 116 resources all comprised farmhouses, farmsteads, or residences reflecting common forms with little or no significance and extensive losses to integrity. TRC recommended these 116 resources not eligible for listing in the NRHP.

Analysis of Potential Cumulative Impacts on Archeological and Historic Resources

As a result of the architectural survey, TRC identified no historic properties inside the 0.5-mile Project APE for the transmission line, and concluded that as currently designed, the Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent

considerations. To date, the OPRHP has not issued a formal consolidated response to TRC's recommendations.

4.6 Vegetation and Wildlife Resources

This section provides an overview of the vegetation and wildlife that may occur in the vicinity of the proposed Project. This section also describes the potential impacts on terrestrial vegetation and wildlife that may result from the construction and operation of the Project, along with the methods that will be used to avoid, minimize and mitigate those potential impacts. The following information is based on existing published information, literature review, and site reconnaissance. Important habitats and protected species are discussed in Section 4.6.3 (Endangered and Threatened Species).

4.6.1 Vegetation

Upland vegetation communities within the 50 feet of either side of the transmission centerline (Project ROW) were identified on the basis of aerial photography and field observations. Field observations were completed in the late summer and fall of 2016, spring of 2017, and summer of 2017. The dominant, commonly encountered vegetative communities have been characterized according to the classification system presented in *Ecological Communities of New York State, Second Edition* (Edinger, et al., 2014).

The upland vegetation cover types observed can be categorized into three major groups, including: open uplands, forested uplands, and terrestrial cultural communities. Open uplands are defined as communities with less than 25 percent canopy cover of trees. Open upland communities include grasslands, meadows, and shrublands. Forested uplands are communities with greater than 60 percent canopy cover of trees. Forested upland communities occur on substrates with less than 50 percent rock outcrop or shallow soil over bedrock. Terrestrial cultural communities have been either created and maintained by human activities, or modified by human influence to such a degree that the physical conformation of the substrate or the biological composition of the resident community is substantially different from the character of the substrate or community that existed prior to human influence (Edinger, et al., 2014).

Open upland vegetative cover types that have been observed in the vicinity of the Project corridor include successional old field and successional shrubland. Observed forested uplands include Appalachian oak-hickory forest, beech-maple mesic forest, hemlock-northern hardwood forest, and successional northern and southern hardwoods. Observed terrestrial cultural communities include cropland/row crops, cropland/field crops, pastureland, mowed lawn, mowed lawn with trees, mowed roadside/pathway, paved road/path, rock quarry, gravel mine, and brushy cleared land.

Wetland vegetation cover types observed are categorized as palustrine, which consists of non-tidal perennial wetlands characterized by emergent vegetation (Edinger et al., 2014). Stream classifications encountered are categorized as lacustrine or riverine. The riverine system consists of linear aquatic communities of flowing, non-tidal waters with a discrete channel, with persistent emergent vegetation sparse or lacking, but may include areas with abundant submerged or floating-leaved aquatic vegetation (Edinger et al., 2014). The lacustrine system consists of ponded waters situated in topographic depressions or dammed river channels, with persistent emergent vegetation sparse or lacking, but

including any areas with abundant submerged or floating-leaved aquatic vegetation (Edinger et al., 2014).

More specifically, delineated wetland and stream feature community types encountered throughout the transmission line were categorized based off of the Cowardin classification system (Federal Geographic Data Committee, 2013). Delineated wetland community types included palustrine emergent wetland, palustrine scrub-shrub wetland, palustrine forested wetland, palustrine open water, and stream community types included riverine upper perennial, riverine intermittent, and riverine ephemeral.

The following are descriptions of the dominant terrestrial, palustrine, and riverine communities traversed by the Project.

Terrestrial Communities

Appalachian oak-hickory forest

This hardwood forest occurs on the ridgetops, upper slopes, and on the south- and west-facing slopes of hills and mountains. Soils are well-drained and normally have a sandy-loam or general loam texture. Appalachian oak-hickory forest is very common in the Project. Dominant trees in this community include a co-dominance between red oak (*Quercus rubra*) and white oak (*Quercus alba*) species. Mixed with these oaks at lower densities are shagbark hickory (*Carya ovata*) and even scarcer occurrences of sweet pignut hickory (*Carya ovalis*). Red maple (*Acer rubrum*), white ash (*Fraxinus americana*), and hop hornbeam (*Ostrya virginiana*) also occur as common associates in this forest. The shrub layer of this forest includes saplings of the aforementioned tree species and also choke cherry (*Prunus virginiana*), red raspberry (*Rubus idaeus*), serviceberry (*Amelanchier arborea*), witch hazel (*Hamamelis virginiana*), and gray dogwood (*Cornus racemosa*). Characteristic ground layer herbs are Pennsylvania sedge (*Carex pensylvanica*), false Soloman's seal (*Maianthemum racemosum*), wild sarsaparilla (*Aradia nudicaulis*), black cohosh (*Cimicifuga racemosa*), rattlesnake root (*Prenanthes alba*), silver-rod (*Solidago bicolor*), and mayapple (*Podophyllum peltatum*).

Beech-maple mesic forest

Beech-maple mesic forest is also very common in proximity and crossing the Project. This community occurs on moist well-drained soils with usually an acidic content. This forest is described as a northern hardwood forest with sugar maple (Acer saccharum) and American beech (Fagus grandifolia) occurring codominant with each other. Common associates which occur in the community to a lesser extent are yellow birch (Betula alleghaniensis), white ash, hop hornbeam, and red maple. Eastern hemlock (Tsuga canadensis) may occur at very low quantities as well. The shrub layer of this forest includes saplings of the aforementioned tree species and also hobblebush (Viburnum lantanoides), American hornbeam (Carpinus caroliniana), and witch hazel. Saplings of sugar maple and American beech scatter the ground layer along with Canada mayflower (Maianthemum canadense), Christmas fern (Polystichum acrostichoides), various wood ferns, white wood aster (Eurybia divaricata), trilliums (Trillium undulatum, T.erectum), trout lily (Erythronium americanum), white snakeroot (Ageratina altissima var. altissima), Pennsylvania sedge, and common wood-sorrel (Oxalis montana).

Hemlock-northern hardwood forest

Hemlock-northern hardwood forest is a common coniferous forest community found within vicinity of the Project. These forest communities are mixed and generally occur on the middle to lower cool slopes of shaded ravines and hillslopes. These communities occur on moist, well-drained loamy soils. Eastern hemlock is predominant within the tree stratum and can range in coverage from pure stands to comprising only 20% of the tree canopy. Along with eastern hemlock, there is an assortment of tree species which can act as a codominant within this community. Relative to the Project, sugar maple, red maple, yellow birch, red oak, American beech, white ash, white oak, white pine (*Pinus strobus*), American basswood (*Tilia americana*), and black cherry (*Prunus serotina*) have been observed to be codominant tree species. Within the shrub layer, striped maple (*Acer pensylvanicum*) is a common species witnessed in this community. Along with the saplings of the aforementioned canopy trees, witch hazel, hobblebush, maple-leaf viburnum (*Viburnum acerifolium*), lowbush blueberry (*Vaccinium pallidium*), and a range of raspberries (*Rubus* spp.) populate the shrub layer. Due to the low light environment created by the hemlock dominant tree stratum, the ground layer of this community is generally sparse. However, when present, ground layer herbaceous species include various wood ferns, Christmas fern, Pennsylvania sedge, trillium species, round-leaf violet (*Viola rotundifolia*), common wood-sorrel, and lady fern (*Athyrium filix-femina*). When pockets of sunlight do penetrate the upper canopy and reach the ground layer, New York fern (*Thelypteris noveboracensis*) and hay-scented fern (*Dennstaedtia punctilobula*) can also be found.

Successional northern and southern hardwoods

Successional forests are common in the vicinity of the Project. A majority of the forestlands within the Project have been cleared for agriculture in the past or were historically utilized for timber production, with operations continuing to a lesser extent into the present day. Successional forests can develop either after man-made clearing events or in the wake of destructive natural events (floods, blow-downs during high wind events, forest fires, etc.). After clearing has occurred, and the impacted land begins to revert back to forests, plant species which are well-adapted to establishment after disturbances begin to populate the area. Northern successional hardwoods occur north of the coastal lowlands ecozone and southern successional hardwoods occurs in the southern half of New York. As such, both successional forest community types occur within the Project.

Successional old field

Successional old fields are openland with secondary successional vegetative growth. The community is dominated by forbs and grasses that tend to sprout quickly in disturbed sites, such as sites that have been previously plowed, graded or cleared. This community may have no more than 50 percent cover of shrubs and unless this community is regularly maintained, succession to shrubland, woodland, or forest communities would occur. Characteristic vegetation includes goldenrods (*Solidago* spp. and *Euthamia graminifolia*), bluegrasses (*Poa pratensis*, *P. compressa*), timothy (*Phleum pratense*), quackgrass (*Elymus repens*), smooth brome (*Bromus inermis*), sweet vernal grass (*Anthoxanthum odoratum*), orchard grass (*Dactylis glomerata*), common chickweed (*Cerastium arvense*), common evening primrose (*Oenothera biennis*), old-field cinquefoil (*Potentilla simplex*), calico aster (*Sympyotrichum lateriflorum* var. *lateriflorum*), New England aster (*Sympyotrichum novae-angliae*), wild

strawberry (*Fragaria virginiana*), Queen-Anne's-lace (*Daucus carota*), ragweed (*Ambrosia artemisiifolia*), hawkweeds (*Hieracium* spp.), dandelion (*Taraxacum officinale*), and ox-tongue (*Picris hieracioides*) (Edinger et al., 2014). Successional old-fields are in moderate number with the Project ROW and cover approximately 4.6%.

Successional Shrubland

A successional shrubland occurs on sites that have been cleared or otherwise disturbed and is defined by more than 50 percent cover of shrubs. Characteristic shrubs include gray dogwood, eastern red cedar (*Juniperus virginiana*), raspberries, serviceberries (*Amelanchier* spp.), choke-cherry, wild plum (*Prunus americana*), sumac (*Rhus glabra*, *R. typhina*), nanny-berry (*Viburnum lentago*), and arrowwood (*Viburnum dentatum*). Non-native invasive shrubs such as hawthornes (*Crataegus* spp.), multiflora rose (*Rosa multiflora*), buckthorns (*Rhamnus cathartica*, *Frangula alnus*), and shrubby honeysuckles (*Lonicera* spp.), are also found within this community type (Edinger et al., 2014). Successional shrublands are a relatively small percent of the Project ROW, accounting for approximately 2.1% of the land cover.

Agricultural Land

In reference to Ecological Communities of New York, there were multiple types of terrestrial cultural communities within the Agricultural Land designation, including cropland/row crops, cropland/field crops, and pastureland (Edinger et al., 2014). Most row crops established within the Project Area are corn (*Zea mays*), which is utilized as feedstock, livestock feed, or for human consumption. Hay fields are also scattered throughout the Project Area and are utilized as green chop or open pasture land for roaming livestock. Active agricultural land in the form of hay fields, pastureland, and cultivated crops covers approximately 19.3% of the Project ROW.

Developed Land

Most of the landscape within the transmission line corridor is rural in nature, so developed lands are largely uncommon. Developed lands represent areas with extreme anthropogenic influence and are characterized by the presence of buildings, roadways, quarries, residential areas, commercial properties, industrial sites, and maintained greenspaces (mowed lawns, gardens, parks, etc. Vegetation within these areas tend to be sparse when not artificially planted or influenced. However, when present, certain species which thrive in disturbed environments act as pioneer species, or become directly or indirectly introduced, tend to propagate within disturbed areas. Often in developed areas non-native plant species flourish in a community which generally characterizes old-field appearances and functions. Non-native species such as ragweed, Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), rambler rose, European buckthorn, amur honeysuckle (*Lonicera maackii*), cut-leaf teasel (*Dipsacus laciniatus*), common mullein (*Verbascum thapsus*), purple loosestrife (*Lythrum salicaria*), and various upland grasses generally populate these developed areas. Developed lands cover approximately 2% of the total land coverage within the Project ROW.

Palustrine Communities

Emergent Wetland

Emergent wetlands are dominated by an herbaceous layer of hydrophytic (water-tolerant) plant species. Emergent wetlands typically contain deep, nutrient rich soils that remain heavily saturated or even inundated throughout the year.

More specifically, some emergent wetlands witnessed in the transmission line corridor contained characteristics representative of wet meadows (Reschke, 1990). Wet meadows are not a Cowardin classification; however, wet meadows are usually found in depressional areas with poorly drained soils and a mix of upland and wetland herbaceous vegetation. Redoxification usually occurs in the upper layers of the soil strata due to wet meadows being drier then emergent marshes on average, except for periods of seasonal inundation. Within wet meadows, wetland (hydrophytic) vegetation still dominates the herbaceous layer; however, these meadows more resemble common grasslands that remain saturated for a significant amount of the growing season. Wet meadow wetlands found in the Project appeared to be primarily the result of retired agricultural fields returning to preexisting wetland conditions.

Emergent wetlands and wet meadows encountered in the transmission line corridor were typically dominated wetland vegetation including, but not limited to, cottongrass bulrush (*Scirpus cypernius*), sedges (*Carex* spp.) and rushes (*Juncus* spp.), reed canary grass (*Phalaris arundinacea*), common boneset (*Eupatorium perfoliatum*), spotted joe-pye weed (*Eutrochium maculatum*), rice cut grass (*Leersia oryzoides*), sensitive fern (*Onoclea sensibilis*), late goldenrod (*Solidago gigantea*), broad leaf cattail (*Typha latifolia*), and American manna grass (*Glyceria grandis*).

Scrub-shrub Wetland

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

Scrub-shrub wetlands encountered in the transmission line corridor were typically dominated by wetland vegetation including, but not limited to, willow species (*Salix* spp.), white meadowsweet (*Spiraea alba*), common winterberry (*Ilex verticillata*), speckled alder (*Alnus incana*), red chokeberry (*Aronia arbutifolia*), red maple saplings, gray dogwood, and highbush blueberry (*Vaccinium corymbosum*). Herbaceous vegetation in these areas were dominated by sensitive fern, cottongrass bulrush, rice cut grass, spotted touch-me-not (*Impatiens capensis*), late goldenrod, purple-stem American-aster (*Symphyotrchum puniceum*), and various sedges and rushes.

Forested Wetland

Forested 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 sufficient light for extensive vegetative growth in the understory. Coniferous swamps, lowland hardwood swamps, and floodplain forests are common

types of forested wetlands. Soils in forested wetlands are typically inundated or saturated early spring into summer. Some forested wetlands may dry up entirely, which reveal water stain marks along the trunks of exposed tree species and also shallow, buttressed root systems indicative of periods of heavy inundation events.

Forested wetlands encountered in the transmission line corridor were typically dominated by tree species of eastern hemlock), red maple, silver maple, green ash (*Fraxinus pennsylvanica*), swamp white oak (*Quercus bicolor*), American elm (*Ulmus americana*), and quaking aspen (*Populus tremuloides*). Understory vegetation typically included saplings of the aforementioned species or shrub species, such as common winterberry, speckled alder, silky dogwood (*Cornus amomum*), or eastern hop-horn beam. Herbaceous species included cinnamon fern (*Osmunda cinnamomea*), sensitive fern, spotted touch-me-not, American manna grass, rush and sedge species, rice cut grass, cottongrass bulrush, American wild mint (*Mentha arvensis*), purple-leaf willowherb (*Epilobium coloratum*), brome-like sedge (*Carex bromoides*), late goldenrod, and purple-stem American-aster.

Riverine and Lacustrine Communities

Open water areas are characteristic of man-made and natural lacustrine and riverine systems located within the transmission line corridor. Lacustrine systems (i.e., relating to ponds and lakes) within the Project Area include artificial impoundments, farm ponds, and natural ponds. Specific riverine systems (i.e., relating to confined streams) generally refer to ephemeral drainages, intermittent streams, and perennial streams. Although aquatic vegetation grows within some of these communities, emergent wetland vegetation often grows along the periphery of these communities as well. Typical emergent wetland species associated with open water communities within the Project include cottongrass bulrush, sedges and rushes, reed canary grass, common boneset, spotted joe-pye weed, rice cut grass, sensitive fern, late goldenrod, broad leaf cattail, and American manna grass amongst others. Open water is relatively sparse within the Project ROW, encompassing only approximately 0.29% of the total transmission line corridor.

Section 4.6.8 below provides an analysis of potential impacts to resources and measures proposed to minimize impacts.

4.6.2 Wildlife

Wildlife species expected to be present within the Project Area were identified based on existing data sources such as the New York State Breeding Bird Atlas (NYSBBA, 2000), the New York State Reptile and Amphibian Atlas (NYSDEC, 1999), and direct observation during field surveys.

Terrestrial wildlife within the Project Area includes typical species that are found within residential and agricultural areas in the region. As described in Section 4.3.1, the Project Area includes a mix of agricultural fields, successional old fields, successional shrubland, forestland, and various wetland communities. The following discussion describes the general habitat types within the Project Area and describes the wildlife species assemblage found in each.

Wildlife species expected to be present within the Project Area were identified based on existing data sources such as the New York State Breeding Bird Atlas (NYSBBA, 2000), U.S. Geologic Survey (USGS) North American Breeding Bird Survey (BBS), Audubon Christmas Bird Count (CBC), U.S. Fish and Wildlife Service Information, Planning, and Conservation System (IPaC) list, New York Natural Heritage Program correspondence, "Amphibian and Reptile Atlas Project" (Herp Atlas Project) provided by the NYSDEC (2017), and through habitat analysis and direct observation during various environmental field surveys.

Terrestrial wildlife within the vicinity of the Project includes typical species that are found within the region. As described in Section 4.3.1, the Project Area includes a mix of agricultural fields, successional old fields, successional shrubland, forestland, and various wetland and stream communities. The following discussion describes the general habitat types within the transmission line corridor and describes the general wildlife species assemblage found in each.

Forested Habitats

Typical wildlife species that utilize the forested habitats in the transmission line corridor include white-tailed deer (*Odocoileus virginianus*), Virginia opossum (*Didelphis virginiana*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*) raccoon (*Procyon lotor*), gray squirrel (*Scirus carolinensis*), eastern chipmunk (*Tamias striatus*), striped skunk (*Mephitis mephitis*), porcupine (*Erethizon dorsatum*), black bear (*Urus americanus*), American robin (*Turdus migratorius*), blue jay (*Cyanocitta cristata*), blackcapped chickadee (*Parus atricapillus*), tufted titmouse (*Parus bicolor*), northern cardinal (*Cardinalis cardinalis*), northern flicker (*Colaptes auratus*), downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), pileated woodpecker (*Dryocopus pileatus*), scarlet tanager (*Piranga olivacea*), red-eyed vireo (*Vireo olivaceus*), ovenbird (*Seiurus aurocapillus*), black-throated green warbler (*Dendroica virens*), chestnut-sided warbler (*Dendroica pensylvanica*), Nashville warbler (*Vermivora ruficapilla*), yellow-bellied sapsucker (*Sphyrapicus varius*), pileated woodpecker (*Dryocopus pileatus*), scarlet tanager (*Piranga olivacea*), red-spotted newt (*Notophthalmus viridescens*), and American toad (*Bufo americanus*) (Edinger, et al., 2014; NYSBBA, 2000; NYSDEC, 1999).

Agricultural Areas

Agricultural land within the transmission line corridor mainly consists of row crops, field crops, and pastureland. Due to the sporadic disturbances attributed to active agricultural areas, fields are used by wildlife in various capacities but mainly offer foraging opportunities over any form of permanent habitation. Typical wildlife species that are utilizing this habitat within the Project Area include white-tailed deer, Virginia opossum, coyote, red fox, Eastern cottontail rabbit (*Sylvilagus floridanus*), woodchuck (*Marmota monax*), American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), grasshopper sparrow (*Ammodramus savannarum*), vesper sparrow (*Pooecetes gramineus*), bobolink (*Dolichonys oryzivorous*), mourning dove (*Zenaida macroura*), horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferus*), common garter snake (*Thamnophis sirtalis*), house mouse (*Mus musculus*), and meadow vole (*Microtus pennsylvanicus*) (Edinger, et al., 2014; NYSBBA, 2000; NYSDEC, 1999).

Shrublands

The shrubland habitats within the transmission line corridor include successional shrubland. General species that utilize this habitat include white-tailed deer, Eastern cottontail rabbit, wild turkey (*Meleagris gallopavo*), Northern mockingbird (*Mimus polyglottos*), gray catbird (*Dumetella carolinensis*), brown thrasher (*Toxostoma rufum*), warblers (*Parulidae* spp.), eastern towhee (*Pipilo erythrophthalmus*), field sparrow (*Spizella pusilla*), song sparrow (*Melospiza melodia*), indigo bunting (*Passerina cyanea*), common garter snake, and eastern milk snake (*Lampropeltis triangulum*) (Edinger, et al., 2014; NYSBBA, 2000; NYSDEC, 1999).

Section 4.6.8 below provides an analysis of potential impacts to resources and measures proposed to minimize impacts.

4.6.3 Aquatic Species

Aquatic Habitats

The aquatic habitat within the transmission line corridor consists of streams, wetlands, and water-filled depressions. These aquatic habitats are used by wildlife for shelter, forage, drinking water, breeding areas and travel corridors. Typical amphibian species found within the wetlands in the Project Area include eastern American toad, northern spring peeper (*Pseudoacris c. crucifer*), green frog (*Rana clamitans melanota*), bullfrog (*Rana catesbeiana*), mink frog (*Rana septentrionalis*), wood frog (*Rana sylvatica*), gray treefrog (*Hyla versicolor*), northern leopard frog (*Rana pipiens*), red-spotted newt, northern two-lined salamander (*Eurycea bislineata*), and northern redback salamander (*Plethodon c. cinereus*). Reptile species that may be found within aquatic habitats in the Project Area include the redbelly snake (*Storeria occiptomaculata*), smooth green snake (*Opheodrys vernalis*), common snapping turtle (*Chelydra serpentina*), and painted turtle (*Chrysemys picta*) (NYSDEC, 1999). Avian species that utilize the shallow, emergent wetlands within the Project Area include red-winged blackbird (*Agelaius phoeniceus*), swamp sparrow (*Melospiza georgiana*), and common yellowthroat (*Geothlypis trichas*). Within shrub swamp habitats, common bird species include common yellowthroat (*Geothlypis trichas*), American bittern (*Botaurus lentiginosus*), and willow flycatcher (*Empidonax trallii*). Mammal species that forage or travel through the aquatic habitats in the transmission line corridor generally include raccoons, opossum, fisher, weasel, and white-tailed deer (Edinger et al., 2014).

Freshwater Fish

A formal request to the NYSDEC Division of Fish, Wildlife & Marine Resources requesting information pertaining to freshwater fish species documented in waterbodies within the Project and the generation facilities was sent on March 21, 2017. Streams which are encompassed in the transmission line ROW include Purdy Creek, Fall Creek, Slate Creek, and Rock Creek. Minor tributaries associated with the aforementioned waterbodies include unnamed tributaries to the Canisteo River, unnamed tributaries to Purdy Creek, unnamed tributaries to Slate Creek, unnamed tributaries to Rock Creek, and unnamed tributaries to Bennett Creek. Purdy Creek and associated tributaries, Slate Creek, Rock Creek, and unnamed tributaries to the Canisteo River are also included in the database query provided by NYSDEC.

Waterbodies which contain sufficient depths and other habitat characteristics to support fish species are located at the bases of these hilltops and in the river valleys bisecting the Project. Project layout was designed through an iterative process of identifying wetland locations and siting Project components to avoid and minimize impacts to surface waters and wetlands in support of Federal and State laws. The use of BMPs in construction locations adjacent to streams and culverts along encountered streams will be utilized in order to mitigate adverse impacts to fish and other aquatic populations within the Project.

The NYSDEC Statewide Fisheries Database was consulted for each of the identified waterbodies. A total of seven fish species were identified as a result of the inquiry which was received on March 30, 2017. Larger, and recreationally significant fish potentially located within the Project include brook trout (*Salvelinus fontinalis*) and brown bullhead (*Ameiurus nebulosus*). Smaller fish species are far more inconspicuous, however they play important roles in the aquatic ecologies of inhabited waterbodies. These smaller fish are also known to inhabit the above-mentioned streams as well, and include species such as Central stoneroller (*Campostoma anomalum*), creek chub (*Semotilus atromaculatus*), Eastern blacknose dace (*Rhinichthys atratulus*), longnose dace (*Rhinichthys cataractae*), and the molted sculpin (*Cottus bairdii*).

Section 4.6.8 below provides a summary of impacts to vegetative resources and mitigation measures.

4.6.4 Endangered and Threatened Species

The Endangered Species Act (ESA) of 1973 protects fish, wildlife, plants and invertebrates that are federally-listed as threatened and endangered, as well as species-specific critical habitat. A federally-listed endangered species is one that is in danger of extinction throughout all or a significant portion of its range. A federally-listed threatened species is likely to become endangered in the foreseeable future throughout all or a significant portion of its range. "Critical habitat" is defined as specific areas both within and outside the geographic area occupied by a species on which are found those physical and biological features essential to its conservation.

A Project-specific USFWS IPAC Resource Report (2016) and NYSDEC town/county protected species lists were reviewed for federally-protected species known to occur in the vicinity of the Project (see Appendix 4-6).

The Migratory Bird Treaty Act (MBTA), originally passed in 1918, implements the U.S. commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource, protecting more than 800 species of birds. The list of migratory bird species protected by the MBTA appears in Title 50, Section 10.13, of the Code of Federal Regulations (CFR) (50 CFR 10.13). The MBTA states that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird, unless authorized under a permit issued by the Secretary of the Interior. Take is defined in regulations as to: "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR 10.13). The USFWS delisted the bald eagle in 2007; however, bald and golden eagles are additionally protected under the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S. Code 668-668d). On December 22, 2017, the United States Department of Interior (DOI) issued a 41-page memorandum (DOI Memorandum) withdrawing and replacing Solicitor's Opinion M-37041, which had interpreted the

MBTA's broad prohibition on taking and killing migratory birds by any means and in any manner as including ***incidental*** taking and killing of such birds. The DOI Memorandum states that the MBTA "is a law limited in relevant part to affirmative and purposeful actions, such as hunting and poaching, that reduce migratory birds and their nests and eggs, by killing or capturing, to human control." Activities (such as the construction and operation of wind energy farms) which incidentally take such birds are not within the scope of the MBTA, according to this DOI memorandum.

In addition to federal law, New York has passed laws to protect threatened and endangered species. State-listed species are protected under Article 11 of the New York State Environmental Conservation Law and its implementing regulations at 6 NYCRR Part 182, which are administered by the NYSDEC. A review of the NYSDEC's Environmental Resource Mapper, an online interactive mapping application, did not identify any potential threatened and endangered plant and animal polygons at the county/town level. Additionally, the Applicant reviewed the NYSDEC Nature Explorer website and did not identify any state-listed species with confirmed occurrences in the towns crossed by the Project in Steuben County.

A list of federal and state-listed species compiled from IPaC research and agency consultation with the potential to occur in Steuben County is provided in Table 4.6-1.

Table 4.6-1. Federal and State-Listed Species with Potential Occurrences in the Project Area

Species (Common Name)	Scientific Name	Federal Listing	State Listing	Town and/or County Of Occurrence
Bats				
Northern Long-eared Bat	*Myotis septenrionalis*	T	T	Steuben County
Eastern Small-footed Myotis	*Myotis leibii*	NL	SC	Steuben County
Birds				
American Bittern	*Botaurus lentiginosus*	NL	SC	Steuben County
Bald Eagle	*Haliaeetus leucocephalus*	NL	T	Steuben County
Black-billed Cuckoo	*Coccyzus erythropthalmus*	NL	SGCN	Steuben County
Blue-winged Warbler	*Vermivora pinus*	NL	SGCN	Steuben County
Canada Warbler	*Wilsonia canadensis*	NL	SGCN	Steuben County
Golden Eagle	*Aquila chrysaetos*	NL	E, SGCN	Steuben County (observed)
Golden-winged Warbler	*Vermivora chrysoptera*	NL	SC	Steuben County
Henslow's Sparrow	*Ammodramus henslowii*	NL	T	Steuben County
Least Bittern	*Ixobrychus exilis*	NL	T	Steuben County
Louisiana Waterthrush	*Parkesia motacilla*	NL	SGCN	Steuben County
Northern Harrier	*Circus cyaneus*	NL	T	Steuben County

Species (Common Name)	Scientific Name	Federal Listing	State Listing	Town and/or County Of Occurrence
Olive-sided Flycatcher	*Contopus cooperi*	NL	SGCN	Steuben County
Peregrine Falcon	*Falco peregrinus*	NL	E	Steuben County
Pied-billed Grebe	*Podilymbus podiceps*	NL	T	Steuben County
Prairie Warbler	*Dendroica discolor*	NL	SGCN	Steuben County
Prothonotary Warbler	*Protonotaria citrea*	NL	SGCN	Steuben County
Red-headed Woodpecker	*Melanerpes erythrocephalus*	NL	SC	Steuben County
Short-eared Owl	*Asio flammeus*	NL	E	Steuben County
Willow Flycatcher	*Empidonax traillii*	NL	SGCN	Steuben County
Wood Thrush	*Hylocichla mustelina*	NL	SGCN	Steuben County

E = Endangered, T = Threatened, SC = Special Concern, SGCN = Species of Greatest Conservation Need, NL = Not Listed
Source: USFWS, 2016
[1]NYNHP, 2016
NYSDEC, 2017b

Based on this listing, the species of greatest conservation need are species of migratory birds that could potentially be affected by activities but are not currently listed under the ESA. These species are identified in IPaC as "birds of conservation concern", which are those species that, without additional conservation actions, are likely to become candidates for listing under ESA. In addition, the bald eagle is protected under the BGEPA. The Project is not likely to adversely affect the birds of conservation concern.

Section 4.6.8 below provides an analysis of potential impacts to resources and measures proposed to minimize impacts.

4.6.5 Federally-Listed Species

Mammals

Northern Long-Eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is federally-listed as threatened and state-listed as threatened. The northern long-eared bat population declined drastically when white nose syndrome (WNS) appeared in New York State in 2006. As of 2012, only two percent of the pre-WNS northern-long eared bat population remained (NYNHP, 2017a). Other threats to the northern-long eared bat population include; habitat degradation or alteration and disturbance during winter hibernation. In the summer months, the northern long-eared bat roosts under loose bark or in the cracks and crevices of both living and dead trees. These maternity roost trees may host a maternity colony of up to 100 bats

or more (USFWS, 2015). The northern-long eared bat will emerge from their roosts at dusk to forage. They usually fly in the understory of forested areas or on forested ridges feeding on flying insects (NYNHP, 2017a). In the winter, these bats hibernate in groups within caves or abandoned mines, referred to as hibernacula.

Birds

No federal-listed bird species were identified by the USFWS to occur along the transmission line route.

Fish

No federal-listed fish species were identified to occur along the transmission line route.

Butterflies and Moths

No federal-listed butterflies or moth species were identified to occur along the Transmission Line Route.

Plants

No federal-listed plant species were identified to occur along the Transmission Line Route.

Reptiles

No federal-listed reptile species were identified to occur along the Transmission Line Route.

4.6.6 State-Listed Species

Mammals

Northern Long-Eared Bat

The northern long-eared bat (*Myotis septentrionalis*) is federally-listed as threatened and state-listed as threatened. For more information regarding the northern long-eared bat see above in Section 4.6.4.

Eastern Small-footed Myotis

The Eastern small-footed myotis (*Myotis leibii*) bat is state-listed as special concern. In New York, known population distribution is limited to hibernacula which includes abandoned mines and caves. Hibernacula can be found in northern New York as well as caves in eastern and central New York, and southern and western New York mines. The global distribution of this species is spotty; however, New York is one of the states with a large known population (NYNHP, 2017b).

The Eastern small-footed myotis winters in hibernacula such as mines, caves, and between deep rock crevices. Suitable summer maternity roosting habitat include deciduous forests in southeastern and central New York but not limited to where the species is believed to be widespread. The main threat to this bat species is disturbance in their hibernacula during the winter hibernation period (NYNHP, 2016). The species is vulnerable to habitat fragmentation or degradation, winter disturbance, disease, and

environmental contaminants which may contribute to its population decline. Construction of the Project will not affect mines, caves or deep rock crevices.

Birds

Several state-listed bird species were documented to occur within the vicinity of the Project. These species were identified through NYSDEC and NYNHP correspondence and a majority of species were also verified through on-site survey work at the EPWEC generation component. State-listed species which were determined to potentially occur within the Project are discussed below.

American Bittern

The American Bittern (*Botaurus lentiginosus*) is state-listed special concern species. Typically in early spring this migratory species returns and seeks habitat in wetland areas with the occasional nest in grasslands or fields next to wetlands. Historically, American Bitterns were common throughout New York but their population has declined due to wetland loss and degradation. The secretiveness of this species has made it difficult to assess the distribution, population status, and habitat associations (NYSDEC, 2017c).

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is state-listed threatened species. Historically, bald eagles nested in forests along the shorelines of oceans, lakes or rivers throughout most of North America. Eagles prefer undisturbed areas near large lakes and reservoirs, marshes and swamps, or stretches along rivers where they can find open water and their primary food source, fish. Bald eagles mate for life, returning to nest in the general area from which they fledged. A bald eagle nest is a large structure, usually located high in a tall, live white pine tree near water (NYSDEC, 2017d). There were no eagle nests observed in the vicinity of the Project. The closest nest is approximately 1.75 miles east of the t-line, along Bennetts Creek (north of the Hamlet of Greenwood).

Golden Eagle

The golden eagle (*Aquila chrysaetos*) is a state endangered eagle species. Golden eagles are commonly found in the western United States plains and are fairly common in the western states. Sightings occur in the eastern U.S. mostly during fall and spring migration but breeding east of the Mississippi River is nearly extirpated. Open areas such as tundra, grasslands, and deserts are preferred habitats of the eagle where they can feed primarily on live mammals such as rodents, rabbits, birds, and reptiles. Golden eagles mate for life and return to the same nest year after year. The nests are built of large sticks and aromatic leaves that may get large from additional material added each year. Nest can be found in a tree but are typically located on a cliff ledge often with protection of an overhanging tree or rock (NYSDEC, 2017e). There were no golden eagle nests observed in the vicinity of the Project.

Golden-winged Warbler

The golden-winged warbler (*Vermivora chrysoptera*) is a state-listed special concern species. The golden-winged warbler prefers to nest in early successional fields with both shrubby and open areas.

This songbird breeding range is shifting in a westward pattern from the north central and northeastern United States and into Ontario, Canada. A shift from the former range may be due to loss of early successional habitat, competition and hybridization with the blue-winged warbler (*Vermivora pinus),* and nest parasitism by the brown-headed cowbirds (*Molothrus ater)* (NYSDEC, 2017f).

Henslow's Sparrow

The Henslow's sparrow (*Ammodramus henslowii*) is a state-listed threatened species. The Henslow's sparrow habitat consists of fields and meadows that are fallow, weedy, and often moist. Populations of this species are much localized in New York, primarily central and western parts of the state. Since the 1950s there has been a steady decline in the Henslow's sparrow populations. Loss of agricultural grasslands habitat for breeding is the main threat to this species (NYSDEC, 2017g).

Least Bittern

The least bittern (*Ixobrychus exilis*) is a state-listed threatened species. The least bittern occurs in freshwater and brackish marshes with tall, dense emergent vegetation such as cattails, sedges, and rushes that are interspersed with clumps of woody shrubs and open water. The range of the least bittern extends throughout the eastern United States, and in New York, it thrives in large, expansive cattail marshes associated with large lakes and rivers including Lake Champlain. The least bittern feeds primarily on small fish and nest in a construction of cattail leaves situated over the water in dense, tall stands of the emergent vegetation (NYSDEC, 2017h).

Northern Harrier

The northern harrier (*Circus cyaneus*) is a state-listed threatened species. This species, formerly known as the marsh hawk, breeds throughout North America in both freshwater and brackish marshes, tundra, fallow grasslands, meadows and cultivated fields. Communal flocks roost on the ground during winter and migratory periods in agricultural fields, abandoned fields and salt marshes. The northern harrier is known to occur throughout New York. This species primarily feeds on rodents and small birds and nests in a flimsy structure built of sticks and grass in dense vegetation on the ground (NYSDEC, 2017i).

Peregrine Falcon

The peregrine falcon (*Falco peregrinus*) is a state-listed endangered species. This species has an extensive worldwide range, preferring open country from tundra, savannah and sea coasts to high mountains, as well as open forests and tall buildings. The nests are built on high ledges, 50 to 200 feet off the ground. In New York, the peregrine falcon has a current breeding range along the Hudson River and surrounding Lake Champlain (NYSDEC, 2017j). There were no peregrine falcon nests observed in the vicinity of the Project.

Pied-billed Grebe

The pied-billed grebe (*Podilymbus podiceps*) is a state-listed threatened species. This species is the most widely distributed grebe in the Americas. In New York, pied-billed grebe breeding records are scattered across the state but are most abundant in marshes associated with the St. Lawrence River Valley and

Lake Ontario. This species breeds on freshwater to brackish seasonal and permanent ponds and requires dense stands of deep water emergent vegetation for nesting and cover that are situated close to open water for foraging (NYSDEC, 2017k).

Red-headed Woodpecker

The red-headed woodpecker (*Melanerpes erythrocephalus*) is a state-listed special concern species. This species is both sedentary and migratory within its breeding range. They nest in dead tree cavities up to 80 feet above the ground. The red-headed woodpecker's diet consists of seeds, nuts, fruit, insects, and small animals such as mice. This species is located from southern Canada to the Gulf coast through the eastern and central United States east of the Rocky Mountains and west of the New England states. The decline in the population is believe to be attributed to nesting competition, vehicle collisions, agricultural pesticides, and loss of habitat (NYSDEC, 2017l).

Short-eared Owl

The short-eared owl (*Asio flammeus*) is a state-listed endangered species. This species is a bird of open country including grasslands and marshlands, often opportunistically inhabiting areas where small mammals are abundant. The short-eared owl are widely distributed breeding in marshes, grasslands, and tundras throughout North America and globally. This species is most common as a winter resident in New York and is very rare as breeder, being largely limited to the St. Lawrence and Lake Champlain Valleys, the Great Lakes plains and the marshes of Long Island's south shore (NYSDEC, 2017m).

Fish

No state-listed fish species were identified to occur along the transmission line route.

Butterflies and Moths

No state-listed butterfly and moth species were identified to occur along the transmission line route.

Plants

No state-listed plant species were identified to occur along the transmission line route.

Reptiles

No state-listed reptile species were identified to occur along the transmission line route.

4.6.7 Sensitive Habitats and Protected Species

The Applicant obtained information regarding sensitive habitats and protected species potentially occurring in the Project area from various federal and state resource agencies including USFWS, NYSDEC, NYNHP, and New York State Department of Agriculture & Markets (NYSDAM). A record of agency consultations is provided in Appendix 4-6.

Federal and state designated important habitats that may occur in the Project Area include USFWS designated critical habitat, New York State Wildlife Management Areas (WMA), NMFS Essential Fish Habitat (EFH), Important Bird Areas (IBA), Significant Coastal Fish and Wildlife Habitats (SCFWH), NYNHP Significant Natural Communities (SNC), and any other designated lands that are protected primarily for the conservation of fish and/or wildlife habitat.

Wildlife Management Areas

Wildlife Management Areas (WMAs) are areas protected by the state for conservation and protection of wildlife. The closest WMA is the West Cameron WMA, which is located approximately 11 miles east of the Project. The Project does not traverse any WMAs.

Important Bird Areas

The IBA Program is a worldwide initiative to identify and conserve areas determined to be important habitat for birds and other wildlife species. To date, the National Audubon Society has administered the IBA Program in the U.S., designating approximately 2,832 IBAs encompassing nearly 417 million acres (NAS, 2017). The Project does not traverse any NYSDEC designated IBAs within the State of New York. There are no known avian migratory flyways in the Project area.

Significant Coastal Fish and Wildlife Habitats

Under the Significant Coastal Fish and Wildlife Habitats (SCFWH) Program, the New York Department of State (NYDS) considers a site significant if it serves one or more of the following functions:

- is essential to the survival of a large portion of a particular fish or wildlife population;
- supports populations of species which are endangered, threatened or of special concern;
- supports populations having significant commercial, recreational or educational value; or
- exemplifies a habitat type which is not commonly found in the state or in a coastal region (19 NYCRR 602.5(a)).

The nearest SCFWHs are associated with Lake Ontario, approximately 60 miles to the north of the Project.

NYNHP Significant Natural Communities

The NYNHP is tasked with designating areas as Significant Natural Communities (SNCs). SNCs are locations of rare or high-quality wetlands, forests, grasslands, ponds, streams, and other types of habitats, ecosystems, and ecological areas (NYNHP, 2017c). The Project is not located within any NYNHP designated SNCs or areas identified as important habitats and the nearest SNCs is approximately ten miles to the east of the Project.

Essential Fish Habitat

The Magnuson-Steven Act mandated that habitats essential to managed species be identified and measures to conserve and enhance these habitats be implemented. These essential habitats include wetlands, coral reefs, seagrasses, river-where fish spawn, breed, feed, or grow to maturity (NOAA, 2017a). No EFH was identified within the Project Area (NOAA, 2017b).

4.6.8 Project Effects of Construction on Vegetation and Wildlife Resources and Mitigation Measures to Be Applied

Vegetation

To minimize the effects to the aforementioned ecological communities that will occur as a result of construction and operation of the Project, mitigation measures and BMPS will be applied based upon location-specific field conditions. BMPS based upon applicable PSC precedent will be proposed in the EM&CP to serve as a "tool box" of mitigation measures to be employed in the ROW. Clearing of the ROW and access roads will generally be performed mechanically and will not require the use of herbicides during construction. Handcuttings will be employed in wetlands and stream buffers as appropriate. Temporary impacts for each pole location will be approximately 100 foot by 300 feet. Access roads will be no wider than a 20 foot width. The Applicant has taken measures to avoid, minimize, and mitigate vegetation impacts to the maximum extent practicable. To minimize potential impacts on vegetation adjacent to the Project Area, construction vehicle operations and the staging of equipment will be restricted to areas within the ROW, workspaces and designated staging areas.

Clearing of forestland cover types will occur within the majority of the Project ROW, which is dominated by forest communities. Note that at least five of the participating landowners already log trees in the ROW. Forest conversion for the Project will occur where forestland is initially cleared for purposes of Project construction and then would be maintained as successional communities for the life of the Project to allow access for maintenance and also maintain proper clearance for the circuit. Based on a Study Area of one-half mile from the transmission center line (Study Area), land classification data from the National Land Cover Dataset (NLCD; USGS 2001) indicates that approximately only 2% of forest land within the Study Area will be converted from forest to field. The Applicant plans to only remove stumps of forest species where the placement of components is intended to occur. BMPs will establish clearing and disposal methods to accomplish ROW clearing in accordance with appropriate area-specific techniques and the Project's Invasive Species Control Plan.

The second most land coverage within the Project Area is active agricultural land. Construction of the Project will result in a temporary disturbance of approximately only 2% of the vegetation associated with crops and pastures within the Study Area based on NLCD data. Temporary impacts to agricultural land will occur from the clearing of vegetation needed for various components during the construction phase of the Project. Temporarily disturbed active agricultural areas will have top soils stripped prior to construction. The topsoil will then be replaced upon completion of the construction phase of the Project. This method will allow for crops and pasture lands to return to preexisting growth conditions overtime. The Applicant will consult with participating landowners where agricultural land would be impacted in order to coordinate construction and any farming activities. To the extent possible the

Applicant will identify the location of subsurface drain tiles on agricultural lands and conduct restoration activities that accommodate future drainage installation.

The construction of the Project will also result in the temporary disturbance of approximately only 1% of lands within the Study Area comprised of barren, scrub / shrub, and grasslands and 1% of the developed land with the Study Area. Temporary impacts will occur as a result of initial clearing and disturbance of these cover types for purposes of construction access and the siting of Project components. However, after construction of the Project has ceased and the Project becomes operational, these areas will be left to revegetate or otherwise return to their preexisting condition. Permanent loss of these cover types will occur from the siting of transmission poles.

Initial mitigation efforts have been undertaken through the application of attentive site planning. During the design phase of the Project, special consideration was given to avoid unnecessary impacts to forestland, active agricultural land, wetlands, and waterbodies. As a result, impacts to these landscape features (and vegetative communities) will be marginal. The Project poles have been sited in order to confine disturbances to the smallest area possible. Existing natural and man-made corridors through forestland, existing farm lanes, and logging roads have been utilized for access when possible, and work areas have been adjusted to utilize open fields to the extent possible.

Efforts to avoid, mitigate, or minimize impacts to vegetative communities will also occur by complying with guidance from environmental monitors, maintaining clean work sites, employing best management practices during construction, and also demarcating areas highly susceptible to adverse disturbances. These confined areas will be deemed inaccessible to construction equipment/vehicles and any other disturbance activity. To minimize direct impacts to vegetation not cleared during construction, the limits of the temporary construction workspace will be clearly marked in the field prior to construction to ensure that no disturbance occurs outside this area.

Following the construction phase of the Project, restoration of temporarily disturbed areas will take place. Temporarily disturbed areas will be seeded with native (other than impacted agricultural areas) and typical wetland and/or upland seed species mixes. These seeded areas will be stabilized with mulch and/or straw and left to reestablish preexisting vegetative coverage in these areas. The permanent ROW will be maintained free of trees through mechanical cutting as herbicides will not be employed. The impacts on terrestrial vegetation associated with the operation of the Project are expected to be minor due to the amount of available habitat in the area.

Indirect impacts to vegetation may include increased soil erosion and sedimentation as well as the creation of conditions conducive to invasive species establishment. A soil erosion and sedimentation control plan will be developed and implemented as part of the stormwater pollution prevention plan (SWPPP) for the Project. Specific control measures are identified in the Preliminary SWPPP, which can be reviewed in Appendix 4-7 of this Application. The final SWPPP will be submitted to DEC as part of obtaining the General 402 Construction Stormwater Permit NOI. Invasive species management measures, consistent with measures adopted by the PSC in other Article VII Applications, will also be developed as part of the EM&CP.

Based on the above analysis, the Project will not result in any extirpation or significant reduction to any existing plant community. The construction and operation of the Project will not result in adverse impacts to protected plants or to significant ecological communities. Impacts to vegetation will be minimized through the use of Commission-approved BMPs and SWPPP measures.

Wildlife

Wildlife species and habitat along the Project ROW are common throughout Steuben County. The construction and maintenance of the ROW will result in minor temporary and permanent alterations of wildlife habitat. In general, the Project will convert a portion of the area's forest to shrubland and herbaceous vegetation through the permanent clearing of forested areas. However, the overall acreage impacted is minor considering the available habitat that will be remaining.

Impacts to wildlife associated with construction activities are anticipated to be minor and temporary. No application of pesticides is proposed during construction. Construction equipment sound may induce temporary avoidance behaviors in nearby wildlife although this impact will also be temporary and minor. Immediate disturbances during the construction phase of the Project will cause disruption of local game species (white-tailed deer, ruffed grouse, turkey, etc.) and avian species. However, after the construction phase of the Project is completed, game species generally will adapt to man-made features in the habitats, and will even use the newly cleared areas for foraging.

Construction areas will be restored to preconstruction conditions, with the exception of previously forested areas which will be maintained in an herbaceous state. No application of pesticides is proposed along the transmission line corridor during operation. The Applicant expects that the POI will continue to be maintained by NYSEG with the same vegetative maintenance program that currently is being employed.

The Project is located on the edge of forested areas where practical so as to reduce forest fragmentation. The installation of the ROW will result in the creation of edge effects in some areas which were previously continuous habitat. Edge effects are changes which occur in species populations or community structures which occur at the periphery of two habitats. Edge effects vary somewhat with distance from forest edge, depending on the type of effect and species of vegetation or wildlife (USDA NRCS, 2012). However, within the State of New York, 300 feet is frequently used as a general range for the edge effect disturbance line, which can be stated as the distance into a forest patch where the edge effect disappears and interior forest conditions are proposed to begin generally (USDA NRCS, 2012). In comparison to the overall forest interior areas which will remain directly adjacent to the ROW (300 feet in from the newly created edge), adverse impacts to forest interior species should be relatively minor. It is likely that forest interior species will relocate to adjacent forest interiors and those habitats still persist at such a capacity locally that relocation of interior species would occur easily and overall impacts would be marginal. Species which thrive in forest edge habitat would see a net gain of habitat as a result of the ROW and it is proposed that there would be a positive population response by those species as a result of the Project.

Federal and State-listed Threatened and Endangered Species

Based on Project-specific information received from the NYNHP, NYSDEC, USFWS, and direct on-site observations, a list of state and federally-listed species was compiled which are believed to occur, or have the potential to occur, within the Project Area. Site-specific information requests to state and federal agencies were made in order to determine the presence of rare, threatened, endangered, and special concern species (see Appendix 4-6). Similarly, a list of species encountered during on-site survey work was documented by field staff. Any species which was visually identified on-site and also on the aforementioned state or federal registry was also included in the list of state and federally-listed species occurring within the Project Area.

In order to avoid potential impacts to northern long-eared bats, all tree clearing activity will occur during the recommended USFW time-of-year clearing period (October 1 to March 31). Therefore, no impacts on federal or state-listed threatened or endangered species or their critical habitats are anticipated from construction of the Project. The Applicant will continue its coordination with federal and state resource agencies in regard to threatened and endangered species.

Based on the above analysis, none of the construction or operation impacts will be significant enough to affect local populations of any resident or migratory wildlife species. There is no evidence of any population-level impacts to species and the small area of converted habitat will be minimized based on available technologies, alternatives and pertinent considerations. Impacts to wildlife will also be minimized through the use of Commission-approved BMPs and SWPPP measures.

4.7 WETLAND AND STREAM RESOURCES

This section discusses the surface water and groundwater features located within the Project's area of disturbance. This section also describes the studies and methodology undertaken to identify the potential effects of the construction and operation phases of the Project on documented wetland and streams within the Project Area. Data sources used in this section include NYSDEC Freshwater Wetland Maps, NYSDEC priority stream classification mapping, National Wetland Inventory (NWI) maps, contemporary orthoimagery, and information gained through on-site wetland delineations performed in accordance with field investigations to identify wetlands, streams, and other surface waters. Surveys were performed in accordance with criteria set forth in the USACE 1987 Wetlands 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 resultant report is provided as Appendix 4-8. The following subsections include a discussion of existing conditions followed by a description of measures that will be implemented to minimize potential adverse environmental effects on these resources after considering available technologies, alternatives and pertinent considerations.

4.7.1 Mapped Wetland and Stream Resources

According to the NWI mapping, a total of one federal wetland totaling approximately 0.26 acres is within the Survey Area, which is defined in this section as a 200 foot corridor centered on the transmission centerline. NWI mapping data indicates that this wetland's dominant community type is riverine.

Review of NYSDEC mapping indicates that there are no NYSDEC freshwater wetlands mapped within the Survey Area that are regulated under Article 24 of the Environmental Conservation Law (ECL). The NYSDEC classification system of freshwater wetlands provides class rankings (I-IV) for wetlands according to their specific ability to provide multiple predetermined functions and values (Class I having the highest rank, descending through to Class IV). The closest state-regulated wetland is NYSDEC freshwater wetland HR-7. This state wetland is a Class III wetland and mapped to be 33.1 acres in size and located 0.4 miles east of the northern terminus of the transmission line in the Town of Hornellsville, New York.

Based on available NYSDEC stream classification mapping, there are four mapped streams within the Survey Area that are listed as state priority streams. State-protected streams are protected per Article 15 of the ECL. Table 4.7-1 below provides a detailed summary of all NYSDEC classified priority (protected and unprotected) streams that cross the Project ROW.

Table 4.7-1. NYSDEC Mapped Priority Streams within the Survey Area

Stream Name	Drainage Basin	NYSDEC Classifications[1]	Cumulative Linear Feet within Transmission Line ROW
Canisteo River, Middle, and minor tributaries	Chemung River	C	200.9
Purdy Creek, and tributaries	Chemung River	C	689.9
Bennetts Creek, Lower, and tributaries	Chemung River	C, C(T)	365.6
Bennetts Creek, Upper, and tributaries	Chemung River	C, C(T)	951.8
[1]NYSDEC classifications include C, C(T), and C(TS) (6 NYCRR Part 701).			

4.7.2 Delineated Wetland and Stream Resources

Prior to initiating field investigations, TRC conducted a desktop review of publicly available data to determine the presence of mapped wetlands and streams within the Survey Area. TRC field biologists subsequently carried out field investigations within the Survey Area to identify wetlands, streams, and other surface waters. Surveys were performed in accordance with criteria set forth in the USACE 1987 Wetlands 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). Data was collected from one or more sample plots in each delineated wetland (depending on the size of the delineated area and any change in cover type), and were recorded on USACE Routine Wetland Determination forms. The boundaries of wetlands were demarcated with pink survey ribbon labeled “wetland delineation” and located with a Trimble Geo 6000 XH GPS unit with reported sub-meter accuracy.

Hydrophytic vegetation was assessed by identifying plant species and their assigned wetland indicator rating of obligate, facultative wetland, facultative, facultative upland, and upland according to the 2016 National Wetland Plant List (Lichvar et al., 2016). Vegetation in both upland and wetland communities was characterized using areal methods for instituting plot measurement. In accordance with USACE methodology, a plot radius of 30 feet around the soil sample location was applied to tree species, a 15-foot radius for saplings/shrubs, and a five-foot radius was utilized for herbaceous plants. After the measurement of percent coverage was determined for each species, an application of the 50/20 rule of dominance determination was utilized to define the presence or absence of overall hydrophytic dominance at sample plots.

Hydric soil indicators were determined utilizing the *Field Indicators of Hydric Soils in the United States: A Guide for Identifying and Delineating Hydric Soils, Version 8.1* (USDA NRCS, 2017). Soil characteristics were documented, such as matrix color, layer depth, presence of organic/peat layers, and evidence of redoximorphic features, which may include indicators such as saturation, redoxification, gleyed matrices, manganese mottling, and hydrogen sulfide odor. Soil test pits were dug using a spade shovel to a depth of approximately 20 inches or more. Refusal of soil sample to 20 inches occurred in some instances due to the presence of hardpan layer, rock, or hard fill materials and was documented. Soil color was described using the Munsell Soil Color Book (Munsell Color, 2015) and texture was determined using the USDA hand-texture methods.

Presence of wetland hydrology was determined based on a number of indicators established by the USACE that are divided into two categories: primary and secondary. The USACE wetland delineation manual defines the presence of wetland hydrology when at least one primary indicator or two secondary indicators are identified. One primary indicator is sufficient to determine if hydrology is present; however, if these are absent then two or more of the secondary indicators are required to determine the presence of wetland hydrology. If other probable wetland hydrology evidence was found on-site, then such characteristics were subsequently documented on the data form.

Additional surface waters, including stream channels and drainage ways found during on-site survey work, were also investigated and characterized. These waters were investigated and documented in the field in order to determine drainage patterns, the presence of aquatic habitat, substrate character, channel gradient, flow regime, riparian vegetation characteristics, and potential connections to other Waters of the United States. Representative photographs were taken of each delineated wetland community and stream within the Survey Area.

Wetlands and streams delineated in the Survey Area are discussed in the following sections and are shown on Figure 4.7-1 and depicted in detail along with assumed jurisdictional status in Table 4.7-2. A total of 28 wetlands were delineated in the Survey Area. Other wetlands delineated in the Survey Area are jurisdictional under Section 404 of the Clean Water Act (CWA) with the exception of wetlands AS-W-17, AS-W-18, AS-W-19, AS-W-D, AS-W-E, and JB-W-B.

Table 4.7-2. Wetlands Within Project Survey Area

Delineation ID	Cowardin Classification	Wetland Acreage Within Transmission Line ROW (Respective Acres)	State Jurisdiction	Federal Jurisdiction
AS-W-14	PFO	0.13	No	Yes
AS-W-15	PEM	0.05	No	Yes
AS-W-16	PEM	0.13	No	Yes
AS-W-17	PEM	0.07	No	No
AS-W-18	PEM	0.07	No	No
AS-W-19	PSS	0.10	No	No
AS-W-20	PSS	1.39	No	Yes
AS-W-B	PUB	0.08	No	Yes
AS-W-D	PEM	0.05	No	No
AS-W-E	PEM	0.11	No	No
AS-W-F	PEM	0.22	No	Yes
CL-W-A	PSS	0.62	No	Yes
CL-W-B	PEM	0.06	No	Yes
CL-W-D	PEM	0.04	No	Yes
CL-W-E	PFO	0.12	No	Yes
DL-W-C	PEM	0.36	No	Yes
DL-W-D	PEM	0.31	No	Yes
DL-W-E-2	PEM	0.06	No	Yes
DL-W-E	PFO	0.08	No	Yes
FA-W-B	PFO	0.03	No	Yes
JB-W-B	PEM	0.04	No	No
JB-W-C	PFO	0.09	No	Yes
JB-W-D	PFO	0.40	No	Yes
JB-W-E	PFO	0.06	No	Yes
WB-W-19	PEM	0.12	No	Yes
WB-W-20	PEM	0.40	No	Yes
WB-W-22	PFO	0.27	No	Yes
WB-W-A	PEM	0.35	No	Yes

The Applicant delineated all streams encountered in the Survey Area and characterized their physical and natural conditions. Resources and guidance criteria utilized during the delineation and characterization of streams and drainages included the USACE definitions for perennial, intermittent and ephemeral streams (USACE, 2012b) and the presence/absence of an Ordinary High Water Mark (OHWM) (USACE, 2005). Results of the delineation and characterization are shown on Figure 4.7-1 and provided below in Table 4.7-3. The Applicant will minimize impacts to these streams by clearing the minimal amount of vegetative buffer consistent with the required safety, engineering, construction and

maintenance practices, as well as other pertinent considerations. Additional discussion of mitigation measures is provided below.

Within the Survey Area, 48 streams were identified, encompassing 16 perennial streams, 19 intermittent streams, and 13 ephemeral streams. The streams crossed by the Project are either unclassified by NYSDEC or have a classification of C (waters supporting fisheries and suitable for non-contact activities) or C(T) (water may support a trout population. Table 4.7-3 below summarizes the streams crossed by the Project. As shown in Table 4.7-3, 7,165 linear feet of streams are anticipated to be temporarily disturbed during construction.

Table 4.7-3. Streams Within Project Survey Area

Steam ID	Stream Name	Stream Flow Regime	NYSDEC Stream Classification[1]	Length of Stream in ROW
AS-S-7	Unnamed tributary to Bennetts Creek	Perennial	C	108
AS-S-8	Unnamed tributary to Bennetts Creek	Ephemeral	Unclassified	30
AS-S-9	Unnamed tributary to Bennetts Creek	Ephemeral	Unclassified	174
AS-S-10	Unnamed tributary to Bennetts Creek	Ephemeral	Unclassified	80
AS-S-A	Fall Creek	Perennial	C(T)	110
AS-S-B	Unnamed tributary to Rock Creek	Intermittent	C	121
AS-S-C	Unnamed tributary to Rock Creek	Ephemeral	Unclassified	21
AS-S-D	Unnamed tributary to Rock Creek	Ephemeral	Unclassified	41
AS-S-F	Unnamed tributary to Slate Creek	Intermittent	Unclassified	8
AS-S-G	Unnamed tributary to Slate Creek	Intermittent	Unclassified	99
AS-S-H	Unnamed tributary to Slate Creek	Intermittent	Unclassified	98
CL-S-6	Unnamed tributary to Slate Creek	Intermittent	Unclassified	938
CL-S-E	Unnamed tributary to Rock Creek	Perennial	C	116
CL-S-I	Unnamed tributary to Slate Creek	Intermittent	C	156
CL-S-J	Unnamed tributary to Slate Creek	Ephemeral	Unclassified	309
CL-S-K	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	155
CL-S-L	Unnamed tributary to Purdy Creek	Intermittent	C	245
CL-S-M	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	206
CL-S-N	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	124
AS-S-G	Unnamed tributary to Slate Creek	Intermittent	Unclassified	99
CL-S-O	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	330
CL-S-Q	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	102
CL-S-R	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	115
DL-S-A	Unnamed tributary to Bennetts Creek	Perennial	C	79

Steam ID	Stream Name	Stream Flow Regime	NYSDEC Stream Classification[1]	Length of Stream in ROW
DL-S-C	Unnamed tributary to Bennetts Creek	Perennial	C	114
DL-S-F	Unnamed tributary to Bennetts Creek	Perennial	C	102
DL-S-G	Unnamed tributary to Bennetts Creek	Perennial	C	39
DL-S-H	Unnamed tributary to Bennetts Creek	Perennial	C	151
DL-S-I	Unnamed tributary to Bennetts Creek	Intermittent	Unclassified	33
DL-S-J	Rock Creek	Perennial	C(T)	137
DL-S-K	Unnamed tributary to Rock Creek	Intermittent	Unclassified	113
DL-S-L	Unnamed tributary to Bennetts Creek	Intermittent	Unclassified	140
DL-S-N	Unnamed tributary to Bennetts Creek	Intermittent	Unclassified	4
FA-S-A	Slate Creek	Perennial	C	117
FA-S-B	Purdy Creek	Perennial	C	101
FA-S-C	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	103
FA-S-D	Unnamed tributary to Purdy Creek	Ephemeral	Unclassified	664
FA-S-E	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	99
FA-S-F	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	121
FA-S-G	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	6
FA-S-H	Unnamed tributary to Purdy Creek	Perennial	C	105
JB-S-A	Unnamed tributary to Canisteo River	Perennial	C	105
JB-S-B	Unnamed tributary to Canisteo River	Perennial	C	148
JB-S-C	Unnamed tributary to Purdy Creek	Perennial	C	165
JB-S-D-2	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	134
WB-S-12	Unnamed tributary to Bennetts Creek	Perennial	C	136
WB-S-14	Unnamed tributary to Bennetts Creek	Intermittent	Unclassified	126
WB-S-A	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	266
WB-S-B	Unnamed tributary to Purdy Creek	Intermittent	Unclassified	170

[1] NYSDEC classifies streams in order of importance and usefulness to the public. The classification "A" is assigned to waters used as a source of drinking water, recreation, and fishing, "B" indicates best usage for recreation and fishing, "C" is used for waters supporting fisheries and suitable for non-contact activities, and "D" is the lowest classification standard and indicates a best usage of fishing, although these waters will not support fish propagation. A standard of (T) or (TS) indicates that the water may support a trout population or trout spawning, respectively.

Fifteen NYSDEC-classified streams were identified in the Survey Area including Fall Creek, Rock Creek, Slate Creek, and Purdy Creek. These streams have been assigned a classification of C or C(T), indicating the best usage of these waters is supporting fisheries and suitable for non-contact activities. The remaining streams within the Survey Area were unclassified by NYSDEC.

There were no ponds or canals identified within the Survey Area.

Impacts to streams located within segments of the ROW are only associated with the clearing and grading of vegetation and topsoil for construction access, installation and operation of the transmission line, and tree/shrub removal within the Project right-of-way. There will be no placement of transmission towers directly into stream features and there will be no fill material placed into stream features. As such, any potential impacts to streams will be avoided or minimized by the protective measures proposed in the draft SWPPP.

Where streams are encountered and must be bisected by the Project, the narrowest corridor will be utilized. Natural vegetation buffer strips will be maintained at stream crossings using selective tree cutting and trimming techniques. The amount of vegetation to be maintained within the buffer strip is dependent upon tree species composition and height, the flexibility of adjusting structure locations and the conductor height. The actual widths of these buffer strips will be described in the EM&CP to be prepared for the Project. This information will be placed on the plan and profile drawings and will be used to locate transmission line support structures. Structures will be placed outside of buffer strips whenever possible.

Operation of construction equipment and vehicles that require the use of diesel and gasoline fuels, lubricating oils, and cooling fluids. The SWPPP and EM&CP will include detailed measures on prevention and containment of inadvertent spills and the use of appropriate BMPs to be protective of sensitive resources on and adjacent to the right-of-way.

The policy of New York State, set forth in Title 5 of Article 15 of the ECL, is to preserve and protect lakes, rivers, streams, and ponds. In an effort to classify which steam is a jurisdictionally protected feature of the state, all waters of the state are provided a class and standard designation based on existing or expected best usage of each water or waterway segment. The classification AA or A is assigned to waters used as a source of drinking water. Classification B indicates a best usage for swimming and other contact recreation, but not for drinking water. Classification C is for waters supporting fisheries and suitable for non - contact activities. The lowest classification and standard is D. Waters with classifications A, B, and C may also have a standard of (T), indicating that it may support a trout population, or (TS), indicating that it may support trout spawning (TS). Special requirements apply to sustain these waters that support these valuable and sensitive fisheries resources. The special requirements of streams dedicated to hold trout species require actions within the waterway to be limited during the spawning and migratory season of trout species.

As a general rule, construction operations for the Project will comply with work period restrictions that are established to protect fish spawning and migration. Specifically, the work period restriction is from October 1 to April 30 for streams with trout and from March 15 to June 15 for other protected streams (NYSDEC, 2017). Site-specific consultation with NYSDEC staff may result in less restrictive no-work

periods if circumstances allow. As such, seasonal work period restrictions on in-stream work during the construction phase of the Project will be established through direct interaction and consultation with the NYSDEC.

4.7.3 Temporary and Permanent Wetland Impacts

Potential impacts to wetland areas during construction and operation will be minimized to the maximum Extent practicable. During the construction phase for the Project, vegetative clearing and soil disturbance will be required to install poles within the Project ROW. Based on preliminary design, no transmission towers will be installed in regulated wetlands.

Approximately 1.2 acres of forested wetlands, out of a total of 5.8 acres of wetlands within the ROW, are anticipated to be converted to scrub-shrub wetlands from required clearing activities while approximately 1.7 acres of wetlands within the ROW could be temporarily disturbed (see Table 4.7-4 below). BMPs designed to minimize impacts to wetlands, based upon applicable PSC precedent, will be presented in the EM&CP.

The Applicant will also need to install temporary construction roads, which will be 16 to 20 feet wide depending on terrain, to allow equipment to access the proposed ROW. The Applicant identified the most likely locations of these temporary access roads (see Exhibit 2) and calculated potential wetlands based on NWI data. Based on the likely access roads to be utilized, an estimated 0.21 acres of NWI wetlands and no DEC-regulated wetlands are anticipated to be temporarily disturbed during construction of the Project. Any impacts would be to ACOE-regulated wetlands, for which the Project will apply for a Nationwide Permit (NWP) (e.g. 51: Land-Based Renewable Energy Generation Facilities; 12: Utility Line Activities) after consultation with the USACE. As shown in Exhibit 2, temporary access roads will employ, to the maximum extent practicable, existing public roadways and existing trails and roads on participating landowner property. Details of these arrangements and where temporary access spurs may need to be created will be presented for review in the EM&CP.

A more detailed discussion of wetlands and proposed mitigation measures follows.

Table 4.7-4. Wetland Impacts Within Project ROW

Delineation ID	Cowardin Classification	Wetland Acreage Within Transmission Line ROW (Respective Acres)	Conversion from Forested to Emergent /Scrub / Shrub Wetland	Temporary Impacts During Construction
AS-W-14	PFO	0.13	0.13	0.13
AS-W-19	PSS	0.10	0.00	0.06
AS-W-20	PSS	1.39	0.00	0.34
AS-W-B	PUB	0.08	0.00	0.01
AS-W-D	PEM	0.05	0.00	0.04
AS-W-E	PEM	0.11	0.00	0.07
AS-W-F	PEM	0.22	0.00	0.22
CL-W-A	PSS	0.62	0.00	0.20
CL-W-E	PFO	0.12	0.12	0.09
DL-W-C	PEM	0.36	0.00	0.13
DL-W-E-2	PEM	0.06	0.00	0.06
DL-W-E	PFO	0.08	0.08	0.00
FA-W-B	PFO	0.03	0.03	0.00
JB-W-C	PFO	0.09	0.09	0.07
JB-W-D	PFO	0.40	0.40	0.00
JB-W-E	PFO	0.06	0.06	0.05
WB-W-19	PEM	0.12	0.00	0.02
WB-W-20	PEM	0.40	0.00	0.09
WB-W-22	PFO	0.27	0.27	0.09
WB-W-A	PEM	0.35	0.00	0.07
	TOTAL:	5.0	**1.2**	**1.7**

Wetland Functions and Values

The functions and values of the delineated wetlands within the Project ROW were assessed using the USACE-developed supplement to the Highway Methodology Workbook entitled Functions and Values: A Descriptive Approach (Supplement). Functions and values are a result of specific biological, chemical, and physical characteristics within the wetland and any complex relationships maintained by the wetland within its watershed, local environment, and also with the general public.

The thirteen functions and values that are considered by the Supplement and by the USACE are listed below. The list includes eight functions and five values. It should be noted that these functions and values are not the only wetland functions and values possible. However, these functions and values do represent the current working suite of descriptors provided by the USACE which will be used to provide an objective representation of the wetland resources associated with the Project.

Wetland Functions

Wetland functions are the properties or process of a wetland ecosystem which aid in promoting a homeostatic natural environment while in the absence of human interference. A wetland's specific function 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 such as, but not limited to, ground water recharge, primary production, nutrient cycling, and sediment retention. Wetland functions 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 of time 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 off of its geomorphic positon, 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 (Nutrient) 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 wetland 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 their periphery. Resident and migrating species were considered along with the potential for any state or federally listed species occurring within then target wetland.

Wetland Values

Values are the societal benefits that occur as a result from one or more of the aforementioned functions and can also include other physical characteristics associated with a wetland which benefits society.

Most wetlands have corresponding public value to an assessable degree. The value of a particular wetland function, or a combination of functions, is based on the interpretative judgment of the significance attributed to the wetlands through the various functions it provides. The judgment of value was based on the opinion of TRC staff members whose views will be ultimately weighed and considered by DEC, DPS and the ACOE staffs. 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 if 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 Value - 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 and associated waterbodies which contain a singular or rare quality. Special qualities may include such things as the wetland's history and the presence of archaeological sites, an unusual aesthetic quality, 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 relates to the effectiveness of the wetland or associated waterbodies to specifically support threatened or endangered species.

Based on processes outlined in the Supplement, the primary functions and values provided by each delineated wetland within the Project ROW were determined (see Appendix 4-8 for a detailed discussion). All twenty-eight delineated wetlands were determined to have the ability to provide some function of groundwater recharge/discharge and wildlife habitat.

4.7.4 Avoidance and Mitigation for Wetland Impacts

Appropriate attempts have been made in the Project design to avoid wetlands and minimize the nature, extent and duration of the disturbance to them. During the construction phase of the Project, potential direct or indirect impacts to wetlands may occur nonetheless as a result of the installation of Project components and in the utilization of temporary workspaces. Where linear wetlands and streams are encountered and must be bisected by the Project, the narrowest and/or previously disturbed portions of the wetlands will be utilized. Based on the preliminary design of the Project there will be no permanent impacts associated with the placement of transmission towers.

Siltation and sedimentation impacts will be negligible throughout the construction phase of the Project. Actions that the Applicant will conduct to limit indirect impacts include the creation of:

Prohibited Access Areas – Waterbodies will be labeled prohibiting the use of motorized equipment in these areas except where a stream is crossed by permitted access roads or through non-jurisdictional use of temporary matting.

Restricted Activities Areas – A 100-foot protective upland buffer will be assigned to wetlands and waterbodies. This upland buffer area will be referred to on construction related mapping and guidelines as a "Restricted Activities Area". Certain specific limitations will be put in place for these areas and will include:

- No placement of cleared vegetation and slash materials within or adjacent to a wetland or waterbody
- No accumulation of construction debris or trash within the restricted area
- No use of herbicide within the restriction area (or as required per manufacturer's instructions)
- No parking of construction equipment, vehicles or mobile operations centers in the restricted area
- No degradation of stream banks
- No equipment washing or refueling within the restricted area
- No storage of any petroleum or chemical material and no disposal of excess concrete or concrete wash water within the restricted area.

A soil erosion and sedimentation control plan will be developed and implemented as part of the SWPPP for the Project. Specific control measures are identified in the Preliminary SWPPP, which can be reviewed in Appendix 4-7. The location of all control features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. Through coordination with an on-site Environmental Monitor, these control features will be inspected on a regular basis to assure that they function properly throughout the period of construction, and until completion of all restoration work.

Through avoidance efforts, the construction and operation phases of the Project will not result in any impacts to NYSDEC freshwater wetlands or their established 100-foot protective upland buffers within the Project Area. The Applicants do, however, anticipate submitting an application to the USACE for Nationwide Permit (NWP) 51: Land-Based Renewable Energy Generation Facilities for federally jurisdictional wetlands. Based on the above analysis, the Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations.

4.8 TOPOGRAPHY AND SOILS

This section provides a discussion of existing conditions and the potential impacts of the Project to geology, topography and soils.

4.8.1 Existing Conditions

Regional Geology

The Project will be located southwest of the Finger Lakes and east of the Genesee River. The proposed transmission line will traverse northerly over Christian Hollow, Cole Hollow, Greenwood Hill, Call Hill, Purdy Hill, and Bear Lick Hollow. To the south lies Pennsylvania's Allegheny Mountains. Turnpike State Forest is located to the northeast of the Project area.

The Project Area resides within the Northern (High) Allegheny Plateau ecological region. This ecoregion resides along the southern tier of New York and the northern tier of Pennsylvania. This ecoregion is defined by high elevation features at the northern end of the Appalachian Plateau. Most of this ecoregion is above 1,200 feet and the general land form of the area is mid-elevation hills separated by numerous narrow stream-cut valleys. This ecoregion is over 16.9 million acres in area and has the second highest percentage of natural cover (81%) of any Northeastern ecoregion (Zaremba, Anderson et al., 2003). Within the ecoregion, deciduous forest covers 52%; 21% is covered by mixed forests, coniferous forests cover 6%; and only 0.7% of the ecoregion is covered by wetlands. Agricultural uses account for 18% of the total land cover (Zaremba, Anderson et al., 2003). Dairy farms are the principle agricultural use with row crops fields limited to the floodplains of river valleys and also tablelands located amongst hilltops. Currently only 1% of the ecoregion is covered by residential and urban development.

More specifically, within this ecoregion, the Project Area resides in the Glaciated Low Allegheny Plateau and the Glaciated Hills sub-ecoregions. The Glaciated Low Allegheny Plateau is a wide-ranging, uniform area which covers much of the Northern Allegheny Plateau of New York. This sub-ecoregion consists of a mosaic of farmland and forestland situated on a low and rolling hillscape. The smooth terrain has been worn through glaciation creating flat hilltops and wide river valleys. Common plant communities alternate between Appalachian oak-pine forest on drier, rocky slopes, and northern hardwoods-conifer forest in ravines, valleys, riparian areas, and on generally moist slopes (Edinger et al., 2014). Most hilltops and river valleys within this plateau have been clear-cut and converted to agriculture while the steeper slopes remain forested.

The Glaciated Allegheny Hills ecoregion has higher elevations on average. These elevation levels are caused by a dominant strata of sandstone and shale which was more resistant to glaciation and weathering events in the past. The Glaciated Allegheny Hills ecoregion is deeply dissected. Soils are known to be stony, acidic, low in fertility, and often found on steep slopes. The soil, climate, and rugged topography make the region more suited to tree growth than agriculture. This is reflected in the ecoregion by being predominantly forested throughout. Hardwood forests, particularly northern hardwood forest communities, are the most dominant. Appalachian oak forests are also known to occur on more dry or south-facing slopes in the region (Edinger et al., 2014).

Topography

The topography along the proposed transmission line route generally can be described as rolling hills and deep valleys, with the hills tending to be steeper along the southern portion of the transmission

line. The Project route begins at approximate elevation of 1,140 feet above mean sea level (amsl) at the POI and generally undulates to the south/southwest, crossing Purdy Creek at approximate elevation 1,320 feet amsl, Fall Creek at approximate elevation 1,855 feet amsl, Slate Creek at approximate elevation 1,635 feet amsl, and Rock Creek at approximate elevation 1,930 feet amsl. The transmission line ends at the Bennett substation at an elevation of approximately 1,135 feet amsl. The highest point along the route is approximately 2,385 feet amsl on Greenwood Hill.

The Applicant has designed the Project to avoid locating Project facilities along high points, ridgelines, and areas of steep slopes, so as to minimize adverse environmental impacts after consideration of available technologies, alternatives and pertinent considerations. Topographic contours are provided on the NYS DOT 1:24,000 maps in Exhibit 2.

Soils

Thirty-three different soil units are mapped 50 feet on either side of the Project's centerline. There are 20 soil series among the transmission line location, of which there are 33 individual soil map units. Each soil series are described in more detail below, including farmland classifications, slope descriptions, and drainage class (Table 4.8-1).

Soil Descriptions

Alton gravelly fine sandy loam, 0 to 3 percent slopes (Alan)

The Alton series consists of very deep, well drained or somewhat excessively drained soils formed in gravelly glacial outwash deposits. They formed in glacial outwash and beach deposits dominated by acid, hard rock with material from limestone in the regolith below depths of 40 inches. In some places the substratum has silty lacustrine material below a depth of 40 inches. Saturated hydraulic conductivity in the mineral soil is high above 40 inches, and is high to very high below a depth of 40 inches. Slope ranges from 0 to 45 percent. The potential for surface runoff ranges from very low to high. Saturated hydraulic conductivity in the mineral soil is high above 40 inches, and is high to very high below a depth of 40 inches. In pedons that have a silty substratum, saturated hydraulic conductivity ranges to moderately low below 40 inches.

Bath soils, steep (BBE)

The Bath series consists of very deep, well drained soils formed in till. They are nearly level to steep soils on glaciated uplands. The soils formed in loamy till derived largely from gray and brown siltstone, sandstone and shale. A fragipan is at a depth of 26 to 38 inches below the soil surface. Slope ranges from 0 to 60 percent. The potential for surface runoff is medium to high. Saturated hydraulic conductivity is moderately high or high in the mineral soil above the fragipan and low or moderately low in and below the fragipan.

Chenango channery silt loam, fan (Ch)

The Chenango series consists of very deep, well and somewhat excessively drained soils formed in water-sorted material on outwash plains, kames, eskers, terraces, and alluvial fans. The soils formed in

water-sorted gravelly and loamy drift. In some places the soils formed in alluvial deposits. The parent material is derived from gray sandstone, shale, and siltstone and lesser amounts of material from limestone and igneous rocks. Slope ranges from 0 through 60 percent. The potential for surface runoff ranges from negligible to high. Saturated hydraulic conductivity is moderately high to high in the mineral solum and high to very high in the substratum.

Chippewa channery silt loam (Ck)

The Chippewa series consists of very deep, poorly drained and very poorly drained soils formed in till deposits with dominantly sandstone, siltstone, and shale rock fragments. These soils are in upland depressions. Soils developed in till deposits with dominantly sandstone, siltstone, and shale rock fragments. A fragipan is at a depth of 8 to 20 in below the soil surface. Slope ranges from 0 to 8 percent. The potential for surface runoff is very low and very high. Saturated hydraulic conductivity is moderately high or high in the mineral soil above the fragipan and moderately low or low in the fragipan and substratum.

Fluvaquents and Ochrepts (FL)

Fluvaquents consists of a moderately deep hydric silt loam found in flood plains. The soils are an alluvium with highly variable texture. Slopes range from 0 to 3 percent. The soil is poorly drained with a water table between 0 to 18 inches and the restrictive feature more than 80 inches below the soil surface.

Ochrepts consists of a gravelly sandy loam. Slopes range from 0 to 5 percent. The soil is moderately well drained with a water table between 18 and 72 inches and the restrictive feature more than 80 inches below the soil surface.

Hornell-Fremont silt loams, 1 to 6 percent slopes (HfB), 6 to 12 percent slopes (HfC), 12 to 20 percent slopes (HgD), steep (HHE), severely eroded (HkD3)

The Hornell series consists of moderately deep, somewhat poorly drained soils formed in till overlying shale or siltstone. They are nearly level to steep soils on bedrock-controlled uplands. These soils formed in till or till and residuum. The till forms a moderately thick mantle, 20 to 40 inches deep, over acid shale or siltstone bedrock. The till mantle is derived from material like the underlying bedrock. In some places the shale bedrock has weathered and part of the soil mantle is residuum. Slope ranges from 0 to 50 percent. The potential for surface runoff is low to very high. Permeability is moderate in the surface layer and slow or very slow in the subsoil and substratum.

The Fremont series consists of deep and very deep, somewhat poorly drained soils on uplands. The soils formed in till derived from soft shale, and some siltstone and sandstone. They are on broad hilltops and hillsides. The soils developed in till derived from shale, and some siltstone and sandstone. Slope ranges from 0 to 40 percent. Saturated hydraulic conductivity is moderately high or high in the subsoil and low to moderately low in the substratum.

Howard-Madrid complex, rolling (HrC), 20 to 30 percent slopes (HrD)

Howard soils consist of very deep, well drained and somewhat excessively drained soils formed in medium textured glacial outwash deposits. The soils are on valley terraces, outwash plains, kame moraines, and eskers. These soils developed in glacial outwash deposits containing significant amounts of limestone rock fragments and a broad range in other rock fragments of sedimentary and igneous origin. Slope ranges from 0 to 70 percent. The potential for surface runoff is negligible to very high. Saturated hydraulic conductivity is moderately high or high in the solum and very high in the substratum.

The Madrid series consists of very deep, well drained soils. They formed in loamy deposits derived mainly from sandstone, limestone and granite on till plains and moraines. Slope ranges from 3 to 50 percent. The potential for surface runoff ranges from low to high. Internal drainage is moderate and permeability is moderate in the solum and moderately slow in the substratum.

Kanona silty clay loam, 2 to 6 percent slopes (KaB), 6 to 20 percent slopes (KaD)

The Kanona series consists of deep and very deep, somewhat poorly drained soils on uplands. The soils formed in till derived from soft shale, and some siltstone. They are on broad hilltops, hillsides and till plains. Slope ranges from 0 to 25 percent. The potential for surface runoff is medium to very high. Saturated hydraulic conductivity is moderately high to high in the mineral surface and subsurface and moderately high to low in the subsoil and substratum.

Lackawanna-Wellsboro association, extremely stony (LC)

The Lackawanna series consists of very deep, well drained soils on nearly level to steep glaciated uplands. They formed in till derived from reddish sandstone, siltstone, and shale. A dense fragipan is present starting at a depth of 43 to 91 cm (17 to 36 in) below the soil surface. Slope ranges from 0 to 55 percent. The potential for surface runoff is low to very high in these soils and saturated hydraulic conductivity is moderately high or high in the mineral soil above the fragipan and low or moderately low in and below the fragipan.

The Wellsboro series consists of very deep moderately well and somewhat poorly drained soils formed in till derived from red sandstone, siltstone, and shale on nearly level to steep glaciated uplands. Slope ranges from 0 to 50 percent. Saturated hydraulic conductivity is moderately high or high in the mineral surface layer, subsurface layer, and upper part of the subsoil; and low or moderately low in the lower part of the subsoil (fragipan) and the substratum.

Lordstown channery silt loam, 3 to 12 percent slopes (LoB), 12 to 20 percent slopes (LoC)

The Lordstown series consists of moderately deep, well drained soils formed in till and cryoturbated material derived from siltstone and sandstone on bedrock controlled landforms of glaciated dissected plateaus. They are nearly level to very steep soils on hillsides and hilltops in glaciated bedrock controlled uplands. Slope ranges from 0 to 90 percent. The potential for surface runoff is low to very high and the permeability is moderate throughout the soil.

Lordstown-Arnot association, steep (LRE), very steep (LRF)

The Lordstown series consists of moderately deep, well drained soils formed in till and cryoturbated material derived from siltstone and sandstone on bedrock controlled landforms of glaciated dissected plateaus. They are nearly level to very steep soils on hillsides and hilltops in glaciated bedrock controlled uplands. Slope ranges from 0 to 90 percent. The potential for surface runoff is low to very high and the permeability is moderate throughout the soil.

The Arnot series consists of shallow, somewhat excessively to moderately well drained soils. Arnot soils developed in a thin mantle of till of Wisconsin age. The till is derived mainly from acid sandstone, siltstone, and shale but in some places ranges to include quartzite and conglomerate. In some places the regolith is a mixture of till and residuum. Bedrock is at depths of to 10 to 20 inches. Slope ranges from 0 to 80 percent. Saturated hydraulic conductivity in the mineral soil is moderately high or high.

Mardin channery silt loam, 2 to 8 percent slopes (MdB), 8 to 15 percent slopes (MdC), 15 to 25 percent slopes (MdD)

The Mardin series consists of very deep, moderately well drained soils on glaciated uplands, mostly on broad hilltops, shoulder slopes and backslopes. These soils formed in loamy till, and have a dense fragipan that starts at a depth of 36 to 66 centimeters (14 to 26 inches) below the soil surface. Slope ranges from 0 to 50 percent. Saturated hydraulic conductivity is moderately high or high in the mineral surface layer, subsurface layer, and upper part of the subsoil; and low or moderately low in the lower part of the subsoil and the substratum. The soils are moderately well drained with a seasonal water table typically at a depth of 36 to 61 centimeters below the soil surface. The potential for surface runoff is medium to high.

Mardin and Volusia channery silt loams, silty substratum (MnC), 6 to 12 percent slopes

The Mardin series consists of very deep, moderately well drained soils on glaciated uplands, mostly on broad hilltops, shoulder slopes and backslopes. These soils formed in loamy till, and have a dense fragipan that starts at a depth of 36 to 66 centimeters (14 to 26 inches) below the soil surface. Slope ranges from 0 to 50 percent. Saturated hydraulic conductivity is moderately high or high in the mineral surface layer, subsurface layer, and upper part of the subsoil; and low or moderately low in the lower part of the subsoil and the substratum. The soils are moderately well drained with a seasonal water table typically at a depth of 36 to 61 centimeters below the soil surface. The potential for surface runoff is medium to high.

The Volusia series consists of very deep, somewhat poorly drained soils formed in loamy till. These soils are on concave to planer landscape positions in glaciated upland areas. The Volusia soils developed in firm basal till derived from siltstone, sandstone and brittle shale or slate. They are underlain by lacustrine materials in some areas. Slope ranges from 0 to 35 percent. The potential for surface runoff is low to very high. Saturated hydraulic conductivity in the mineral soil above the fragipan is moderately high or high and in the fragipan and substratum it is low to moderately high.

Morris channery silt loam, gently sloping, extremely stony (MSB)

The Morris series consists of very deep, somewhat poorly drained soils formed in till from red sandstone, siltstone, and shale. They have a dense fragipan layer from 25 to 56 cm (10 to 22 in) that restricts root penetration and water movement. Slopes range from 0 to 25 percent. Saturated hydraulic conductivity is moderately high or high above the fragipan and is low or moderately low in the fragipan and substratum.

Ochrepts and Orthents (OC)

Ochrepts consists of a channery silt loam. Slopes range from 35 to 60 percent. The soil is moderately well drained with a water table and the restrictive feature more than 80 inches below the soil surface.

Orthents consists of a channery loam. Slopes range from 35 to 70 percent. The soil is moderately well drained with a water table and the restrictive feature more than 80 inches below the soil surface.

Oquaga channery silt loam with 3 to 12 percent slopes (OgB), 12 to 20 percent slopes (OgC), 20 to 30 percent slopes (OgD)

The Oquaga series consists of moderately deep, somewhat excessively drained soils formed in a thin mantle of reddish till with lithology dominated by the local and underlying reddish sandstone, siltstone, and shale on nearly level to very steep uplands. Slope ranges from 0 to 70 percent. Permeability is moderate.

Volusia channery silt loam, 3 to 8 percent slopes (VoB), 8 to 15 percent slopes (VoC), 15 to 25 percent slopes (VoD)

The Volusia series consists of very deep, somewhat poorly drained soils formed in loamy till. These soils are on concave to planer landscape positions in glaciated upland areas. The Volusia soils developed in firm basal till derived from siltstone, sandstone and brittle shale or slate. They are underlain by lacustrine materials in some areas. Slope ranges from 0 to 35 percent. The potential for surface runoff is low to very high. Saturated hydraulic conductivity in the mineral soil above the fragipan is moderately high or high and in the fragipan and substratum it is low to moderately high.

Wellsboro channery silt loam, 15 to 25 percent slopes (WoD)

The Wellsboro series consists of very deep moderately well and somewhat poorly drained soils formed in till derived from red sandstone, siltstone, and shale on nearly level to steep glaciated uplands. Slope ranges from 0 to 50 percent. Saturated hydraulic conductivity is moderately high or high in the mineral surface layer, subsurface layer, and upper part of the subsoil; and low or moderately low in the lower part of the subsoil (fragipan) and the substratum.

Table 4.8-1. Existing Soil Characteristics

Mapping Unit	Soil Name	Slope (%)	Drainage Class	Hydric Rating[1]	Percent Coverage of Survey Area (%)
AlA	Alton gravelly fine sandy loam	0 to 3	Well drained	0	0.26%
BBE	Bath soils, steep	-	Well drained	0	0.67%
Ch	Chenango channery silt loam, fan	-	Well drained	0	0.44%
Ck	Chippewa channery silt loam	-	Poorly drained	90	0.30%
FL	Fluvaquents and Ochrepts	-	Poorly drained	55	2.06%
HfB	Hornell-Fremont silt loams	1 to 6	Somewhat poorly drained	5	1.85%
HfC	Hornell-Fremont silt loams	6 to 12	Somewhat poorly drained	5	1.24%
HgD	Hornell and Fremont silt loams	12 to 20	Somewhat poorly drained	5	2.98%
HHE	Hornell and Fremont silt loams, steep	-	Somewhat Poorly Drained	5	11.36%
HkD3	Hornell and Fremont silty clay loams, severely eroded	6 to 20	Somewhat poorly drained	5	4.93%
HrC	Howard-Madrid complex, rolling	-	Well drained	0	0.30%
HrD	Howard-Madrid complex	20 to 30	Well drained	0	0.44%
KaB	Kanona silty clay loam	2 to 6	Poorly drained	35	0.01%
KaD	Kanona silty clay loam	6 to 20	Poorly drained	35	1.94%
LC	Lackawanna-Wellsboro association, extremely stony	2 to 30	Moderately Well Drained	0	1.02%
LoB	Lordstown channery silt loam	3 to 12	Well drained	0	3.69%

Mapping Unit	Soil Name	Slope (%)	Drainage Class	Hydric Rating[1]	Percent Coverage of Survey Area (%)
LoC	Lordstown channery silt loam	12 to 20	Well drained	0	1.49%
LRE	Lordstown-Arnot association, steep	-	Well drained	0	5.64%
LRF	Lordstown-Arnot association, very steep	-	Well drained	0	6.20%
MdB	Mardin channery silt loam	2 to 8	Moderately Well Drained	0	6.28%
MdC	Mardin channery silt loam	8 to 15	Moderately Well Drained	0	5.45%
MdD	Mardin channery silt loam	15 to 25	Moderately Well Drained	0	5.49%
MnC	Mardin and Volusia channery silt loams, silty substratum, 6 to 12 percent slopes		Somewhat poorly drained	5	0.25%
MSB	Morris channery silt loam, gently sloping, extremely stony	-	Somewhat Poorly Drained	5	1.43%
OC	Ochrepts and Orthents		Moderately well drained	0	2.20%
OgB	Oquaga channery silt loam	3 to 12	Well Drained	0	5.32%
OgC	Oquaga channery silt loam	12 to 20	Well Drained	0	2.05%
OgD	Oquaga channery silt loam	20 to 30	Well Drained	0	4.46%
VoB	Volusia channery silt loam	3 to 8	Somewhat Poorly Drained	5	2.95%
VoC	Volusia channery silt loam	8 to 15	Somewhat Poorly Drained	4	10.46%
VoD	Volusia channery silt loam	15 to 25	Somewhat poorly drained	3	6.66%

Mapping Unit	Soil Name	Slope (%)	Drainage Class	Hydric Rating[1]	Percent Coverage of Survey Area (%)
WoD	Wellsboro channery silt loam	15 to 25	Moderately well drained	0	0.22%

Mines and Gravel Operations

There are no mines or gravel operations that would be affected by construction or operation of the Project.

4.8.2 Project Effects on Topography and Soils and Mitigation

There are no unique geologic or soil-related features that would be affected by construction or operation of the Project.

Potential Construction Impacts and Mitigation

The Best Management Practices that will be implemented during construction will be described in detail in the EM&CP. Mitigation measures that would be implemented to prevent adverse impacts to soil will include using hay bales and silt fence barriers, covering soil stockpiles during rain events and at the end of each work day, and stabilized construction entrances/exits. Segregated topsoil will be replaced in the same area where it was removed, and if necessary, compacted soils from construction activities will be tilled. Revegetation/seeding of exposed soils will be performed as stipulated in the SWPPP, to be developed as part of the EM&CP. Revegetation will provide soil stability to areas cleared during Project construction. Excavated soils will be re-used as backfill material, if possible.

To minimize potential impacts on soils and lands adjacent to the Project Area to the maximum extent practicable, construction vehicle operations and the staging of equipment will be restricted to areas within the ROW, temporary workspaces and designated staging areas.

Bedrock or other rock material encountered along the transmission line route that would prevent the structures from being installed to the target burial depth as described in Exhibit E-3 will be removed by backhoe excavation, impact hammering, rock saw, or blasting as necessary. Plans to manage any excess soil or excess rock that cannot be used as backfill will be provided in the EM&CP.

Construction of the Project is not expected to result in any permanent or significant temporary change in topography. Post-construction soil grading will be performed to restore topography to pre-construction conditions to the maximum practicable extent.

Potential Operational Impacts and Mitigation

There will be no impacts related to geology, topography or soils during routine operation of the Project. During Project operations, vehicles and maintenance equipment will be restricted to areas within the ROW to minimize potential impacts on soils and adjacent lands. Localized excavation of individual structures may be required in the event maintenance is required. The Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations.

Seismic Hazard

New York State is characterized as a location of moderate level seismicity and seismic hazard. The highest levels of seismicity in the state are located in Metro-New York City, the northern Adirondacks, and Western New York (Jacob, 1993). According to the USGS Seismic Hazard Maps for the United States (USGS, 2008), there is a 2 percent probability of a 6-7 percent gravitational "g" acceleration exceedance in 50 years; and a 10 percent probability of an 2-3 percent "g" exceedance in 50 years in the Project Area.

4.9 NOISE

Construction noise related impacts from the installation of the transmission poles and stringing the transmission line will be short-term, typical of construction projects and are expected to be minimal. Construction noise will vary depending on the type of equipment in use at any given time. Noise will be mitigated by the attenuating effects of distance, the intermittent and short lived character of the noise, and the use of functional mufflers on all construction equipment. Further, the nature of construction to be performed, especially for the transmission poles, dictates that construction activities and associated sound levels will move along the route and that no one residence will be exposed to significant sound levels for an extended period. Finally, the type and magnitude of sound will be similar to that associated with public works projects and tree service companies. The Project represents the minimum adverse environmental impacts, considering available technologies, alternatives and pertinent considerations.

An operational noise analysis was not completed because no new transformers are needed at the POI substation and therefore no new permanent noise impacts are expected.

4.10 INVASIVE SPECIES

4.10.1 Existing Conditions

The disturbance of naturally occurring ecologies can occur through the introduction of non-native species. While all species compete in the environment to survive, non-native or invasive species, appear to have specific traits or specific combinations of traits that allow them to outcompete native species. As invasive species spread, native species begin to reduce in population as suitable habitat and nutrient resources become more limited. During the plant species survey conducted within the summer and fall of 2016, and spring of 2017, a total of 12 invasive plant species were observed during field activities associated with the Project. These species are included in the *New York State Prohibited and Regulated*

Invasive Plants (New York Stated Department of Environmental Conservation [NYSDEC], 2014) and below, as follows:

- Amur honeysuckle (*Lonicera maackii*)
- Black locust (*Robina pseudoacacia*)
- Canada thistle (*Cirsium arvense*)
- Common buckthorn (*Rhmanus cathartica*)
- Cut-leaf teasel (*Dipsacus laciniatus*)
- Morrow's honeysuckle (*Lonicera morrowii*)
- Multiflora rose (*Rosa multiflora*)
- Tartarian honeysuckle (*Lonicera tartarica*)
- Japanese honeysuckle (*Lonicera japonica*)
- Mugwort (*Artemisia vulgaris*)
- Autmn Olive (*Elaeagnus umbellata*)
- Ragweed (*Ambrosia spp*.)

As part of the Application and in preparation for construction, an Invasive Species Control Plan (ISCP) has been prepared to describe the survey methods which were utilized to identify invasive species populations currently present on-site (see Appendix 4-9). This control plan also includes proposed control procedures of current and introduced invasive populations, including locating and identifying target species, an establishment of removal protocol, inspection of construction materials (including fill) and equipment, equipment cleaning, and site restoration. The ISCP also discusses in detail the monitoring methods which will take place during the construction phase of the Project. The ISCP will be included as well in the Project EM&CP. As part of the on-site monitoring effort, control guidelines will be established and strictly adhered to. This will be done in order to ensure that all Project workers are informed of the threat of spreading invasive species and be educated on the BMPs, which will be implemented during construction and restoration of the Project.

The Applicant anticipates that post-construction monitoring will occur over a two year period. Should new occurrences of invasive species become established, the ISCP contains a treatment plan to control the introduction and spread of invasive species. Due to invasive species outcompeting native species, invasive populations may naturally increase in distribution and density over time. However, the general goal for the ISCP is to prevent an increase in invasive species population size or density as a direct or indirect result of the Project. Should the ISCP fail due to an unforeseen circumstance, a revised management plan will be written with new guidelines and/or protocols in order to create an adaptable and responsive management framework.

For detailed information in invasive species management operations for the Project please refer to the *Invasive Species Control Plan* (ISCP), located in Appendix 4-9.

4.10.2 Project Effects of Invasive Species

The Applicant intends to implement the measures proscribed in the ISCP, which is provided with this application. These measures, as well as commonly used BMPs for the construction of transmission line projects, will provide sufficient control measures to prevent the introduction and spread of invasive

species. With these measures, the Project is designed to operate in compliance with applicable State environmental law and previously-approved NYPSC BMPS related to controlling invasive species, as applicable to the Project. The Project represents the minimum adverse environmental impacts related to invasive species, considering available technologies, alternatives and pertinent considerations.

4.11 ELECTRIC AND MAGNETIC FIELDS

A discussion of the electric and magnetic fields (EMF) associated with the transmission line is presented in Exhibit E-5, Section E.5-3, based on a study provided as Appendix 6-8.

4.11 REFERENCES

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