BEFORE THE
PUBLIC SERVICE COMMISSION
STATE OF NEW YORK

Application of New York Power Authority and Niagara Mohawk Power Company d/b/a National Grid for a Certificate of Environmental Compatibility and Public Need for the Rebuild of approximately 100 linear miles of existing 230 kV to either 230 kV or 345 kV along with associated substation construction and upgrades along the existing NYPA Moses-Willis 1&2, Willis-Patnode, Willis-Ryan, a portion of Ryan-Plattsburgh and National Grid's Adirondack-Porter 11, 12, and 13 in Clinton, Franklin, St. Lawrence, Lewis, and Oneida Counties, New York.	)	Case No.: 21-T-0340

NEW YORK POWER AUTHORITY AND

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID

SMART PATH CONNECT PROJECT

REVISED EXHIBIT 4

ENVIRONMENTAL IMPACTS

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EXHIBIT 4: ENVIRONMENTAL IMPACTS

Exhibit 4 addresses the requirements of 16 NYCRR § 86.5.

4.1. Introduction

The Power Authority of the State of New York doing business as New York Power Authority ("NYPA"), and Niagara Mohawk Power Corporation doing business as National Grid ("National Grid") (NYPA and National Grid, collectively, the "Applicant"), propose to construct and operate the Smart Path Connect Project (the "Project"). The Project consists of rebuilding approximately 100 linear miles of existing 230 kilovolt ("kV") transmission lines to either 230 kV or 345 kV along with associated substation construction and upgrades. The Project includes rebuilding all or parts of the following transmission lines primarily within existing rights-of-way ("ROW"): NYPA's Moses-Willis 1 & 2, NYPA's Willis-Patnode and NYPA's Willis-Ryan; and National Grid's Adirondack to Porter (Chases Lake-Porter Line 11, Adirondack-Porter Line 12, and Adirondack-Chases Lake Line 13), the extension of the existing 230 kV Rector Road to Chases Lake Line 10, as well as connecting to NYPA's Moses-Adirondack 1&2 (also known as "MA 1&2" or "Smart Path") ROW.

For the purpose of this Exhibit, the Project is grouped into two components: Moses-Willis-Patnode ("MW-Patnode") and Adirondack-Porter. The MW-Patnode component includes the following Project facilities:

- The rebuild of NYPA's Moses-Willis 1&2, Willis-Patnode, and Willis-Ryan 230 kV lines and a short portion of the Ryan-Plattsburgh 230 kV line

- The construction of Haverstock Substation
- The interface connection of the proposed Haverstock Substation to the NYPA Moses-Adirondack ROW
- The construction of a new Willis 345/230 kV Substation
- The modifications within the fenceline at the Massena Substation
- The modifications of Ryan and Patnode Substations (Note: these substations are not discussed further in this Exhibit because no ground-disturbing activities are proposed outside of the facility fence lines, and no new noise-emitting equipment will be installed)
- The ROW expansion (approximately 835 feet or 0.5 acre) at the Ryan Substation

The Adirondack-Porter component includes the following Project facilities:

- The rebuild of National Grid's Adirondack-Porter 230 kV lines
- The construction of the proposed Adirondack Substation
- The interface connection of the proposed Adirondack Substation to the Moses-Adirondack ROW
- The construction of Austin Road Substation
- The extension of the existing 230 kV Rector Road to Chases Lake Line 10 to Austin Road Substation
- The expansion of Edic Substation
- The expansion of Marcy Substation
- The decommissioning of portions of Chases Lake and Porter Substations (Note: these substations are not discussed further in this Exhibit because no ground-disturbing activities

are proposed outside of the facility fence lines, and no new noise emitting equipment will be installed)

4.1.1. Summary of Exhibit

The subsequent sections adhere to the requirements of Article VII of New York's Public Service Law, regarding the siting of major utility transmission facilities, and the statute's implementing regulations addressing applications for Certificates of Environmental Compatibility and Public Need. *See* 16 NYCRR § 86.5 (addressing the requirements of Exhibit 4).

The Applicant completed environmental studies for the Project to assess existing conditions along the Proposed ROW and the areas proposed for the new substations and substation expansions, including biological resources; physical conditions, including topography and soils; cultural resources; aesthetic, visual, and recreational resources; land use; noise; and electromagnetic fields ("EMF"). These environmental studies were conducted within the Proposed ROW of the new transmission facilities and within the limits of disturbance of the new substations and substation expansions. Studies for cultural and visual resources were conducted in an expanded area to address larger areas of potential effects. The results of the completed environmental studies are summarized in Section 4.2 and have been used to study and evaluate the Project's environmental impacts, including, but not limited to, siting of permanent structure locations, siting of temporary facilities (such as, but not limited to, laydown areas, access roads, and pulling stations) and siting of new substations/substation expansions. Effects on resources and mitigation and protection measures are summarized in Section 4.3 and Section 4.4, respectively. Additional environmental

studies will be completed along off-ROW access roads and laydown yards and will be included in the Environmental Management and Construction Plan ("EM&CP). ").

Based on the analysis provided within this Exhibit and the mitigation and protection measures proposed by the Applicant, the Project presents the minimum adverse impacts considering the state of technology and impacts to environmental resources.

4.2. Environmental Studies Completed *(16 NYCRR § 86.5(a))*

16 NYCRR § 86.5(a) The applicant shall submit a statement describing any study which has been made of the impact of the proposed facility on the environment. That statement shall include a description of the methods employed in making that study and a summary of its findings.

4.2.1. Introduction of Environmental Studies

The Project is the rebuild of existing transmission lines on mostly existing maintained ROWs. To the maximum extent feasible, to minimize impacts, the Applicant is proposing new structures in the vicinity of existing disturbed structure locations and will use existing access roads and the existing methods for ROW management.

In addition to the new structures and substation facilities, construction of the Project would require temporary laydown yards, temporary access roads, and temporary pulling stations. To assist with siting these temporary facilities, siting the permanent structures and access road locations, and minimizing the environmental impact of the Project, the Applicant has completed or will complete environmental studies along the Proposed ROWs. The studies are as follows:

- Study of existing biological resources (e.g., vegetation, wildlife, threatened and endangered species)

- Study of existing physical conditions (e.g., surface waters/hydrology, wetlands, topography, geology, and soils)
- Study of existing cultural resources (e.g., historic and archaeological)
- Study of the aesthetic, visual, scenic, and recreational resources
- Study of existing land use (e.g., agricultural, areas)
- Study of EMF strength and noise

The description of the methods employed in conducting the studies and a summary of their findings is included in sections 4.2.2 through 4.2.12.

Field evaluations, existing data review, literature review, and agency consultations were conducted to identify, quantify, and describe existing environmental conditions within the Study Area, as defined below.

Field evaluations took place during fall 2020 through spring 2021 for MW-Patnode Study Area and the Adirondack-Porter Study Area with additional studies taking place in summer and fall 2021 for the updated Haverstock and Willis 345/230 kV substation locations. Field evaluations addressed physical conditions (e.g., geology, surface waters), biological resources (e.g., vegetation, wildlife), cultural resources (e.g., historic, archaeological), and land use (e.g., agriculture, scenic areas). Data collected and analyzed included, but were not limited to, the County Soil Surveys for St. Lawrence, Franklin, Clinton, Lewis, and Oneida counties; recent aerial photography; United States Geological Survey ("USGS") topographic quadrangle maps; National Wetland Inventory ("NWI") maps; New York State Department of Environmental Conservation ("NYSDEC") Freshwater Wetland Maps; County- and NYSDEC-mapped streams; and Federal

Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") floodplain mapping. In addition, consultations with local municipalities, the New York State Department of Public Service ("DPS"), NYSDEC, New York Natural Heritage Program ("NYNHP"), and U.S. Fish and Wildlife Service ("USFWS") were also conducted, including letters, telephone and electronic communication, and offsite meetings (*see* Appendix A).

Separate studies were conducted to address specific resources. The results of these studies are addressed in the following reports: Rare, Threatened, and Endangered Species Report (Appendix B), Invasive Species Baseline Survey Report (Appendix C), Wetland Delineation Report ("WDR") (Appendix D), Phase I Archaeology Study Plan (Appendix E), Architectural Study Plan (Appendix F), Visual Resource Assessment (Appendix G), Electric and Magnetic Field Analysis (Appendix H), and Blanding's Turtle Habitat Assessment Report (Appendix I), and Accoustic Study Report (Appendix J).

A summary of the results of the desktop and field investigations and separate studies is presented below by resource area and Project component. The "Study Area," defined for the purposes of describing the existing environment and any potential environmental effects, varies by resource type. For resource analysis concerning land use and land features (vegetation, wetlands, soils, etc.), the MW-Patnode Study Area consists of the MW-Patnode Proposed ROW as defined in Exhibit 2 and the areas where new or expanded substations would be located. The Adirondack-Porter Study Area was 375 feet wide and included the entire Adirondack-Porter Proposed ROW as defined in Exhibit 2 plus additional ROW width to cover the relevant portions of the National Grid easement as may be needed to accommodate design. In addition, the Adirondack-Porter Study Area includes the areas where new or expanded substations would be located and their connections to the

proposed ROW. Natural resource field surveys have not yet been conducted for some small segments of the Proposed ROW and any off-ROW access roads, laydown yards, or other workspaces. The Applicant will complete natural resource field surveys of these areas prior to or as part of the EM&CP.

For cultural resources and visual impacts, the Study Area was increased to encompass additional area beyond the Proposed ROW. These areas are discussed in Section 4.2.10 for cultural resources and Section 4.2.11 for visual impacts.

For the Moses Haverstock ("MH-3") circuit, the only work proposed is the installation of a new optical ground wire ("OPGW") and the short tie into the proposed Haverstock Substation. The Applicant did not complete field studies for this section of the ROW; however, the Applicant will complete natural resource field surveys of these areas prior to or as part of the EM&CP.

The Applicant also did not complete field studies in several other relatively small sections of the Project because several areas were in development and/or being finalized through the first half of 2021. All such areas will be surveyed in advance of and included in the EM&CP.

4.2.2. Vegetative Communities

The Applicant identified and characterized existing vegetative communities within the Study Area through reconnaissance-level field surveys and using the USGS National Land Cover Dataset ("NLCD") land cover classifications, which are based primarily on Landsat (satellite) imagery. Additionally, the Applicant consulted with the NYNHP to determine if any unique, uncommon,

or otherwise rare vegetative communities were present within the Study Area or its vicinity (*see* Appendix A).

MW-Patnode

The following cover types (with definitions of what constitutes such cover type) were identified within the MW-Patnode Study Area:

- Cultivated Crops – Areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for more than 20% of total vegetation. This class also includes all land being actively tilled.
- Pasture/Hay – Areas of grass, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for more than 20% of total vegetation.
- Grassland/Herbaceous – Areas dominated by graminoid or herbaceous vegetation, generally more than 80% of total vegetation. These areas are not subject to intensive management such as tilling but can be used for grazing.
- Deciduous Forest – Areas dominated by trees generally more than five (5) meters (approximately 16 feet) tall and more than 20% of total vegetation cover. More than 75% of the tree species shed foliage simultaneously in response to seasonal change.
- Evergreen Forest – Areas dominated by trees generally greater than five (5) meters (approximately 16 feet) tall, and more than 20% of total vegetation cover. More than 75% of the tree species maintain their leaves all year. Canopy is never without green foliage.

- Mixed Forest – Areas dominated by trees generally more than five (5) meters (approximately 16 feet) tall, and more than 20% of total vegetation cover. Neither deciduous nor evergreen species is greater than 75% of total tree cover.
- Developed, Open Space – Areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grass. Impervious surfaces account for less than 20% of total cover. These areas most commonly include large-lot, single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- Developed, High Intensity – Areas highly developed where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80% to 100% of the total cover.
- Woody Wetlands – Areas where forest or shrubland vegetation accounts for more than 20% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
- Emergent Herbaceous Wetlands – Areas where perennial herbaceous vegetation accounts for more than 80% of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
- Scrub/Shrub – Areas dominated by shrubs; less than five (5) meters (approximately 16 feet) tall with shrub canopy typically more than 20% of total vegetation. This class includes true shrubs, young trees in an early successional stage, or trees stunted from environmental conditions.
- Open Water – Areas of open water, generally with less than 25% cover of vegetation or soil.

- Barren Land (Rock/Sand/Clay) – Areas of bedrock, desert, pavement, scarps, talus, slides, volcanic material, glacial debris, sand dunes, strip mines, gravel pits, and other accumulations of earthen material. Generally, vegetation accounts for less than 15% of total cover.

The NLCD 2016 data was used for reference and confirmed or updated to accurately reflect onsite conditions noted during field surveys conducted from October 13 through November 21, 2020. Field-surveyed NLCD cover types identified within the MW-Patnode Study Area are shown in Figure 4-1. Table 4-1 provides a summary of these cover types.

Table 4-1: Field-Surveyed NLCD Cover Types: MW-Patnode Study Area

Habitat Type	**Within Study Area[a]**		**Within Proposed ROW[b]**	
	Acres	**Percentage**	**Acres**	**Percentage**
Cultivated Crops	129.0	9.4%	113.5	8.8%
Pasture/Hay	201.4	14.6%	201.0	15.6%
Grassland/Herbaceous	219.4	15.9%	196.6	15.2%
Deciduous Forest	29.1	2.1%	15.3	1.2%
Evergreen Forest	2.3	0.2%	2.3	0.2%
Mixed Forest	3.7	0.3%	0.7	0.1%
Developed Open Space	22.1	1.6%	2.9	0.2%
Developed High Intensity	37.1	2.7%	38.3	3.0%
Developed Low Intensity	6.7	0.5%	6.6	0.5%
Woody Wetlands	284.1	20.6%	274.2	21.2%
Emergent Herbaceous Wetlands	111.7	8.1%	113.2	8.8%
Scrub/Shrub	318.1	23.1%	308.6	23.9%
Open Water	13.2	1.0%	18.3	1.4%
Barren Land (Rock/Sand/Clay)	0.3	<0.1%	0.3	<0.1%
Total	1,378	100%	1,292	100%

[a] Note the Study Area does not include the Moses-Haverstock ROW, nor does it include the existing substations' footprints.
[b] The Proposed ROW includes all substations, including new, existing, and expanded areas.

Scrub/shrub was the most abundant cover type in the MW-Patnode Study Area, comprising 23.1% (318.1 acres) of the Study Area. The second-most abundant cover type was woody wetlands, comprising 20.6% (284.1 acres) of the MW-Patnode Study Area.

The dominant cover type at the Haverstock Substation site is deciduous forest, covering 60.2% (8.0 acres) of the site. Other dominant cover types at the Haverstock Substation site include grassland/herbaceous and scrub/shrub (1.5 acres/11.1% and 2.4 acres/17.9%, respectively). The only cover type at the Willis 345/230 kV Substation site is cultivated crops.

Adirondack-Porter

The following cover types were identified within the Adirondack-Porter Study Area: cultivated crops, pasture/hay, grassland/herbaceous, deciduous forest, evergreen forest, mixed forest, developed open space, developed low intensity, developed high intensity, woody wetlands, emergent herbaceous wetlands, scrub/shrub, open water, and barren land (rock/sand/clay).

The following additional cover types (with definitions of what constitutes such cover type) were identified in the Adirondack-Porter Study Area but were not identified in the MW-Patnode Study Area:

- Developed, Low Intensity – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20 to 49% of total cover. These areas most commonly include single-family housing units.

- Developed, Medium Intensity – Areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 to 79% of the total cover. These areas most commonly include single-family housing units.

Field-surveyed NLCD cover types identified within the Adirondack-Porter Study Area are shown in Figure 4-2. Table 4-2 provides a summary of these cover types.

Table 4-2: Field-Surveyed NLCD Cover Types: Adirondack-Porter Study Area

Habitat Type	Within Study Area[1]		Within Proposed ROW[2]	
	Acres	Percentage	Acres	Percentage[3]
Cultivated Crops	111.8	4.4%	90.8	5.1%
Pasture/Hay	203.2	7.9%	138.1	7.7%
Grassland/Herbaceous	206.4	8.1%	195.7	10.9%
Deciduous Forest	113.1	4.4%	30.3	1.7%
Evergreen Forest	37.6	1.5%	3.2	0.2%
Mixed Forest	359.6	14.0%	30.5	1.7%
Developed Open Space	24.6	1.0%	14.5	0.8%
Developed Low Intensity	15.3	0.6%	11.3	0.6%
Developed High Intensity	22.3	0.9%	14.4	0.8%
Woody Wetlands	347.5	13.6%	237.5	13.3%
Emergent Herbaceous Wetlands	239.5	9.3%	205.9	11.5%
Scrub/Shrub	850.2	33.2%	794.7	44.4%
Open Water	22.8	0.9%	15.5	0.9%
Barren Land (Rock/Sand/Clay)	8.0	0.3%	7.1	0.4%
Total	2,562	100%	1,789	100%

[1] The Study Area only includes new or expanded substations; existing substations were not included in studies.
[2] The Proposed ROW includes all substations, including new, existing, and expanded areas.

Scrub/shrub is the most abundant cover type, comprising 33.2% (850.2 acres) of the Study Area. The second-most abundant cover type was mixed forest, comprising 14.0% (359.6 acres) of the Adirondack-Porter Study Area; however, forest cover types are much less prevalent within the Proposed ROW, which is currently maintained in accordance with National Grid's Transmission

Right-of-Way Management Plan ("TROWMP"). One exception is approximately 4.1 acres of mixed forest located within High Tower State Forest. It is located with a ravine and currently spanned by the existing lines within the ROW. However, the upgraded 345 kV lines will require this portion of the ROW to be cleared.

The dominant cover type at the Adirondack Substation site is cultivated crops, covering 9.9% (9.1 acres) of the site. The dominant cover type at the Austin Road Substation site is deciduous forest, covering 98.4% (10.3 acres) of the site. The dominant cover type at the Edic Substation expansion site is developed, open space, covering 100% (0.2 acres) of the site. The dominant cover type at the Marcy Substation expansion is grassland/herbaceous, covering 42.7% (0.5 acres) of the site.

4.2.3. Rare, Threatened, and Endangered Plant Species

According to correspondence with the NYNHP and online consultation with the USFWS Information for Planning and Conservation ("IPaC"), no federal or state rare, threatened, or endangered ("RTE") plant species have been documented in the MW-Patnode and Adirondack-Porter Study Areas. Correspondence with NYNHP and the results of online consultation with the IPaC website are included in Appendix A.

4.2.4. Significant Ecological Communities

According to correspondence with the NYNHP, no natural communities of statewide significance are located within the MW-Patnode and Adirondack-Porter Study Areas (Conrad 2021).

4.2.5. Invasive Plant Species

Invasive plants include those that are non-native to a particular ecosystem and whose introduction causes or is likely to cause economic or environmental harm, or harm to human health. Locating these unwanted species is a critical component of reducing the spread of these plants during construction. The NYSDEC list of invasive plants contained in 6 NYCRR Part 575, dated September 10, 2014, was used as a reference during field surveys.

MW-Patnode

Within the MW-Patnode Study Area, 10 species, amounting to 360 invasive plant stands totaling approximately 42.3 acres, were identified during field surveys in the fall of 2020. Invasive plant stands varied in size and percent cover. Mapping of these areas is included in the Invasive Species Baseline Survey Report (*see* Appendix C).

Table 4-3 provides a summary of the field investigation results and invasive plant species identified for the MW-Patnode Study Area. The Invasive Species Baseline Survey Report (Appendix C) provides detailed field survey results including estimated percent cover and acreage calculated for each stand identified. Morrow's honeysuckle (*Lonicera morrowii*) was the most abundant invasive plant observed (147 stands comprising 22.2 acres). Common buckthorn (*Rhamnus cathartica*) was the second-most abundant species (101 stands comprising 8.7 acres) followed by spotted knapweed (*Centaurea stoebe*) (36 stands comprising 6.3 acres). Invasive plant stands occurred in both upland and wetland areas, including 2.8 acres within NYSDEC jurisdictional wetlands and 1.0 acre within NYSDEC wetland adjacent areas.

The most abundant invasive plant species at the Haverstock Substation site is common buckthorn, covering 16.2% (2.2 acres) of the site. The other invasive plant species at the Haverstock Substation site is Morrow's honeysuckle (7.8%/1.1 acres). The Willis 345/230 kV Substation site has no invasive plant species.

Table 4-3: Invasive Plant Summary: MW-Patnode Study Area

Scientific Name	Common Name	Number of Stands in Study Area	Total Acreage in Study Area	Total Acreage in Proposed ROW
Artemisia vulgaris	Mugwort	5	<0.1	<0.1
Berberis thunbergii	Japanese Barberry	2	<0.1	<0.1
Centaurea stoebe	Spotted Knapweed	36	6.3	6.3
Cirsium arvense	Canada Thistle	9	<0.1	<0.1
Frangula alnus	Smooth Buckthorn	2	<0.1	<0.1
Heracleum mantegazzianum	Giant Hogweed	6	0.5	0.5
Lonicera morrowii	Morrow's Honeysuckle	147	22.2	22.0
Lythrum salicaria	Purple Loosestrife	36	2.9	2.9
Phragmites australis	Common Reed Grass	16	1.7	1.7
Rhamnus cathartica	Common Buckthorn	101	8.7	7.3
	Total	**360**	**42.3**	**40.7**

Adirondack-Porter

Within the Adirondack-Porter Study Area, 14 species, amounting to 515 invasive plant stands totaling approximately 77.9 acres, were identified during field surveys in the fall of 2020. Invasive plant stands varied in size and percent cover. Mapping of these areas is included in the Invasive Species Baseline Survey Report (Appendix C).

Table 4-4 provides a summary of the field investigation results and invasive plant species identified. The Invasive Species Baseline Survey Report (Appendix C) provides detailed field

survey results including estimated percent cover and acreage calculated for each stand identified. Morrow's honeysuckle was the most abundant invasive plant observed (265 stands comprising 54.6 acres). Spotted knapweed was the second-most abundant species observed (129 stands comprising 5.2 acres) followed by smooth buckthorn (*Frangula alnus*) (32 stands comprising 6.2 acres). Invasive plant stands occurred in both upland and wetland areas, including 4.2 acres within NYSDEC jurisdictional wetlands and 2.2 acres within NYSDEC wetland adjacent areas.

The only invasive plant species at the Adirondack Substation site is Tartarian honeysuckle, covering 1% (0.1 acre) of the site. No invasive plant species occur at the Austin Road or Edic Substation site. No invasive plant species occur at the Austin Road, Edic Substation, or Marcy Substation expansion area sites.

Table 4-4: Invasive Plant Summary: Adirondack-Porter Study Area

Scientific Name	Common Name	Number of Stands in Study Area	Total Acreage in Study Area	Total Acreage in Proposed ROW
Alliaria petiolate	Garlic Mustard	2	<0.1	<0.1
Artemisia vulgaris	Mugwort	4	<0.1	<0.1
Centaurea stoebe	Spotted Knapweed	129	5.2	4.7
Cirsium arvense	Canada Thistle	5	0.1	0.1
Elaeagnus umbellata	Autumn Olive	9	1.5	1.1
Frangula alnus	Smooth Buckthorn	32	6.2	5.4
Heracleum mantegazzianum	Giant Hogweed	1	<0.1	<0.1
Lonicera morrowii	Morrow's Honeysuckle	265	54.6	49.8
Lonicera tatarica	Tartarian Honeysuckle	5	0.2	0.2
Lythrum salicaria	Purple Loosestrife	6	1.4	1.1
Phragmites australis	Common Reed Grass	17	0.7	0.7
Reynoutria japonica	Japanese Knotweed	2	<0.1	<0.1
Rhamnus cathartica	Common Buckthorn	12	3.2	2.3
Rosa multiflora	Multiflora Rose	26	4.7	3.3
	Total	**515**	**77.9**	**68.9**

4.2.6. Fish and Wildlife

Information on the fish and wildlife resources in the Study Areas was obtained from the New York Breeding Bird Atlas ("BBA") (NYSDEC 2008a and 2021), the New York Reptile and Amphibian Atlas (2007), the National Audubon Society, NYNHP, and USFWS. Correspondence with NYNHP and the results of online consultation with the USFWS IPaC website are included in Appendix A. Wildlife species and habitats documented during field work conducted during the fall of 2020 are also included in the following sections.

4.2.6.1. Wildlife Species

MW-Patnode

The most recent BBA (BBA III) has documented the presence of 83 breeding bird species in the vicinity of the MW-Patnode Study Area (NYSDEC 2021g) during the first year of data in what will be a five-year effort for the updated BBA (2020 to 2024). The previous New York BBA (II) was conducted from 2000 to 2005, during which over 90 breeding bird species were documented in the vicinity of the MW-Patnode Study Area, although this is now an outdated dataset (NYSDEC 2008a). The most commonly documented species from BBA III include Canada goose (*Branta canadensis*), northern flicker (*Colaptes auratus*), American kestrel (*Falco sparverius*), eastern phoebe (*Sayornis phoebe*), red-eyed vireo (*Vireo olivaceus*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), tree swallow (*Tachycineta bicolor*), black-capped chickadee (*Poecile atricapillus*), veery (*Catharus fuscenscens*), American robin (*Turdus migratorius*), cedar waxwing (*Bombycilla cedrorum*), European starling (*Sturnus vulgaris*), gray catbird (*Dumetella carolinensis*), American goldfinch (*Spinus tristis*), chipping sparrow (*Spizella*

passerine), white-throated sparrow (*Zonotrichia albicollis*), savannah sparrow (*Passerculus sandwichensis*), song sparrow (*Melospiza melodia*), eastern towhee (*Pipilo erythrophthalmus*), red-winged blackbird (*Agelaius phoeniceus*), Baltimore oriole (*Icterus galbula*), common grackle (*Quiscalus quiscula*), yellow warbler (*Setophaga petechia*), chestnut-sided warbler (*Setophaga pensylvanica*), American redstart (*Setophaga ruticilla*), ovenbird (*Seiurus aurocapilla*), common yellowthroat (*Geothlypis trichas*), northern cardinal (*Cardinal cardinalis*), and indigo bunting (*Passerina cyanea*). Onsite habitat observations in 2020, as described in the WDR (Appendix D), confirmed that the Study Area includes habitat for bird species that use hay/pasture, scrub/shrub, and forest edge habitats.

There are no NYSDEC-designated Bird Conservation Areas ("BCA") in the vicinity of the MW-Patnode Study Area. The closest one is Lyon Mountain, located approximately 12 miles south of the eastern end of the MW-Patnode Study Area. Lyon Mountain is one of the mountains in the Adirondack Sub-alpine Forest BCA (NYSDEC 2021f).

The MW-Patnode Study Area is in the vicinity of three National Audubon Society-identified Important Bird Areas ("IBA"). The west end of the Study Area is approximately a half-mile from the Lower St. Lawrence River IBA. This IBA is located along the shoreline of the St. Lawrence River and encompasses a range of wetland and upland habitats (Audubon 2021a). Bald eagles (*Haliaeetus leucocephalus* – NY Threatened) winter along the river, and the area also is very important for wintering waterfowl. Additional at-risk species supported in this IBA include pied-billed grebe (*Podilymbus podiceps* – NY Threatened), least bittern (*Ixobrychus exilis* – NY Threatened), northern harrier (*Circus cyaneus* – NY Threatened), American black duck (*Anas*

rubripes; in winter), common loon (*Gavia immer* – NY Special Concern), wood thrush (*Hylocichla mustelina*), and cerulean warbler (*Setophaga cerulean* – NY Special Concern).

The MW-Patnode Study Area comes close to crossing the northern edge of the Brasher Falls and Bombay Forests IBA at two locations in the Town of Bombay. Brasher Falls and Bombay Forests IBA is a large reforestation complex with extensive contiguous forest that supports a suite of breeding forest birds as well as ponds, marshes, and swamp hardwoods, and other wetlands (Audubon 2021b).

The Adirondack Forest Tract IBA is located approximately 3 miles south of the eastern portion of the MW-Patnode Study Area, in the Towns of Burke, Chateaugay, and Ellenburg (Audubon 2021c). The Adirondack Forest Tract IBA supports a characteristic forest-breeding bird community, including species such as the common loon (NY Special Concern) and the peregrine falcon (*Falco peregrinus* – NY Endangered), as well as the ruffed grouse (*Bonasa umbellus*), American woodcock (*Scolopax minor*), yellow-bellied sapsucker (*Sphyrapicus varius*), eastern wood-pewee (*Contopus virens*), least flycatcher (*Empidonax minimus*), great crested flycatcher (*Myiarchus crinitus*), blue-headed vireo (*Vireo solitarius*), veery, wood thrush, northern parula (*Stetophaga Americana*), chestnut-sided warbler, black-throated blue warbler (*Setophaga caerulescens*), black-throated green warbler (*Setophaga virens*), blackburnian warbler (*Setophaga fusca*), blackpoll warbler (*Setophaga striata*), black-and-white warbler (*Mniotilta varia*), American redstart, ovenbird, Canada warbler (*Cardellina canadensis*), scarlet tanager (*Piranga olivacea*), rose-breasted grosbeak (*Pheucticus ludovicianus*), and purple finch (*Haemorphous purpureus*).

Mapping developed for the New York Reptile and Amphibian Atlas (Herp Atlas) indicates that 31 reptile and amphibian species have been documented within the 7.5-minute USGS quadrangle maps that include portions of the MW-Patnode Study Area. Based on this mapping, common species within the MW-Patnode Study Area could likely include eastern American toad (*Anaxyrus americanus americanus*), gray treefrog (*Hyla versicolor*), bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans*), wood frog (*Rana sylvatica*), northern leopard frog (*Rana pipiens*), common snapping turtle (*Chelydra serpentine*), painted turtle (*Chrysemys picta*), common garter snake (*Thamnophis sirtalis*), and eastern milk snake (*Lampropeltis triangulum triangulum*).

The NYSDEC's *Checklist of Amphibians, Reptiles, Birds, and Mammals of New York State* and International Union for Conservation of Nature range maps were used to determine a list of 51 mammal species that may occur within the MW-Patnode Study Area. The habitats observed in the Study Area likely support common species such as the white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), raccoon (*Procyon lotor*), woodchuck (*Marmota monax*), coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*), North American porcupine (*Erethizon dorsatum*), and North American beaver (*Castor canadensis*).

Adirondack-Porter

The most recent BBA (III) has documented the presence of 60 breeding bird species in the vicinity of the Adirondack-Porter Study Area (NYSDEC 2021g) during the first year of data in what will be a five-year effort (2020 to 2024). This number is expected to increase as additional data is collected. Over 100 breeding bird species were documented in the vicinity of the Adirondack-Porter Study Area in the previous, now outdated, New York BBA (2000 to 2005) (NYSDEC

2008a). Many of the commonly documented species from BBA III listed above for MW-Patnode also occur in the Adirondack-Porter Study Area. Other common breeding bird species more specific to the Adirondack-Porter Study Area include wild turkey (*Meleagris gallopavo*), broad-winged hawk (*Buteo platypterus*), blue-headed vireo, hermit thrush (*Catharus guttatus*), blackburnian warbler, pine warbler (*Setophaga pinus*), and yellow-rumped warbler (*Setophaga coronata*). Onsite habitat observations in 2020, as described in the WDR (Appendix D), confirmed that the Study Area includes habitat for bird species that use forest edge, scrub/shrub, and hay/pasture habitats.

There are no NYSDEC-designated BCA in the vicinity of the Adirondack-Porter Study Area. The closest one is the Perch River BCA, located approximately 33 miles northwest of the northern end of the Adirondack-Porter Study Area (NYSDEC 2021f).

The Adirondack-Porter Study Area traverses through the Adirondack Forest Tract IBA (Audubon 2021c) in the Town of Watson. The Adirondack-Porter Study Area generally runs parallel to the western boundary of the Adirondack Forest Tract IBA in Lewis County and northern Oneida County, approximately 2 to 3 miles from the IBA boundary. The Adirondack Forest Tract IBA supports a characteristic forest-breeding bird community (Audubon 2021c). Potentially impacted bird species and other species characteristic of the general area are the same as those described for the MW-Patnode Study Area.

Mapping developed for the New York Herp Atlas indicates that 32 reptile and amphibian species have been documented within the 7.5-minute USGS quadrangle maps that include portions of the Adirondack-Porter Study Area. Based on this mapping, common species within the Adirondack-

Porter Study Area could likely include common mudpuppy (*Necturus maculosus*), eastern American toad, northern dusky salamander (*Desmognathus fuscus*), spotted salamander (*Ambystoma maculatum*), northern redback salamander (*Plethodon c. cinereus*) green frog, northern spring peeper (*Pseudacris c. crucifer*), common snapping turtle, painted turtle, northern water snake (*Nerodia s. sipedon*), common garter snake, and eastern milk snake.

The NYSDEC's *Checklist of Amphibians, Reptiles, Birds, and Mammals of New York State* and International Union for Conservation of Nature range maps were used to determine a list of 51 mammal species that may occur within the Adirondack-Porter Study Area. The habitats observed in the Study Area likely support common species such as the white-tailed deer, black bear, raccoon, woodchuck, coyote, Virginia opossum, North American porcupine, and North American beaver. It may also contain less common species such as fisher (*Pekania pennanti*) or bobcat (*Lynx rufus*).

4.2.6.2. Wildlife Habitat

Transmission utility corridors such as those in which the Project is primarily located are typically managed for safety and reliability purposes by using Integrated Vegetation Management ("IVM") practices that include clearing of tall growing vegetation along with maintaining a wire zone and border zone, which are the cornerstone principals of IVM. The value IVM provides to pollinator habitat is becoming more widely recognized (Wojcik and Buchman 2012). By maintaining utility corridors in this fashion through mechanical (mowing) and chemical means (herbicide application), physical structure and edges are created that allow for the growth and reproduction of understory plants that would exclude taller growing vegetation. Transmission corridors managed under an IVM approach are continually being maintained and reset to earlier successional

stages creating a favorable environment for pollinators. This diversified compatible plant community creates ideal habitat in which many of these early successional plants produce flowers desirable to pollinators, along with fruits, seeds, and berries for birds, mammals, and other wildlife species, ultimately increasing animal diversity, which is instrumental to sustaining pollinators. The IVM approach considers pollinators as part of the total ROW ecosystem management. Where feasible, research would be supported and encouraged and would include pollinator considerations in the goals and objectives, adopting practices when scientifically proven.

MW-Patnode

Scrub/shrub and grassland/herbaceous communities are the most prevalent habitat type identified within the MW-Patnode Study Area. This habitat type includes many flowering plants that provide nectar, seeds, and insect foods needed by breeding birds and pollinators. Scrub/shrub habitat also offers shelter and nest sites, as well as hunting areas for predatory birds. Invertebrate foods such as grasshoppers, crickets, beetles, dragonflies, wasps, spiders, earthworms, and sow bugs are abundant in scrub/shrub habitat. Additionally, prey items such as mice, voles, shrews, moles, rabbits, snakes, lizards, and small songbirds that aggregate in scrub/shrub habitat are important prey for many predator species. In addition, common shrub species such as gray dogwood (*Cornus racemosa*), wild grape (*Vitis spp.*), buckthorn (*Rhamnus spp.*), honeysuckle (*Lonicera spp.*), sumac (*Rhus spp.*), and brambles (r*ubus spp*.) that produce berries that are a food source for many mammals and birds. Common bird species in the Study Area's scrub/shrub habitats are likely to include gray catbird, brown thrasher (*Toxostoma rufum*), common yellowthroat, yellow warbler,

chestnut-sided warbler, eastern towhee, field sparrow (*Spizella pusilla*), song sparrow, and indigo bunting (Edinger 2014).

Cropland, pasture, and grassland areas in the MW-Patnode Study Area provide potential habitat for bird species such as savannah sparrow, American goldfinch, eastern meadowlark (*Sturnella magna*), bobolink (*Dolichonyx oryzivorus*), and American kestrel. These areas are also used as foraging areas by aerial insectivores such as bats, swallows, and flycatchers. During the growing season, the herbaceous vegetation in these areas supports abundant insect populations, which serve as an important food source for nesting songbirds. The vegetation itself provides forage in the form of seeds and foliage, which is used by sparrows, finches, small mammals, woodchuck, and white-tailed deer. Tall grass and weeds are also used as bedding and fawning areas by deer. Birds of prey such as red-tailed hawk (*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), and American kestrel and mammalian predators such as red fox (*Vulpes vulpes*) and eastern coyote use open fields as hunting areas. Corn, soybean, and hay fields in the MW-Patnode Study Area provide a food source for animals such as Canada geese, wild turkey, white-tailed deer, and black bear.

Emergent herbaceous wetlands and open water habitat in the MW-Patnode Study Area are used as a source of food, water, and/or cover by many of the previously mentioned upland species. In addition, these areas provide habitat for various wetland/aquatic wildlife species, including great blue heron, mallard (*Anas platyrhnchos*), wood duck, American bittern, painted turtle, common snapping turtle, bull frog, North American beaver, American mink (*Mustela vison*), and muskrat (*Ondatra zibethicus*).

Forestland is most commonly found along the edge of the MW-Patnode Study Area. These wooded areas provide habitat for forest-dwelling bird species such as wood thrush, veery, red-eyed vireo, ovenbird, American restart, and black-and-white warbler. Common mammals using forest habitats in the MW-Patnode Study Area likely include white-tailed deer, black bear, coyote, North American porcupine, and gray squirrel (*Sciurus carolinensis*). The presence of conifers in mixed forests enhances the diversity of forest-dwelling wildlife. Conifers provide preferred food and/or shelter for certain species of nesting birds, red squirrels (*Tamiasciurus hudsonicus*), and other mammals. Forested wetlands along the edge of the MW-Patnode Study Area provide habitat for many of the species listed above, as well as species such as spring peeper (*Pseudacris crucifer*), wood frog, spotted salamander (*Ambystoma maculatum*), and wood duck. Dead trees in these areas are also used by cavity nesting species such as woodpeckers, black-capped chickadee, bats, and squirrels.

The quality of the forested habitat along the MW-Patnode Study Area varies based upon the size or contiguous nature of the forested blocks. The quality of forestland along the MW-Patnode Study Area, comprising the existing ROW, in many places is reduced due to the proximity to a forest edge and/or human disturbance. These conditions limit the value of these areas to wildlife species that require forest interior conditions.

Adirondack-Porter

Scub/shrub and cropland, pasture, and grassland communities are the most prevalent habitat type identified within the Adirondack-Porter Study Area. Scrub/shrub habitat include many flowering plants that provide nectar, seeds, and insect foods needed by breeding birds and pollinators.

Scrub/shrub habitat also offers shelter and nest sites, as well as hunting areas for predatory birds. Invertebrate foods such as grasshoppers, crickets, beetles, dragonflies, wasps, spiders, earthworms, and sow bugs are abundant in scrub/shrub habitat. Additionally, prey items such as mice, voles, shrews, moles, rabbits, snakes, lizards, and small songbirds that aggregate in scrub/shrub habitat are important prey for many predator species. In addition, common shrub species, such as those listed above for MW-Patnode, produce berries that are a food source for many mammals and birds. Many of the common bird species in the Adirondack-Porter Study Area's scrub/shrub habitats are include those listed above for the MW-Patnode Study Area (Edinger 2014).

Cropland, pasture, and grassland areas in the Adirondack-Porter Study Area provide potential habitat for grassland bird species such as those listed above for the MW-Patnode Study Area. These areas are also used as foraging areas by aerial insectivores such as bats, swallows, and flycatchers. During the growing season, the herbaceous vegetation in these areas supports abundant insect populations, which serve as an important food source for nesting songbirds. The vegetation itself provides forage in the form of seeds and foliage, which is used by sparrows, finches, small mammals, woodchuck, and white-tailed deer. Tall grass and weeds are also used as bedding and fawning areas by deer. Birds of prey such as red-tailed hawk, great horned owl, and American kestrel and mammalian predators such as red fox (*Vulpes vulpes*) and eastern coyote use open fields as hunting areas. Corn, soybean, and hay fields in the Adirondack-Porter Study Area provide a food source for animals such as Canada geese, wild turkey, white-tailed deer, and black bear.

Emergent herbaceous wetlands and open water habitat in the Study Area are used as a source of food, water and/or cover by many of the previously mentioned upland species. In addition, these

areas provide habitat for various wetland/aquatic wildlife species including the species mentioned above for MW-Patnode.

Forestland is most commonly found along the edge of the Adirondack-Porter Study Area. These wooded areas provide habitat for forest-dwelling bird species and mammals such as those mentioned above for MW-Patnode. The presence of conifers in mixed forests enhances the diversity of forest-dwelling wildlife. Forested wetlands along the edge of the Adirondack-Porter Study Area provide habitat for many of the species listed above. Dead trees in these areas are also used by cavity nesting species such as woodpeckers, black-capped chickadee, bats, and squirrels.

The quality of the forested habitat along the Adirondack-Porter Study Area varies based upon the size or contiguous nature of the forested blocks. The quality of forestland along the Adirondack-Porter Study Area, comprising the existing ROW, in many places is reduced due to the proximity to a forest edge and/or human disturbance. These conditions limit the value of these areas to wildlife species that require forest interior conditions.

4.2.6.3. Fish Species

MW-Patnode

Numerous perennial streams flow through the MW-Patnode Study Area and support fish populations. These include Trout River (Class C(t),[1]) Pike Creek (Class C), East Branch Deer

[1] Waters protected under Article 15 of the ECL include any stream, or stream segment, with an NYSDEC assigned classification of AA, A, or B, or classification of C with a standard of (t) or (ts). The classification AA or A is assigned

Creek (Class C), Little Trout River (Class B(t)), Salmon River (Class C(t)), UNT to Salmon River (Class C(t)), Alder Brook (Class C(t)), Plum Brook (Class D), and Chateaugay River (Class C(t)). Many of these waterbodies, as well as numerous smaller streams, are popular recreational fisheries. Streams located within the MW-Patnode Study Area that are stocked with trout by NYSDEC include Trout River, Plum Brook, Salmon River, and Chateaugay River (NYSDEC 2020). The NYSDEC's New York Fish Atlas mapping indicates that 88 fish species have been documented in the MW-Patnode Study Area or its vicinity.

Adirondack-Porter

Numerous perennial streams flow through the Adirondack-Porter Study Area and support fish populations. These include Black River (Class C(t)), Alder Creek (Class C(t)), Cincinnati Creek (Class C), Steuben Creek (Class C), West Kent Creek (Class C(ts)), East Kent Creek (Class C(t)), UNT to Crystal Creek (Class C(t)), Crystal Creek (Class C(t)), South Branch Crystal Creek (Class C(t)), Sandy Creek (Class C(t)), Murmur Creek (Class C(ts)), UNT to Murmur Creek (Class C(ts), UNT to Independence River (Class C(ts)), Black Creek (Class C(t)), UNT to Black Creek (Class C), Otter Creek (Class C(t)), UNT to Otter Creek (Class C(t)), Fish Creek (Class C(ts)), UNT to Black River (Class C(t) and Class AA(t)), Fall Brook (Class C(t)), Miller Brook (Class C(ts)), Moose River (Class C), UNT to Moose River (Class C), Beauty Creek (Class C(t)), UNT to Beauty Creek (Class C(t), Cold Brook (Class C(t)), UNT to Cold Brook (Class C(t)), Ninemile Creek

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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. A standard of (t) indicates that the water may support a trout population, and a standard of (ts) indicates that it may support trout spawning.

(Class C), UNT to Ninemile Creek (Class C), UNT to Gridley Creek (Class C), and UNT to Crane Creek (Class C). Many of these waterbodies, as well as numerous smaller streams, are popular recreational fisheries. Streams located within the Study Area that are stocked with trout by NYSDEC include Black River, Black Creek, Crystal Creek, Otter Creek, Cincinnati Creek, and Moose River. The NYSDEC's New York Fish Atlas mapping indicates that approximately 70 fish species have been documented in the Adirondack-Porter Study Area or its vicinity.

4.2.7. Rare, Threatened, and Endangered Species

RTE species are those fish and wildlife species for which federal or state agencies afford protection by law. Included in this category are federally listed threatened or endangered species; eagles protected by the Bald and Golden Eagle Protection Act ("BGEPA"; 16 USC 668-668d); and species designated as state-listed or that receive special management consideration by New York.

The following sections provide a discussion of RTE fish and wildlife species and their likelihood of occurrence within the Study Areas.

4.2.7.1. Federally listed Species

MW-Patnode and Adirondack-Porter

The Applicant used the USFWS IPaC system on August 11, 2020, to determine if any federally listed RTE species were potentially present within the Project Study Area. The results of the IPaC indicated that the only federally listed species potentially occurring within the Project Study Area (both MW-Patnode and Adirondack-Porter) is the northern long-eared bat ("NLEB"; *Myotis*

septentrionalis). The IPaC results also indicated that there were no critical habitats for NLEB in the Study Area (USFWS 2020).

Northern Long-eared Bat

NLEB is listed as threatened at the state and federal level, and it winters in caves and mines and migrates seasonally to summer roosts in dead and dead/decaying trees. NLEB are typically associated with mature interior forest (Carroll et al. 2002) and tend to avoid woodlands with significant edge habitat (Yates and Muzika 2006). They can most often be found in cluttered or densely forested areas including in uplands and at streams or vernal pools (Brooks and Ford 2005). They may use small openings or canopy gaps as well. Some research suggests that NLEB forage on forested ridges and hillsides rather than in riparian or floodplain forests. Captures from New York suggest that NLEB may also be found using younger forest types (NYNHP 2016). This species selects day roosts in dead or live trees under loose bark, or in cavities and crevices, and may sometimes use caves as night roosts (USFWS 2013). They may also roost in buildings or behind shutters. A variety of tree species are used for roosting. The structural complexity of surrounding habitat and availability of roost trees may be important factors in roost selection (Carter and Feldhamer 2005). Roosts of female bats tend to be large diameter tall trees, and in at least some areas, located within a less dense canopy (Sasse and Pekins 1996). NLEB hibernate in caves and mines where the air temperature is constant, preferring cooler areas with high humidity (USFWS 2013). The NYNHP maintains data regarding known occurrences of NLEB hibernacula and summer roosts. Based on the NYNHP dataset, the closest known NLEB hibernacula is greater than 15 miles away from the MW-Patnode Study Area and greater than 30 miles away from the

Adirondack-Porter Study Area. Additionally, there are no known roost trees within 7 miles of the Project Study Area.

4.2.7.2. State-Listed Species

In addition to federal law, threatened and endangered fish and wildlife species are protected in New York under 6 NYCRR Part 182, which is administered by the NYSDEC.

The NYNHP provides information regarding state-listed species protected in New York under 6 NYCRR Part 182. In October 2020, the Applicant initially reviewed the NYNHP dataset it receives as part of a data sharing agreement with the NYNHP to identify RTE species with potential to occur in the Study Area in advance of biological field surveys completed in fall 2020. The Applicant subsequently received a letter from the NYNHP dated February 26, 2021, providing information on potential state-listed RTE species in the Study Area (Conrad 2021). The following RTE species were identified in both the NYNHP database and February 26, 2021, letter as potentially occurring within the MW-Patnode Study area: bald eagle (state threatened), Blanding's turtle (*Emydoidea blandingii*; state threatened), eastern sand darter (*Ammocrypta pellucida*; state threatened), horned clubtail (*Arigomphus cornutus*; state unlisted), mooneye (*Hiodon tergisus*; state threatened), skillet clubtail (*Gomphurus ventricosus*; state unlisted), upland sandpiper (*Bartramia longicauda*; state threatened), and yellow lampmussel (*Lampsilis cariosa*; state unlisted*).* One additional species, black sandshell (*Ligumia recta*; state unlisted), was included in the NYNHP letter (Conrad 2021). Listed species are discussed in more detail below; unlisted species are discussed in Appendix B, Rare Threatened and Endangered Species Report.

Although the NYNHP response letter's did not identify any RTE species as being known on the Adirondack-Porter Study Area, one species, the loggerhead shrike (*Lanius ludovicianus*; state endangered) was identified as being known proximate to the project using the NYNHP database, which had been shared with NYPA as a sister agency. That internal review identified a known loggerhead shrike observation in close proximity to the Adirondack-Porter Study Area. The resulting 1-mile buffer of that known occurrence, for which NYNHP considers the specific species to potentially to occur, overlapped with Adirondack-Porter Study Area. As such, the habitat within that buffer was reviewed for loggerhead shrike suitability.

The following paragraphs provide a discussion of each of these species' preferred habitat, their potential locations within the Proposed ROW, and whether any suitable habitat or individuals were observed. Note that all Blanding's turtle surveys were performed by Dr. Glenn Johnson, and results of these surveys are covered in a separate report (Appendix I).

Bald Eagle

The bald eagle was formerly a federally listed species but was delisted in 2007 due to recovery of the population. It is currently listed in New York State as threatened although the population has demonstrated exceptional growth in recent decades. NYSDEC has suggested down-listing the status to species of special concern ("SSC") in an October 2019 preproposal (NYSDEC 2019). They are year-round residents in the vicinity of open water and roost in forested regions. They nest in forests along the shorelines of lakes or rivers where they can find open water. Bald eagles often winter along major river systems (NYSDEC 2021a).

The NYNHP letter identified the St. Lawrence River as a significant wintering area for the bald eagle (Conrad 2021). The NYNHP buffer identified for this species includes the St. Lawrence River and the vicinity; the intersection of the buffer with the MW-Patnode Study Area occurs at the western end of the Study Area, including the proposed Haverstock Substation (*see* Figure 3-2 of Appendix B). The habitat within the intersecting areas did not contain suitable foraging or nesting habitat for the bald eagle, as the habitat was predominantly comprised of dense, scrubby regenerative forest dominated by small apple trees, invasive shrubs (common buckthorn [*Rhamnus cathartica*] and Morrow's honeysuckle). There were also herbaceous areas under the existing transmission towers. Given the proximity to rivers, there is potential for bald eagle flyovers in this area, or the potential to perch on existing transmission towers, but there are no attractive habitat characteristics.

The MW-Patnode Study Area crosses the Grasse River approximately 0.25 mile southeast of the edge of the NYNHP bald eagle buffer. This river is large enough that a bald eagle could potentially use it for foraging habitat, although the section of river that intersects with the Study Area lacks habitat suitable for nesting. There is riparian forest habitat north of the Study Area on the east side of Grasse River.

There was one sighting of a bald eagle near the eastern end of the MW-Patnode Study Area during fall 2020 biological field surveys (*see* Figure 3-7 of Appendix B). The sighting occurred on November 17, 2020, approximately 1.3 miles west of the eastern end of the Study Area. An adult bald eagle was observed soaring over the tree line approximately 330 feet (0.06 mile) north of the edge of the Study Area. The bald eagle was flying over forested habitat. Bald eagles can occur in

the region at any time of year, typically occurring in the vicinity of open water. However, bald eagle can range widely over the landscape while foraging and during migration.

Eastern Sand Darter

The eastern sand darter (state threatened) is a small fish, approximately 2.5 inches in length. Its spawning period is thought to begin in May and continue through the summer. The major cause of declines in eastern sand darter populations is siltation, which contributes to a loss of the clean sandy substrate this species prefers. Population fragmentation from dam construction, stream pollution, and stream channelization have also contributed to population decline (NYSDEC 2021b). Eastern sand darter currently occurs in six general locations in New York State: the Grasse River, the St. Regis River, the Salmon Rivers, the Metawee and Poultney Rivers near Lake Champlain, and Lake Erie. Within the MW-Patnode Study Area, the potential occurances are limited to the Grasse River, St. Regis River, and the Little Salmon River. Eastern sand darter frequently buries itself in sand; it prefers clean sandy raceways of slow-moving streams and rivers. It often occurs immediately downstream of a bend (MSU 2021a).

The NYNHP letter identified the eastern sand darter as being present in the St. Regis River adjacent to the proposed crossing (Conrad 2021). During the project's internal review, the intersections between the MW-Patnode Study Area and NYNHP's buffer around the known occurrences of the species were found to be located at the St. Regis River and the vicinity of Little Salmon River (*see* Figures 3-3 and 3-4 of Appendix B). The known occurrence buffer area does not cross the Grasse River within the MW-Patnode Study Area for this species, and was not mentioned in the NYNHP response (Conrad 2021).

The St. Regis River at the Study Area's crossing is 120 feet wide and over 3 feet deep. The substrate comprises bedrock and silt, with no instream cover observed. The MW-Patnode Study Area crossing at the St. Regis River may not be sufficiently sandy for optimal eastern sand darter habitat, although, given the species' documented presence in the vicinity (Conrad 2021), it likely occurs at the crossing in low numbers of in transit while moving between sand bars.

The known occurrence buffer in the vicinity of the Little Salmon River intersects the MW-Patnode Study Area in a non-aquatic area; 0.45 mile east of the buffer edge, and was not referenced in the NHP response letter (Conrad 2021). At the Study Area's crossing, the river's width is 63 feet across and over 2 feet deep. The substrate comprises boulders, cobble, gravel, sand, and silt. The adjacent habitat is pasture, with no instream cover observed. Because there is some sand present at Little Salmon River crossing, the Applicant identified that the MW-Patnode Study Area's crossing at this river may contain suitable habitat for the species. No in-water work is planned for the waterbodies noted above; therefore, construction of the Project is not expected to impact this species or its habitat.

Mooneye

The mooneye (state threatened) is a medium-sized fish up to 2 pounds and 15 inches in length. It is found in waters from southern Canada (Hudson Bay Basin) south through the Great Lakes Basin (except Lake Superior), the St. Lawrence River, and the Lake Champlain drainage basin, in addition to other remnant populations. Mooneye populations are decreasing both in numbers and the number of locations where they are found. While the exact causes of population declines are not known, it is due in part to increased siltation occurring in clear water areas where mooneye

normally occur (NYSDEC 2021c). Mooneye spawn in spring, migrating to medium and large rivers from March through May to deposit its eggs. Mooneye prefer clear water habitat of large streams, rivers, and lakes; eggs are deposited over rocks in swift water areas. This species often uses deep holes of fast-moving rivers with firm substrates (MSU 2021b).

The intersection between the MW-Patnode Study Area and the NYNHP buffer areas is located at the Grasse River (*see* Figure 3-2 of Appendix B). The Grasse River at the MW-Patnode Study Area's crossing is 430 feet wide and over 10 feet deep. The substrate comprises cobble, gravel, sand, silt, and clay, with no instream cover observed. The adjacent habitat is pasture on the west bank and shrubby wetland on the east bank. The Grasse River is fairly large with hard materials such as cobble and gravel in the substrate, which may provide suitable habitat for mooneye to occur. No in-water work is planned for the Grasse River.

Upland Sandpiper

The upland sandpiper (state threatened) is a medium-sized sandpiper. It spends little time near water and is an obligate grassland species. Upland sandpiper has become a rare breeder throughout the state in agricultural areas and grasslands (NYSDEC 2021d). Population declines across the northeast are the result of habitat loss. Grassland area across the state has decreased over the last 30 years as a result of development, vegetative succession, and a reduction in pasture and hayfields. The upland sandpiper arrives in New York by late April when it returns to its breeding grounds. This species typically requires three different proximate vegetation heights for breeding: perches and low vegetation during courtship, higher vegetation to hide its nest, and lower vegetation during supervision of young (NYSDEC 2021d). The upland sandpiper typically requires large open areas.

In Weik's Conservation of Grassland birds in Maine, upland sandpiper were rarely found in grasslands less than 50 hectares (Ha), whereas they were found half the time in fields between 50 Ha and 100 Ha and at all sites greater than 100 Ha (USFWS 2001). Nesting was also infrequently documented at sites less than 50 Ha whereas they were observed half the time in habitats greater than 200 Ha (Vickery et al. 1994).

During the Project's internal review of the NYNHP dataset, known occurrence buffer areas identified for upland sandpiper occur at the far west end of the MW-Patnode line, including the Haverstock proposed substation (*see* Figure 3-2 of Appendix B). The section of the MW-Patnode Study area east of Grasse River and west of Haverstock Road is predominantly wetland habitat dominated by reed canary grass (*Phalaris arundinacea*). The section of the MW-Patnode Study Area east of Fregoe Road and west of Grasse River was agricultural land and active cow pasture. While the cow pasture is grassy habitat of plausible utility for upland sandpiper, the well-grazed short grass height in addition to the presence of relatively steep slopes and shrub cover along a stream intersecting the pasture and MW-Patnode Study Area suggests this area would be unlikely to support upland sandpiper. The habitat west of Fregoe Road was unsuitable, because it was predominantly comprising dense, scrubby regenerative forest dominated by small apple trees and invasive shrubs. There was only limited herbaceous habitat between shrub patches, the largest open patch 0.8-acre in size, occurring under the existing transmission towers. The vegetation between shrub patches was dominated by reed canary grass and goldenrod, and an approximately 0.3-acre patch of fenced-off lawn. These herbaceous areas were too small and hemmed in with shrubs and trees for use by upland sandpiper. Overall, the MW-Patnode Study Area did not contain suitable habitat for the upland sandpiper.

Blanding's Turtle

The Blanding's turtle is state-listed as threatened. Blanding's turtles have different habitat requirements for different seasonal or life history activities. Wetlands and other freshwater aquatic habitats including emergent marshes, woodland pools, red maple swamps, buttonbush swamps, ponds, lakes, rivers, and streams are used by the species for a variety of activities such as hibernation, mating, feeding, shelter, estivating, and basking (NYNHP 2015b). Blanding's turtles also use upland areas to migrate between wetland pools, and, in the summer months, females migrate overland from the wetland habitat to nest in upland areas containing well-drained, loose soil with good solar exposure (Kiviat 1997). According to information provided by NYSDEC and NYNHP, Blanding's turtles have the potential to occur within approximately 9.6 miles of the MW-Patnode Study Area in the Towns of Massena and Brasher.

The Applicant enlisted Dr. Glenn Johnson, Professor of Biology at SUNY Potsdam and Riveredge Senior Ecologist, to conduct a Blanding's turtle habitat assessment. Dr. Johnson prepared the *Blanding's Turtle Habitat Assessment Report* for the approximate 9.6 miles of the MW-Patnode Study Area where the turtles are known or believed to occur (*see* Appendix I).

Prior to the field investigation, Dr. Johnson reviewed available maps and aerial photography to identify areas of potentially suitable Blanding's turtle habitat on the Study Area. NWI and New York State wetlands identified as consisting completely or partially of shrub-scrub were reviewed and noted for further field investigation.

The Blanding's turtle habitat assessments were completed concurrent with wetland delineations starting on November 1, 2020. Wetlands were characterized as potentially supporting Blanding's

turtles by providing suitable habitat if criteria outlined above were noted. In addition, any suitable nesting areas within the Study Area and near potential Blanding's turtle habitat were noted. Seven (7) delineated wetlands within the Study Area were assessed for potentially suitable Blanding's turtle habitat. Of these seven (7) wetlands, two (2) had one or more of the habitat characteristics to support Blanding's turtles. The remaining five (5) wetlands provided no significant habitat to support Blanding's turtles in the Study Area or in the immediate vicinity, although one wetland was hydrologically connected to one of the wetlands identified as having potential habitat and may provide marginal transitory habitat on the Study Area. Availability of suitable upland habitat for nesting was not observed, although portions of the existing ROW could be used for this purpose. The two wetlands with potential habitat total 7.17 acres. Although one of these wetalnds is relatively small (1.96 acres), it consists of some habitat features that make it potential Blanding's turtle habitat given the potential for the adjacent impoundment to provide additional habitat. The other wetland (5.21 acres) provides suitable habitat for most of the seasonal activities of Blanding's turtles, including foraging, basking, and overwintering.

Loggerhead Shrike

Historically, the loggerhead shrike (state-listed endangered) was reported as a fairly common breeder in western and central New York. Current loggerhead shrike populations are extremely low in New York; no nests have been located in the state in recent years. The causes of the loggerhead shrike's decline are not clear. One potential reason is the abandonment of many farms and orchards, which have become overgrown and created unfavorable nesting habitat. Car strikes and pesticide contamination may also be factors. Loggerhead shrike begins nesting in late April or early May. Its breeding habitat consists of agricultural areas that contain hedgerows, hayfields, pastures, and scattered trees and shrubs. Hawthorn is a preferred species, as shrikes store food by impaling prey on thorns or barbed wire (NYSDEC 2021e).

Loggerhead shrike was one of the RTE species listed in the initial NYNHP dataset; however, it was not included in the February 26, 2021, NYNHP letter (Conrad 2021). The intersection between the Adirondack-Porter Study Area and the NYNHP buffer area identified for loggerhead shrike is an approximately 1.4-mile stretch along the southern end of the Proposed ROW (*see* Figure 4-1 of Appendix B). This intersection area was assessed for loggerhead shrike habitat and was determined to be not overly suitable. The vegetation was predominantly comprising cattail, sedges, and goldenrod, with less than 20% shrubs, which included honeysuckle, rose, and blackberry. This section of Adirondack-Porter Study Area did not have a sufficient percentage of shrubland or pasture habitat to support adequate habitat. The secondary growth forest along the edge of the Study Area also presented less than ideal habitat. An area located several hundred yards to the south, outside of the Adirondack-Porter Study Area, was determined to be more suitable habitat compared to habitat within the Study Area. However, the area outside the Study Area was still less

optimal; it was comprised of agricultural fields with hedgerows present, but these fields were largely active cultivated cropland, which is not preferred habitat for loggerhead shrike.

Following field review, biologists determined that the Adirondack-Porter Study Area did not contain suitable loggerhead shrike habitat within the NYNHP buffer.

Incidental Observations of other RTE Species

In addition to the RTE species discussed above, field teams observed the northern harrier *(Circus hudsonius)*, a state threatened species, during fall 2020 biological field surveys. There were two sightings of northern harrier (in the western third of the MW-Patnode Study Area (*see* Figures 3-5 and 3-6 of Appendix B). The first sighting occurred on November 6, 2020, approximately 0.3 mile west of East Mahoney Road in Brasher Falls. A female northern harrier was observed in hunting flight low to ground and landing several times in the pasture on the northern edge of the Study Area. The second sighting occurred on November 11, 2020, approximately 0.5 mile east of Scanlon Road in Bombay. A female northern harrier was observed hunting approximately 0.1 mile south of the MW-Patnode Study Area, in a fallow field of goldenrod and grass, then landed in the field.

The NYNHP did not provide any potential RTE locations or buffers for northern harrier. NYSDEC suggested downlisting this species to species of special concern in an October 2019 pre-proposal. This species is most likely to be present in this region during the breeding season and migration. They range widely across the landscape while foraging, using wide-open habitats such as wetlands, grasslands, hayfields, and to a lesser extent agricultural fields (Cornell University 2019). The MW-Patnode Study Area has considerable pasture and agricultural land, thus there is potential for the

species to occur incidentally along many sections of the MW-Patnode Study Area with large stretches of open habitat.

4.2.8. Hydrology

The following sections discuss the surface water and groundwater features located within the Study Area. Data sources used in this evaluation include USFWS NWI database, NYSDEC Freshwater Wetlands Database, NYSDEC Water Quality Classification Database, USGS National Hydrographic Dataset, and recent and historic satellite imagery. Field delineations were also performed from October 13, 2020, through November 21, 2020. The methods used to delineate wetland, tributary, and waterbody features are described in the WDR (Appendix D). Mapped hydrologic features in the vicinity of the Study Area are illustrated in appendices B-1 and C-1 of the WDR (Appendix D).

4.2.8.1. Surface Waters and Groundwater

Surface water and groundwater resource information was collected by review of existing mapping and field delineations.

MW-Patnode

NYSDEC mapping indicates that 26 streams occur within the MW-Patnode Study Area. NYSDEC-mapped streams, lakes, ponds, and rivers are given class and standard designations based on existing or expected best usage of each water or waterway segment. Waters protected under Article 15 of the ECL include any stream, or stream segment, with a NYSDEC-assigned classification of AA, A, or B, or with a classification of C with a standard of (T) or (TS). NYSDEC-

mapped streams within the MW-Patnode Study Area include 10 protected streams and 16 unprotected streams. Mapped hydrologic features in the vicinity of the MW-Patnode Study Area are illustrated in Figure 4-3.

The Applicant-directed field delineations located 51 tributaries, combining for 67 occurrences within the MW-Patnode Study Area, including 15 streams that are considered protected (classification C(t) or higher) and 36 unprotected (Figure 4-4). Thirty-two (32) streams were classified as perennial and 19 as intermittent. Stream data forms (including information regarding flow regime, water width, ordinary high water width, depth, substrate, observed water quality, bank slope, bank substrate, gradient, and adjacent vegetation) are provided in Appendix B-4 of the WDR (Appendix D hereto). Appendix B-2 of the WDR (Appendix D) provides information regarding stream name, flow regime, NYSDEC stream classification, and linear feet within the Study Area. Table 4-5 provides a summary of delineated streams within the MW-Patnode Study Area.

Table 4-5: Delineated Streams: MW-Patnode Study Area

Flow Regime	Number of Streams Delineated	Total Feet within Study Area	Total Feet within Proposed ROW
Intermittent	19	6,437	6,813
Perennial	32	11,344	11,345
Total:	**53**	**17,782**	**18,158**

A total of five (5) open water areas were delineated during the field survey. Three (3) of these ponded areas occur within mapped NYSDEC Freshwater Wetlands. Table 4-6 provides a summary of the open water areas that occur within the Study Area.

Table 4-6: Delineated Open Water: MW-Patnode Study Area

Waterbody ID	Type	NWI-Mapped Wetland Type	NYSDEC Wetland	Agency Jurisdiction	Acreage in Study Area	Acreage in Proposed ROW
WB-T17-001	POND – NATURAL	N/A	RR-6	NYSDEC/USACE	0.3	0.3
WB-T26-001	POND – NATURAL	PSS1/EM5E	FC-40	NYSDEC/USACE	1.7	1.7
WB-T19-001	POND – NATURAL	PSS1A	N/A	N/A	<0.1	<0.1
WB-T42-001	POND – NATURAL	PUBHh	CB-56	NYSDEC/USACE	0.1	0.1
WB-T22-001	POND – NATURAL	PUBHh	N/A	N/A	0.2	0.2
				Total:	**2.3**	**2.3**

Two (2) tributaries (totaling 778 feet) are within the Haverstock Substation site. A NYSDEC Class D stream is mapped within the unsurveyed portion of the Willis 345/230 kV Substation expansion site. No open water areas are located within or immediately adjacent to the Haverstock Substation site or the Willis 345/230 kV Substation expansion area.

The MW-Patnode Study Area crosses two (2) unconfined, mid-yield aquifers that are within the Towns of Westville, Malone, Constable, Burke, and Chateaugay. NYSDEC mapping indicates there are no primary or principal aquifers located within the MW-Patnode Study Area or its vicinity (NYSDEC 2008b).

Adirondack-Porter

Surface water and groundwater resource information was collected by review of existing mapping and field delineations. NYSDEC mapping indicates that 62 streams occur within the Adirondack-Porter Study Area. NYSDEC-mapped streams within the Study Area include 47 protected streams

and 15 unprotected streams. Mapped hydrologic features in the vicinity of the Adirondack-Porter Study Area are illustrated in Figure 4-5.

The Applicant-directed field delineations located 161 tributaries, combining for 200 occurrences within the Adirondack-Porter Study Area, including 59 streams that are considered protected (classification C(t) or higher) and 102 unprotected (Figure 4-6). Ninety-five (95) streams were classified as perennial, 56 as intermittent, nine (9) as ephemeral, and one (1) undetermined (this stream will be resurveyed to determine flow classification). Stream data forms (including information regarding flow regime, water width, ordinary high water width, depth, substrate, observed water quality, bank slope, bank substrate, gradient, and adjacent vegetation) are provided in Appendix C-4 of the WDR (Appendix D hereto). Appendix C-2 of the WDR (Appendix D) provides information regarding stream name, flow regime, NYSDEC stream classification, and linear feet within the Study Area. Table 4-7 provides a summary of streams within the Adirondack-Porter Study Area.

Table 4-7: Delineated Streams: Adirondack-Porter Study Area

Flow Regime	Number of Streams Delineated	Total Feet within Study Area	Total Feet within Proposed ROW
Perennial	95	51,722	33,996
Intermittent	56	18,627	8,972
Ephemeral	9	2,120	1,167
Undetermined	1	1,061	501
Total:	**161**	**73,530**	44,636

A total of ten (10) waterbodies were delineated during the field survey. None of these ponded areas occur within mapped NYSDEC Freshwater Wetlands. Table 4-8 provides a summary of the open water areas that occur within the Study Area.

Table 4-8: Delineated Open Water: Adirondack-Porter Study Area

Waterbody ID	Type	NWI-Mapped Wetland Type	NYSDEC Wetland	Agency Jurisdiction	Acreage in Study Area	Acreage in Proposed ROW
WB-T41-002	POND – ARTIFICIAL	N/A	N/A	USACE	0.06	0.06
WB-T41-001	POND – ARTIFICIAL	N/A	N/A	USACE	0.07	0.05
WB-T41-004	OXBOW	R3USA	N/A	USACE	0.41	0.30
WB-T41-003	POND – ARTIFICIAL	N/A	N/A	USACE	0.23	0.23
WB-T44-001	POND – ARTIFICIAL	N/A	N/A	USACE	0.13	0.14
WB-EDR-003	POND	PUBHh	N/A	USACE	0.09	0.06
WB-EDR-002	CANAL	R3UBHx	N/A	USACE	0.46	0.35
WB-EDR-001	POND	R5UBH	N/A	USACE	0.15	0.16
WB-EDR-101	POND	PEM1E	N/A	N/A	0.09	--
WB-EDR-100	POND	N/A	N/A	N/A	0.09	0.09
				Total:	**1.79**	**1.42**

No streams or open water areas are located within or immediately adjacent to the Adirondack Substation, Austin Road Substation, or Edic Substation expansion sites.

The Adirondack-Porter Study Area crosses eight (8) main aquifers, none of which are primary aquifers. Of the eight (8), two (2) are unconfined mid yield, one (1) is unconfined high yield, two (2) are "lacustrine or eolian," and three (3) are "kame, kame terrace, kame moraine, outwash or alluvium." The crossed aquifers are in the towns of Croghan, New Bremen, Watson, Greig, Lyonsdale, Boonville, Steuben, Floyd, and Trenton. NYSDEC mapping indicates there are no

primary or principal aquifers located within the Adirondack-Porter Study Area or its vicinity (NYSDEC 2008b).

4.2.8.2. Wetlands

The wetland delineation methodologies outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (1987 Corps Manual) (USACE 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual Northcentral and Northeast Region* (NC&NE Regional Supplement) (USACE 2011), and the *New York State Freshwater Wetlands Delineation Manual* (NYSDEC 1995) were used to identify and delineate wetlands within the Survey Area. Wetlands identified were classified consistent with the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979).

The Applicant has considered both United States Army Corps of Engineers ("USACE") jurisdictional and New York State jurisdictional wetlands. The USACE regulates and permits certain activities in wetlands that are considered "waters of the United States" under Section 404 of the Clean Water Act and navigable waters under Section 10 of the Rivers and Harbors Act of 1899. All wetlands delineated are potentially regulated waters of the United States afforded protection under Section 404 of the Clean Water Act.

The NYSDEC regulates mapped wetlands that are at least 12.4 acres in size, or that are considered to be of unusual local importance pursuant to the Freshwater Wetlands Act, Article 24 of the ECL. NYSDEC also regulates 100-foot wetland "adjacent areas" or buffer areas, which are generally defined as those areas of land or water that are outside of the wetland and within 100 feet of the surveyed wetland boundary.

MW-Patnode

Wetland delineations were completed within the MW-Patnode Study Area from October 13 through November 21, 2020, as well as in summer and fall 2021. The delineation methods and results are detailed in the WDR (Appendix D). A total of one hundred and forty-four (144) uniquely named wetlands (229 occurrences) were delineated within the MW-Patnode Study Area; one unique name was given for each wetland, even if the wetland was classified as multiple Cowardin Classification types (occurrences). The boundaries of delineated wetlands are depicted in Figure 4-4. Table 4-9 provides a brief summary of the wetlands identified during the field investigation.

Table 4-9: Delineated Wetland Summary: MW-Patnode Study Area

Cowardin Classification Type	Number of Wetlands	Acreage in Study Area	NYSDEC Wetland in Proposed ROW (acres)	Other Wetland in Proposed ROW (acres)
PEM	69	111.8	32.8	80.7
PSS	87	275.2	123.6	145.3
PFO	13	8.9	0.2	5.9
PUB	1	<0.1	0	<0.1
Total:	**170[1]**	**396.0**	**156.6**	**232.0**

[1] This total exceeds the 144 uniquely named wetlands due to multi-cover type wetland complexes.

Twenty-four (24) of the 144 wetlands identified during survey efforts occur in, or in proximity to, areas mapped by the NYSDEC as state-regulated resources, and therefore are potentially afforded protection under Article 24.

Five wetlands (0.4 acres) were delineated within the Haverstock Substation site. None of the delineated wetlands are state-regulated resources. The Applicant completed wetland delineations

for the Willis 345/230 kV Substation site in summer 2021. No wetlands occur within the substation footprint.

Adirondack-Porter

Wetland delineations were completed within the Adirondack-Porter Study Area from October 13 through November 21, 2020. The delineation methods and results are detailed in the WDR (Appendix D).

A total of one hundred and ninety-six (196) uniquely named wetlands (442 occurrences) were delineated within the Adirondack-Porter Study Area; one unique name was given for each wetland, even if the wetland was classified as multiple Cowardin Classification types (occurrences). The boundaries of delineated wetlands are depicted in Figure 4-6. Table 4-10 provides a brief summary of the wetlands identified during the field investigation.

Table 4-10: Delineated Wetland Summary: Adirondack-Porter Study Area

Cowardin Classification Type	Number of Wetlands	Acreage in Study Area	NYSDEC Wetland in Proposed ROW (acres)	Other Wetland in Proposed ROW (acres)
PEM	135	227.2	65.3	131.3
PSS	106	244.0	19.3	197.1
PFO	74	71.5	0.3	2.9
PUB	3	1.2	0	1.2
Total:	**318[1]**	**543.8**	**84.8**	**332.5**

[1] This total exceeds the 198 uniquely named wetlands due to multi-cover type wetland complexes.

Twenty-one (21) of the 196 wetlands identified during survey efforts occur in, or in proximity to, areas mapped by the NYSDEC as state-regulated resources, and therefore are potentially afforded protection under Article 24.

At the Marcy Substation expansion site, there is one PEM wetland (0.2 acres) and one PFO wetland (<0.1 acres). None of the delineated wetlands are state-regulated resources. No wetlands were delineated within the Adirondack, Austin Road, or Edic Substation sites.

4.2.9. Topography, Geology, and Soils

Information regarding topography, geology, and soils was obtained from existing published sources, including soil surveys for Franklin County (USDA-NRCS 1958), Lewis County (USDA-NDCS 1960), St. Lawrence County (USDA-NRCS 2005), Clinton County (USDA-NRCS 2006), and Oneida County (USDA-NRCS 2008); ArcGIS Earth (ESRI 2021); Statewide Bedrock Geology Mapping; and New York State Surficial Geology Mapping (NY State Museum/NY Geological Survey 1999a; NY State Museum/NY Geological Survey 1999b); and Geology of New York (Isachsen 2021).

4.2.9.1. Topography

MW-Patnode

The MW-Patnode Study Area is located in two physiographic provinces: the St. Lawrence Lowlands and the northern edge of the Adirondack Mountains (NYSM 2021). Approximately the western two thirds of the Study Area, located in the St. Lawrence Lowlands, are generally characterized by gentle relief, with elevations rising from a low of approximately 150 feet above mean sea level ("amsl") at the Grass and Raquette Rivers to approximately 800 feet amsl where the Project enters the Adirondack Mountains physiographic province approximately 4 miles northeast of the Town of Malone, New York. From this point, relief becomes more pronounced,

rising to an elevation of approximately 1,380 feet amsl in Ellenburg, Clinton County, NY (ESRI 2021). Five major river systems drain through the MW-Patnode Study Area (the Grass, Raquette, St. Regis, Salmon, and Chateaugay Rivers) from the higher elevations in the south to the St. Lawrence River in the north; *see* Figure 2 in Appendix B-1 of the WDR (Appendix D).

Potential limitations to development along the Proposed ROW include a few isolated areas of steep slopes associated with stream and/or river valleys found in the Project, particularly the Salmon and the Chateaugay Rivers.

Adirondack-Porter

The Adirondack-Porter Study Area occupies three physiographic provinces. They are, from north to south, the Adirondack Mountains, the Tug Hill Plateau, and the Hudson-Mohawk Lowlands (NYSM 2021). Elevations in the Study Area range from a low of approximately 600 feet amsl near Beaver Creek, east of the Village of Holland Patent, to a high of approximately 1,700 feet amsl, east of Delta Reservoir and the Hamlett of Westernville. Mountain foothills dictate the topography in the Adirondack Mountains province, which can be described as rolling to moderately undulating, and ranges between approximately 860 feet amsl and 1,200 feet amsl. The Tug Hill Plateau portion of the study area exhibits more pronounced relief, ranging between approximately 1,100 feet amsl and 1,700 amsl. The southern portion of the Study Area occupies minor portions of the Hudson-Mohawk Lowlands and drops to approximately 600 feet amsl near Beaver Creek, east of the Village of Holland Patent (ESRI 2021). Topography in these bottomlands has been shaped by repeated flooding, resulting in accumulation of alluvial outwash deposits that were derived from rocks upstream, leading to development of fertile, productive soils. The Black River

drainage system provides surface drainage for the majority of the Study Area (USDA-NRCS 2008).

Potential limitations to development along the Proposed ROW include a few isolated areas of steep slopes associated with stream and/or river valleys throughout the Project, particularly in the areas east of Delta Reservoir.

4.2.9.2. Geology

MW-Patnode

The western portion of the MW-Patnode Study Area, located within the St. Lawrence Lowlands (northeastern St. Lawrence County and northwestern Franklin County), is characterized by areas of low relief developed upon sedimentary bedrock (dolostone and sandstone). The bedrock originated from sediments that were deposited in a shallow, Cambrian-Ordovician aged sea (540-444 million years ago). Fossils are generally scarce in these bedrock formations as the environment of deposition was not conducive to their preservation (USDA-NRCS 2005).

The central and eastern portions of the MW-Patnode Study Area, located in the eastern portion of the St. Lawrence Lowlands physiographic province and northern edge of the Adirondack Mountains physiographic province (northern Franklin County and northwestern Clinton County) is characterized by bedrock similar to that found in the St. Lawrence Lowlands (i.e., limestone, dolostone [magnesium-containing limestone] and sandstone). The boundary between the St. Lawrence Lowlands and the Adirondack Mountains is gradual. Within the Adirondack Mountains portion of the Study Area, lowland sedimentary rocks overly Adirondack metamorphic rocks.

Bedrock dips gently northward, sourced from Adirondack Mountain source areas found to the south (USDA-NRCS 1958).

The Study Area has experienced glaciation more than once during the previous few million years. The most recent glaciation, the Wisconsin Glaciation (ending approximately 10,000 to 12,000 years ago), resulted in scouring and abrading of the terrain and deposition of various thicknesses of glacial till and stratified materials from associated glacial meltwaters.

Unconsolidated surficial materials that were deposited throughout the Study Area include recent alluvial sand and gravel; colluvium; lacustrine beach sands; marine and lacustrine sand; sand-rich glacial till and glacial kame and kame moraine deposits. Thickness of the unconsolidated deposits is irregular and varies from less than a meter, or absent where bedrock outcrops, to tens of meters (Cadwell et al. 1986). These distinct materials comprise the parent material for the soils throughout the Study Area.

Based on review of data available from NYSDEC, a total of 26 active sand and gravel pits and one sandstone quarry are located within three (3) miles of the MW-Patnode Study Area (see Table 4-11) (NYSDEC 2016b).

Table 4-11: Active Mining Operations Within 3 Miles of the MW-Patnode Study Area

Mine ID	Permittee	Mine Name	Town	Distance from ROW	Direction from ROW
50989	Mitchell Construction & Sales Inc	Mitchell Construction Westville Pit	Westville	0.1	North
50497	Constable, Town of	Constable Sand Pit	Constable	0.4	North
50450	Westville, Town of	Westville Pit	Westville	0.4	North

Mine ID	Permittee	Mine Name	Town	Distance from ROW	Direction from ROW
51035	Wood, William and Hamilton	Woods Sand & Gravel Mine	Chateaugay	0.8	North
50305	Barrett Paving Materials Inc	Westville Pit	Westville	0.9	North
50878	Fort Covington, Town of	Quain Road Sand Pit	Fort Covington	1.0	South
50872	Bombay, Town of	Town of Bombay Sand Pit	Bombay	1.1	South
51010	H & C Robinson Contractors Inc	Robinson Gravel	Malone	1.2	South
50999	Gokey, Steven	Gokey Gravel Pit	Burke	1.4	South
50882	H & C Robinson Contractors Inc	Robinson Sand Pit	Constable	1.4	South
50408	Ed Duquette & Son Inc	Nephew Pit	Malone	1.4	South
51039	Crestline Sand & Gravel LLC	Crestline Sand and Gravel South	Malone	1.4	South
50832	Snyder, Gaylord R	Snyder Sand Pit	Westville	1.5	South
50871	Paquin, Peter	Paquin Cranberry Sand Pit	Bombay	1.5	South
50896	H & C Robinson Contractors Inc	Robinson's Upstate Pit	Malone	1.7	South
50637	Secore, Richard	Secore Excavation Sand Pit	Chateaugay	1.9	North
50492	Bellmont, Town of	Bellmont Gravel Pit	Bellmont	1.9	South
50415	Adirondack Quarry Inc	North Adirondack Quarry	Bellmont	1.9	South
50693	Malone, Village of	Bare Hill Sand Pit	Malone	2.0	South
50927	King, Nancy L	King Sand Pit	Bellmont	2.3	South
50564	Duquette, Bryan E	Ed Duquette Pit	Malone	2.4	South
50477	Fort Covington, Town of	Fort Covington Gravel Pit	Fort Covington	2.5	South
51001	Stark, Judith A	Little Briggs Pit	Westville	2.6	North
50500	Malone, Town of	Park Street Pit	Malone	2.6	South
50643	Secore, Richard	Secore Excavation Gravel Pit	Bellmont	2.7	South
51030	Delormier, Donald	C & D Sand & Gravel Pit	Westville	2.9	North

Mine ID	Permittee	Mine Name	Town	Distance from ROW	Direction from ROW
50293	Malone, Village of	Lane Street Crusher Pit	Malone	3.0	South

The 2018 USGS National Seismic Hazard Model demonstrates peak ground accelerations as percent "g" within a 2% probability of exceedance in 50 years for the conterminous United States. According to the 2018 USGS National Seismic Hazard Model, seismic hazard in the MW-Patnode Study Area ranges from 0.20 to 0.40, generally corresponding to low to medium hazard. The rating is based on a scale of 0 through 1.60+, where zero indicates the lowest hazard and 1.60+ indicates the highest hazard (USGS 2018).

The USGS Earthquake Catalog was used to assess earthquake activity in the MW-Patnode Study Area since 1900 (USGS 2021). Results of this search revealed one moderate (magnitude 5.5) earthquake in 1944 that occurred in the vicinity of the western end of the alignment, approximately 0.7 mile from the ROW that caused damage to brick chimneys and other structures (NESEC 2021). A second, weaker (magnitude 4.5) earthquake occurred on the same day, 5 miles from the ROW (likely an aftershock of the former). Nineteen minor earthquakes (magnitude 2.0 - 4.5) were also found in the search (USGS 2021). These ranged from magnitude 2.5 to magnitude 4.2 and occurred within 20 miles of the MW-Patnode Study Area.

Adirondack-Porter

The Adirondack-Porter Study Area occupies three physiographic provinces from north to south, they are the Adirondack Mountains, the Tug Hill Plateau, and the Hudson-Mohawk Lowlands. The Adirondack Mountains make up a circular region approximately 124 miles across. The

Adirondack region was originally flat, and covered by sedimentary strata similar to that which surrounds it. In relatively recent geologic time, the region underwent uplift, to form a dome. Erosion removed the overlying sedimentary layers, exposing much older, mostly metamorphic basement rocks. These exposed rocks have been squeezed and sheared to produce complicated folds of all sizes throughout the region (Isachsen et al. 2000). The Adirondack Mountains region is divided into the Northwest Lowlands and the Central Highlands. The Study Area is located on the western edge of the Adirondack Mountain Central Highlands. West of the Adirondack Mountains lies the Tug Hill Plateau, which is composed of hundreds of feet of limestone and shale that dips westward. The Tug Hill Plateau is inferred to be an uplifted and internally faulted fault-bounded block (Wallach and Rhealt 2010). In addition to the Tug Hill Plateau, the Study Area also occupies minor portions of the Hudson-Mohawk Lowlands, which comprise broad valleys cut by the Hudson and Mohawk Rivers. Rocks in this region include sandstone, formed from sediments eroded from proto-North America, as well as limestone formed in deeper water (Isachsen et al. 2000).

Nearly all of the parent materials of the soil of Lewis County were deposited, either directly or indirectly, by glaciers. Wisconsin Glaciation (ending approximately 10,000 to 12,000 years ago), resulted in scouring and abrading of the terrain and deposition of various thicknesses of glacial till and stratified materials from associated glacial meltwaters (USDA-NRCS 1960).

Unconsolidated surficial materials that were deposited throughout the Study Area include recent alluvial sand and gravel, lacustrine beach sands, marine and lacustrine sand, sand-rich glacial till, and glacial kame deposits. Thickness of the unconsolidated deposits is irregular and varies from less than a meter, or absent where bedrock outcrops, to tens of meters (Cadwell et al. 1986). All

of these distinct materials comprise the parent material for the vast number of and variation in soils throughout the Study Area.

Based on review of data available from NYSDEC, a total of 19 active sand and gravel pits and two limestone quarries are located within three (3) miles of the Adirondack-Porter Study Area (Table 4-12) (NYSDEC 2016b).

Table 4-12: Active Mining Operations Within 3 Miles of Adirondack-Porter Study Area

Mine ID	Permittee	Mine Name	Town	Distance from ROW	Direction from ROW
60827	Lyonsdale, Town of	Poore Mine	Lyonsdale	0.1	East
61109	Leyden, Town of	County Border Pit	Lyonsdale	0.1	West
60933	Humphrey, Charles A Jr	O'brien Mine	Lyonsdale	0.2	West
60098	Boonville, Town of	Hayes Rd. Pit	Boonville	0.3	West
60754	Lewis County Highway Dept	O'Brien Pit	Lyonsdale	0.4	West
61024	Boonville, Town of	Moose River Road Sand Mine	Boonville	0.5	East
61105	Goldthrite Trucking LLC	Mattis Pit	Croghan	0.7	East
60934	Greig, Town of	Landfill Mine	Greig	0.8	East
60048	Barrett Paving Materials Inc	Boonville Quarry	Region 6 Only	0.9	West
60247	Hajdasz, Albert	Hajdasz Sand & Gravel Pit	Trenton	1.0	East
60204	Hanson Aggregates New York LLC	Sperry Hill S&G	Boonville	1.2	West
60860	NYS DEC	Independence River Pit	Watson	1.2	East
60009	Greig, Town of	Fish Creek Road Mine	Greig	1.3	East
60508	Lenart, Steve	Lenart Sand & Gravel Pit	Boonville	1.3	East
60772	West Turin, Town of	Fisher Pit	Lyonsdale	1.3	West
60620	Trenton, Town of	Mapledale Road Pit	Trenton	1.4	East

Mine ID	Permittee	Mine Name	Town	Distance from ROW	Direction from ROW
61080	Barrett Paving Materials Inc	Port Leyden Quarry	Leyden	1.6	West
60039	Hanson Aggregates New York LLC	Boonville Pit	Boonville	2.0	West
60985	Maciejko, Jason	Ehlers Mine	Turin	2.3	West
61085	Bush, Matthew	Matt Bush Pit	Croghan	2.4	East
60082	V S Virkler & Son Inc	Gate #1 Gyore Road Pit	Watson	2.8	West

The 2018 USGS National Seismic Hazard Model demonstrates peak ground accelerations as percent "g" within a 2% probability of exceedance in 50 years for the conterminous United States. According to the 2018 USGS National Seismic Hazard Model, seismic hazard in the Adirondack-Porter Study Area ranges from 0.08 to 0.12, corresponding to low hazard. The rating is based on a scale of 0 through 1.60+, where zero indicates the lowest hazard and 1.60+ indicates the highest hazard (USGS 2018).

The USGS Earthquake Catalog was used to assess earthquake activity in the Adirondack-Porter Study Area since 1900 (USGS 2021). Results of this search only revealed two earthquakes above magnitude 2.0: a magnitude 3.5 event centered 4.1 miles east of the ROW that took place in 1980, and a magnitude 3.2 event, centered 2 miles west of the ROW that took place in 1997. No reports of damage connected to earthquakes in the Adirondack-Porter Study Area were found.

4.2.9.3. Soils

MW-Patnode

A soil map unit represents an area dominated by one or more major kinds of soil or miscellaneous areas. It is identified according to the taxonomic classification of the dominant soils. Map units are made up of the soils for which they are named and some minor soils that belong to taxonomic classes other than those of the major soils. Most minor soils have properties similar to those of the dominant soil or soils in the map unit. Soils that have profiles that are almost alike make up a *soil series* (USDA-NRCS 2021).

Within the St. Lawrence County portion of the MW-Patnode Study Area, 19 soil map units comprise 12 soil series. Within the Franklin County portion of the Study Area, 88 soil map units comprise 35 soil series. Within the Clinton County, portion of the Study Area, 12 soil map units comprise 11 soil series. Characteristics of some of the most commonly found soil series within the Study Area are summarized in Table 4-13.

Table 4-13: Dominant Soil Series: MW-Patnode Study Area

Soil Series	Characteristics
Muskellunge	Formed from calcareous silty and clayey glaciolacustrine/glaciomarine deposits derived from igneous and sedimentary rock Occurs on marine terraces and lake terraces Silty clay loam Slope ranges from 0 to 15% Somewhat poorly drained Potential for surface runoff is very high or high Prime farmland if drained Found on approximately 6.6% of Study Area

Soil Series	Characteristics
Covington	Formed from calcareous clayey glaciolacustrine deposits or glaciomarine deposits Occurs in depressions Silty clay loam Slope ranges from 0 to 8% Poorly drained Potential surface runoff is negligible or very high Not prime farmland Found on approximately 4.9% of Study Area
Brayton	Formed from loamy till derived mainly from granite and other noncalcareous rock Occurs on till plains Stony loam and very stony loam Slope ranges from 0 to 8% Poorly drained Potential for a perched water table above the dense substratum from autumn through spring Farmland of statewide importance Found on approximately 4.9% of Study Area
Westbury and Dannemora	Formed from loamy till derived from acid sandstone and siltstone Occurs on drumlinoid ridges, till plains Stony, sandy loam Slope ranges from 0 to 8% Somewhat poorly drained to poorly drained Farmland of statewide importance Found on approximately 7.5% of Study Area
Adjidaumo	Formed from calcareous silty and clayey glaciolacustrine/glaciomarine deposits derived from igneous and sedimentary rock Occurs in depressions Silty clay and mucky silty clay Slope ranges from 0 to 3% Poorly drained. Mucky surface phases may be very poorly drained Runoff slow to ponded Farmland of statewide importance Found on approximately 4% of Study Area
Hogansburg	Formed from calcareous loamy lodgment till derived from limestone Occurs on ridges and low hills Loamy soil. May be very stony Slope ranges from 0 to 8% Moderately well drained to well drained Runoff ranges from very slow to rapid Not prime farmland Found on approximately 8.6% of Study Area

Soil Series	Characteristics
Livingston	Formed from clayey estuarine deposits or glaciolacustrine deposits Occurs in depressions Silty clay loam Slope ranges from 0 to 2% Very poorly drained Potential for surface runoff is negligible if ponded, or high to very high Not prime farmland Found on approximately 3.5% of Study Area
Moira	Formed from loamy till derived dominantly from acid sandstone Occurs on drumlinoid ridges and till plains Stony to very stony loam Slope ranges from 0 to 15% Moderately well drained Farmland of statewide importance Found on approximately 3% of Study Area
Colton and Constable	Formed from sandy and gravelly glaciofluvial deposits derived mainly from acid sandstone or igneous rock Occurs on outwash plains, kame terraces Gravelly and cobbly loamy sand Slope ranges from 0 to 25% Well drained to excessively drained Farmland of statewide importance Found on approximately 6% of Study Area
Walpole	Formed from sandy glaciofluvial deposits Occurs in depressions Loamy sand and sandy loam Slope ranges from 0-6% Poorly drained Soils have a water table at or near the surface much of the year Farmland of statewide importance Found on approximately 5.2% of Study Area
Empeyville	Formed from loamy till derived from sedimentary rock Occurs on drumlinoid ridges, low hills Very fine sandy loam Stony or very stony Moderately well drained Runoff is low to very high Slope ranges from 0-25% Farmland of statewide importance Found on approximately 4.5% of Study Area

Soil Series	Characteristics
Malone	Formed from calcareous loamy lodgment till derived from limestone Occurs on ridges, low hills Loamy soil May be very stony Somewhat poorly drained Slope ranges from 0-8% Prime farmland if drained Found on approximately 4.5% of Study Area
Sources: Franklin County Soil Survey (USDA-NRCS 1958); St. Lawrence County Soil Survey (USDA-NRCS 2005); Clinton County Soil Survey (USDA-NRCS 2006).	

Loamy sand, sandy loam, and stony loam are dominant soil texture within the Study Area; however, muck, peat, gravelly and cobbly loam, and exposed bedrock outcrops are also present (USDA-NRCS 2021).

Soil drainage is dominantly in the range of moderately well drained to poorly drained, with 3.2% classified as excessively drained, 2.3% classified as somewhat excessively drained, 11.3% classified as well drained, 27.8% classified as moderately well drained, 22.8% classified as somewhat poorly drained, 22.4% classified as poorly drained, and 9.0% classified as very poorly drained. The remaining 1.1% was either characterized as open water (1.0%), or rock outcrop (0.1%) (USDA-NRCS 2021).

The updated USDA-NRCS Soil Survey Handbook No. 18 defines prime farmland as “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses.” It has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, prime farmlands “have an adequate and dependable water supply from precipitation or irrigation,

a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are also permeable to water and air. Prime farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding" (USDA-NRCS 2017).

According to the SSURGO database, 11.3% of the mapped soils within the Study Area are considered prime farmland (includes map units within the Bice, Eel, Elmwood, Flackville, Genesee, Grenville, Hogansburg, Nicholville, Ondawa, Podunk, Schroon, Sunapee, and Worth soil series) and an additional 9.9% are considered prime farmland if drained (includes map units within the Malone, Mino, Muskellunge, Peasleeville, Swanton, and Wallington soil series) (USDA-NRCS 2021).

The Soil Survey Handbook defines farmland of statewide importance as "those that are nearly prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable" (USDA-NRCS 2017). According to the SSURGO database, 40.6% of soils within the Study Area are considered farmland of statewide importance (USDA-NRCS 2021).

Dominant soils at the Haverstock Substation site include the Hogansburg Loam and the Hogansburg and Grenville soils undifferentiated group. These soils occupy 100% (11.3 acres) of the site. Dominant soils at the Willis 345/230 kV Substation site include the Westbury and Dannemora stony fine and very fine sandy loams (64.7% of the site [8.8 acres]); Empeyville very fine sandy loam (25.4% of the site [3.5 acres]); and Stony land, Worth and Parishville soils (9.9% of the site [1.3 acres]).

Adirondack-Porter

Within the Lewis County portion of the Adirondack-Porter Study Area, 44 soil map units comprise 21 soil series. Within the Oneida County portion of the Study Area, 69 soil map units comprise 42 soil series. Characteristics of some of the most commonly found soil series within the Study Area are summarized in Table 4-14.

Table 4-14: Dominant Soil Series: Adirondack-Porter Study Area

Soil Series	Characteristics
Adams	• Formed from sandy glaciolacustrine deposits derived from gneiss • Occurs on deltas and outwash terraces • Loamy fine sand • Slope ranges from 0 to 60% • Somewhat excessively drained • Not prime farmland • Found on approximately 24.4% of Study Area
Kendaia	• Formed from calcareous loamy lodgment till derived from limestone, sandstone, and shale • Occurs on drumlins, ridges, and till plains • Silt loam • Slope ranges from 0 to 8% • Somewhat poorly drained • Prime farmland if drained • Found on approximately 6.9% of Study Area
Monadnock	• Dominant series that occurs either alone or with similar Adams, Colton, Tunbridge or Sabattis series • Loamy ablation till over sandy ablation till derived from gneiss • Occurs on hillsides and mountainsides • Slope ranges from 0 to 35% • Well drained • Not prime farmland • Bouldery to very bouldery soil • Found on approximately 13.5% of Study Area

Soil Series	Characteristics
Malone loam	• Formed from calcareous loamy lodgment till derived from limestone • Occurs on ridges, low hills • Loamy soil • May be very stony • Somewhat poorly drained • Slope ranges from 0-15% • Prime farmland if drained • Found on approximately 7.5% of Study Area
Kalurah	• Formed from calcareous loamy till derived mainly from limestone, dolomite, and sandstone • Occurs on ridges and hills • Silt loam • Moderately well drained • Slope ranges from 3-25% • Farmland of statewide importance • Found on approximately 4.8% of Study Area
Colton	• Formed from gravelly outwash derived from gneiss • Occurs on kame terraces, eskers, and outwash terraces • Loamy sand or loamy sand with gravel or cobbles • Excessively drained • Slope ranges from 0 to 45% • Not prime farmland • Found on approximately 6.7% of Study Area
Salmon-Nicholville complex	• Formed from silty glaciolacustrine deposits derived from gneiss; • Occurs on glacial lake terraces • Moderately well drained • Slope ranges from 0 to 8% • All areas are prime farmland • Found on approximately 2% of Study Area
Sources: Lewis County Soil Survey (USDA-NRCS 1960); Oneida County Soil Survey (USDA-NRCS 2008).	

Silt loam, sandy loam, and loamy sand are dominant soil texture within the Study Area; however, a wide range of textures are present, including muck, peat, sand, gravelly loam, and exposed bedrock outcrops (USDA-NRCS 2021).

Soil drainage is highly variable, with 16.4% classified as excessively drained; 16.6% classified as somewhat excessively drained; 26.3% classified as well drained; 16.3% classified as moderately well drained; 16.5% classified as somewhat poorly drained; 5.6% classified as poorly drained; and 1.8% classified as very poorly drained. The remaining 0.4% was characterized as open water (USDA-NRCS 2021).

According to the SSURGO database, 8.3% of the mapped soils within the Study Area are considered prime farmland (includes map units within the Alton, Bice, Castile, Charlton, Conesus, Galway, Hamlin, Kalurah, Mongaup, Nicholville, Pittsfield, Pyrities, Salmon, Scituate, and Wenonah soil series). An additional 13.3% are considered prime farmland if drained (includes map units within the Fredon, Gretor, Kendaia, Malone, Niagara, Roundabout, and Wakeville soil series) (USDA-NRCS 2021). In addition, 20.9% of soils within the Study Area are considered farmland of statewide importance (USDA-NRCS 2021).

Dominant soils at the Adirondack Substation site include Colton loamy sand and cobbly loamy sand, which cover the entire 14-acre site. Dominant soils at the Austin Road Substation site include Monadnock-Adams-Colton complex, which covers 97.5% (10.2 acres) of the site, and Monadnock fine sandy loam, which covers 2.1% (0.2 acre). Dominant soils at the Edic Substation expansion site include Udorthents, smoothed, and similar soils, which cover the entire 0.2-acre site.

4.2.10. Cultural Resources

The term cultural resources, as used here, includes archaeological sites, objects, places, historic buildings, structures, and archaeological and historic districts. The Phase I Archaeological Survey and Architectural/Historical Survey Plans are each included with this Exhibit as Appendices F and

G, respectively. The New York State Historic Preservation Office ("SHPO") reviewed and approved these survey plans (*see* Appendix A). This section summarizes the methodology of the surveys conducted for the Project to identify cultural resources. Archaeological field investigations and subsequent reports for new and proposed substations were completed. The Applicant has submitted these survey reports and the results of agency correspondence. The Architectural/Historical surveys have been completed and submitted by the Applicant; SHPO concured with the findings on December 6, 2021.

Archaeological and architectural studies use different Study Areas, which are also known as the area of potential effects ("APE"). The APE is generally defined as the geographic area(s) within which the Project may change the character or use of historic properties; this includes all land disturbances and visual impacts. The archaeological APE for the Project focused on archaeologically sensitive areas associated with proposed ground-disturbing activities. The architectural APE encompasses the full extent of any visual impacts and/or direct physical changes to nearby historic properties caused by the Project. APE and Study Area are synonymous when used to assess potential impacts to archaeological and architectural resources.

4.2.10.1. Archaeology

Background research was conducted first to assess the presence and potential for archaeological resources within the archaeological APE of the Project. Archaeological investigations of these supplementary ground-disturbing impact areas were addressed after final engineering designs were completed. For purposes of the is initial study, the archaeological APE utilized a 0.5-mile buffer from either side of the centerline of the Proposed ROW. Field subsurface testing was only

conducted in archaeologically sensitive areas where the proposed structures are to be located and within the footprint of the proposed new and expanded substations, as well as for a proposed laydown yard.

4.2.10.1.1. Background Research and Model Development

Background research included a review of local histories, a study of eighteenth-, nineteenth-, and twentieth-century maps and plans, a check of archaeological site files, and a review of published archaeological and historical studies as well as unpublished cultural resource management reports. This research was subsequently applied to a geographic information system ("GIS")-based archaeological predictive model. The locations of existing archaeological sites were checked on the Office of Parks, Recreation and Historic Preservation ("OPRHP") Cultural Resource Information System ("CRIS") within the archaeological APE. OPRHP approved the MW-Patnode Proposed ROW study plan on January 21, 2021 (*see* Appendix A).

4.2.10.2. Archaeological Sites

MW-Patnode

A total of 10 previously recorded archaeological sites were identified within the archaeological study area for MW-Patnode during the background research. One site was identified as precontact and nine as historic. The single precontact site was listed as temporally unaffiliated and was identified by a broken quartzite chopper. The historic-period sites date from the nineteenth to twentieth centuries. The 10 sites have an undetermined status for listing in the National Register of Historic Places ("NRHP").

Adirondack-Porter

A total of 20 previously recorded archaeological sites were identified within the archaeological APE for the Adirondack-Porter Study Area during the background research. One site was identified as precontact and 19 as historic. The precontact site dates to the Early Woodland. The historic-period sites date from the eighteenth to twentieth centuries. Sites A04904.000004, A04917.000006, and, A06504.000097 are identified as Not Eligible for listing on the NRHP. The remaining 17 sites have an undetermined status for listing in the NRHP, one of which is the precontact site (8920.000162).

4.2.10.3. Cemeteries in the Project Vicinity

Cemetery records were reviewed through the OPRHP CRIS system, other historical records, and online databases to identify any historical cemeteries located in the current archaeological APE.

MW-Patnode

A total of 274 cemeteries are listed in St. Lawrence County, NY. Of these, one cemetery, the Massena Center cemetery, is located within the archaeological APE, but outside the Proposed ROW. No cemeteries are mapped within the Proposed ROW within St. Lawrence County, NY.

The search identified 79 cemeteries for Franklin County, NY. Of these, the Pike cemetery, the Pine Grove cemetery, and the Ridgeway cemetery are mapped within the archaeological APE, but outside the Proposed ROW. No cemeteries are mapped within the Proposed ROW within Franklin County, NY. A total of 131 cemeteries are listed in Clinton County, NY. No cemeteries are mapped within the archaeological APE or the proposed ROW within Clinton County, NY.

Adirondack-Porter

A total of 150 cemeteries are listed in Lewis County, NY. Of these, one cemetery, the Calvary cemetery, is located within the archaeological APE, but outside the Proposed ROW. No cemeteries are mapped within the proposed ROW within Lewis County, NY.

A total of 336 cemeteries are listed in Oneida County, NY. Of these, five cemeteries, the Cobin cemetery, the Penn Mountain cemetery, the Salem cemetery, Sixty cemetery, and the Steuben Valley cemetery, are located within the archaeological APE, but outside the Proposed ROW. No cemeteries are mapped within the Proposed ROW within Oneida County, NY.

4.2.10.4. National Register Listings in the Project Area Vicinity

MW-Patnode

Background research identified 2 NRHP-listed historic sites/districts within three (3) miles of the Proposed ROW in St Lawrence and Franklin Counties (Tables 4-15 and 4-16). No NRHP-listed properties are present within three (3) miles of the ROW in Clinton County.

Table 4-15: National Register-Listed Properties within 3-Miles of the Proposed ROW in St Lawrence County

NR Number	Name	Town	Address
90NR02556	Robinson Bay Archeological District	Massena	Robinson Bay

Table 4-16: National Register-Listed Properties within 3-Miles of the Proposed ROW in Franklin County

NR Number	Name	Town	Address
08NR05911	Wilder Farmstead, Boyhood Home of Almanzo Wilder	Burke	60 Franklin Street

Adirondack-Porter

Background research identified 4 NRHP-listed historic sites/districts within three (3) miles of the Proposed ROW in Oneida County (Table 4-17). No NRHP-listed properties are present within three (3) miles of the ROW in Lewis County.

Table 4-17: National Register-Listed Properties within 3-Miles of the Proposed ROW in Oneida County

NR Number	Name	Town	Address
14NR06559	New York State Barge Canal Historic District	Multiple	Multiple
93NR00500	New York Central Railroad Adirondack Division Historic District	Forestport, Remsen	Multiple
90NR02076	Boonville Historic District	Boonville	Multiple
91NR00272	Holland Patent Stone Churches Historic District	Holland Patent	Multiple

4.2.10.5. Previous Surveys Conducted in the Project Vicinity

MW-Patnode

According to the CRIS database, nine surveys have been conducted in the archaeological APE for the MW-Patnode Study Area. Surveys were conducted for a variety of purposes, including: a shore structure and shore erodibility study along the St. Lawrence River, NYPA projects,

recreational river access projects in St. Lawrence County, wind energy projects in Clinton and Franklin Counties, a waterline project in Massena, and a survey in support of the Grasse River Superfund remediation project. These previous investigations were used to develop the predictive model described below. In 2015, an archaeological survey was conducted for the Jericho Rise Wind Farm project (EDR 2015). This included a pedestrian survey which covered the footprint for the proposed Willis 345/230 kV Substation. This survey identified two historic sites (Bilow Holding Site 1 and Bilow Holding Site 2), which lie east of Willis Road. The sites were designated as unevaluated.

Adirondack-Porter

According to the CRIS database, 12 surveys have been conducted in the archaeological APE for the Adirondack-Porter Study Area. Surveys were conducted for a variety of purposes, including: a water storage facility and water lines, wastewater and manure transfer systems, a dam restoration project, NYPA projects, a transmission line for the Mohawk Valley Economic Development Growth Enterprise, wind and solar energy projects in Lewis and Oneida Counties, and a telecommunication facility. These previous investigations were used to develop the predictive model described in the following section.

4.2.10.6. Historical Map Analysis and Archaeological Predictive Model Development

In consultation with OPRHP and interested, federally recognized Native American Nations, NYPA developed a GIS-based predictive model to identify areas with probability to contain archaeological sites. The GIS-based predictive model stratifies the Proposed ROW and surrounding areas into areas of high, moderate, and low probability for archaeological sites. The

GIS-based model, built using ArcGIS 10.2.1 for Desktop Model Builder, incorporates the following five inputs: slope, surficial geology, known archaeological sites, water bodies (streams, lakes, and rivers), and topographic features lying within specific elevation ranges. The input data were gathered from 2020 wetland and stream delineations conducted for the Project, as well as from the Geospatial Data Gateway, OPRHP, and the New York State Museum. The GIS-based model includes the Proposed ROW and new substation and expansions as well as surrounding areas out to a distance of 0.8 kilometer (0.5 mile). The area outside the Proposed ROW was included in the model to provide data about archaeological sensitivity for future proposed off-ROW improvements such as access roads and temporary laydown areas associated with the Project, to be developed in the EM&CP. Input features more than 0.8 kilometer (0.5 mile) from the Proposed ROW were determined to have no effect on archaeological site probability; therefore, a one (1)-mile buffer was used in the model.

4.2.10.7. Archaeological Resources Survey

An archaeological survey was designed to assess the efficacy of the predictive model and to identify any archaeological sites in the Proposed ROW and new and expanded substations. The survey was conducted in two phases: the Phase IA (pedestrian reconnaissance) survey, and a Phase IB (subsurface testing) survey. This was followed by the Phase II site evaluation for the previously identified archaeological sites on Fregoe Road, Massena and Willis Road, Chateaugay (*see* Appendix E).

4.2.10.7.1. Pedestrian Reconnaissance Survey

This surface reconnaissance was intended to evaluate archaeological sensitivity that were delineated in the Proposed ROW and new and expanded substations by the GIS-based archaeological predictive model. It also served to identify areas where the model may lack the necessary resolution to identify potential site locations, especially where historical documentation is lacking or spatially inaccurate when overlain on modern maps. This approach allowed the Project archaeologists to evaluate local topographic or environmental features that are too small to influence the model because of the low resolution of the data sets. The area of the Marcy Substation modifications consisted of modified slope leading to wetlands, and no subsurface testing was recommended in that area. Both the proposed Adirondack and Austin Substations lie on areas of slope greater than 15 percent as well as areas of disturbed utility corridor. No subsurface excavations were recommended for the proposed Adirondack and Austin Susbstations. The expansion area of the Edic Substation lies on land disturbed by the installation of the existing structure. The expansion area located east of the Marcy Substation consisted of modified slope leading to wetlands. No subsurface excavations were recommended for these expansions areas. The Applicant has submitted the survey results for both the MW-Patnode and Adirondack-Porter Proposed ROWs to SHPO. On December 6, 2021 the SHPO concurred that the Project structures would not impact archaeological resources. The survey results for the remainder of the Project facilities were submitted to SHPO on February 25, 2022. The Phase II survey reports were submitted to SHPO on February 28, 2022. SHPO concurred with the findings in the Phase II reports via letters dated March 7, 2022.

4.2.10.7.2. Subsurface Testing

Subsurface testing for both the MW-Patnode and the Adirondack-Porter Proposed ROWs were completed in November, 2021. A total of 466 shovel tests were excavated for the proposed access roads along the MW-Patnode portion of the Project. Trace amounts of modern material was recovered from the proposed access road located off of Quarry Road in the Town of Burke. No site was designated. No cultural material was recovered from any other section of the MW-Patnode line. A total of 370 shovel tests were excavated for proposed access roads along the Adirondack-Porter portion of the Project. No cultural material was recovered, and no sites were designated. A total of 171 shovel tests were excavated in the testable areas of the proposed Malone Laydown Yard. Trace historic materials were recovered from the shovel tests, and no historic sites were designated. A total of 109 shovel tests were excavated in areas of archaeological sensitivity within the proposed Haverstock Substation. One archaeological site, the W. Montague Site, was identified on the property of 127 Fregoe Road. This site revealed poor integrity and is not recommended as eligible for listing in the NRHP. No other cultural material was recovered from testing conduction within the proposed Haverstock Substation. The Applicant has prepared a report detailed the survey results, and has submitted the report to SHPO.

Phase II site evaluations for the Fregoe Historic Site 1 and Fregoe Historic Site 2 were completed in early December, 2021. The artifact assemblages for both sites consisted of nineteenth century sheet middens with potential twentieth century material. Signs of disturbance were present in the strata of both sites, possibly as a result of the previous installation of utility poles in the vicinity of the sites. Both sites have fair to poor integrity due to this disturbance. The survey report recommended that the Fregoe Historic Site 1 and the Fregoe Historic Site 2 are not eligible for the

National Register of Historic Places, and that no further archaeological work is required. The Applicant completed a detailed report of the Phase II site evaluation for the Fregoe Historic Site 1 and the Fregoe Historic Site 2, which has been submitted to SHPO. SHPO concurred with the findings via letter dated March 7, 2022.

The site evaluations for the two sites on Willis Road (the Bilow Historic Site 1 and Bilow Historic Site 2) were completed in late December, 2021. The Bilow Historic Site 1 yielded a nineteenth century sheet midden with potential twentieth century material. A partial foundation wall was identified, and is consistent with the location of a nineteenth century house structure. The entire assemblage was located within the plow zone of the site. No sealed features were uncovered in the site evaluation. Further excavation of the site would likely duplicate the results of the site evaluation. The survey report recommended that the Bilow Historic Site 1 is not eligible for the National Register of Historic Places, and that no further archaeological work is required. The Bilow Historic Site 2 yielded limited diagnostic material, with the majority of the material consisting of architectual material. No features were identified. As with the Bilow Historic Site 1, the artifact assemblage for the Bilow Historic Site 2 was confined to the plow zone. Further excavation would likely duplicate the results of the site evaluation, and the assemblage is of limited research potential. The survey report recommended that the Bilow Historic Site 2 is not eligible for the National Register of Historic Places, and that no further archaeological work is required. The Applicant has prepared a detailed report of the Phase II site evaluations for the Bilow Holding Site 1 and the Bilow Holding Site 2, which has been submitted to SHPO. SHPO concurred with the findings via letter dated March 7, 2022.

4.2.10.8. Architectural/Historical Resources Survey

The architectural APE, as with the archaeological APE, encompasses the full extent of any visual impacts and/or direct physical changes to nearby historic properties caused by the Project. The architectural APE was based on the height and placement of the proposed structures and determined to be a one (1)-mile buffer for the entire length of the Proposed ROW, and around the new and expanded substations, based on the *OPRHP/State Historic Preservation Office (SHPO) Guidance on Transmission Lines*. The computer-generated viewshed analysis for the areas around and adjacent to each of the identified resources determined those locations from which there is potentially a view of the Project. Based on this refined architectural APE, land parcels with buildings over 50 years of age based on historic aerial photography were noted, and those that appeared potentially eligible for SR/NRHP listing were surveyed and documented. OPRHP approved the MW-Patnode Proposed ROW study plan on January 17, 2021 (*see* Appendix A). The Adirondack-Porter Proposed ROW study plan was submitted to SHPO for review in June 2021 and accepted.

4.2.10.8.1. Methodology

The viewshed calculation was performed using a USGS 10-meter digital elevation model, which provided an estimate of the ground surface elevation for every 10x10-square-meter area across the entire proposed ROW and the new and expanded substations. Using this information, the effects of terrain on line-of-sight visibility of an area can be modeled, allowing the identification of those areas that can and cannot be seen because of intervening topography. Vegetation was modeled by overlaying forest cover data on top of the elevation data layer, assuming an average canopy height

of 23 meters (approximately 75 feet). The extent of forest cover was determined by digitizing forested areas based on 2011 imagery. Since the location and height of the transmission line structures is known, the viewshed model was developed from the perspective of the structure height in relation to the terrain visible from the top of the structure. Other intervening buildings and their positions and heights were not taken into consideration as part of the calculations for the viewshed analysis.

Prior to beginning fieldwork, a file search was conducted in online databases to gather information about known historic resources in the vicinity of the architectural APE. Staff reviewed the NHL online database, the OPRHP CRIS database, and the OPRHP online GIS viewer for the Towns of Massena, Brasher, Bombay, Fort Covington, Westville, Malone, Constable, Burke, Ellenburg, and Clinton (MW-Patnode Study Area) and the Towns of Croghan, New Bremen, Watson, Greig, Lyonsdale, Leyden, Port Leyden, Boonville, Steuben, Trenton, Floyd, Holland Patent, Marcy, and Deerfield (Adirondack-Porter Study Area). Any inventory forms and designation forms for previously documented properties near or in the architectural APE were collected. All previously listed or eligible properties were located on USGS maps and aerial photographs. Staff reviewed local survey reports, histories, and historical maps available online to gain an understanding of historical development patterns in the architectural APE.

Following the background research, architectural historians conducted the reconnaissance survey to identify potential historic properties in the vicinity of the architectural APE. During the field survey, an architectural historian documented each resource in the architectural APE that appeared to be 50 years or older and potentially eligible for SR/NRHP listing through high-resolution digital photographs and in the CRIS Trekker portable application. Each property was located on aerial

base maps, and views of the surrounding landscape were noted. The background research completed prior to the field survey provided data for evaluating each resource's potential eligibility for inclusion in the SR/NRHP, using the NRHP's criteria for evaluation of historical significance and integrity (36 CFR 60.4).

4.2.10.8.2. Architectural Survey Results

MW-Patnode

Twenty-one previously identified historical properties are located in the architectural APE (Table 4-18). None of these properties are listed in the SR/NRHP, but six have been formally determined eligible for SR/NRHP listing. Two of the remaining properties have an undetermined status, with the remainder having been previously determined not eligible for listing in the NRHP. The eligible and undetermined properties were surveyed; the six eligible properties are recommended to retain that status, and the two undetermined properties are recommended not eligible.

Twenty (20) additional properties within the APE were surveyed in March 2021. Of these, seventeen (17) are recommended eligible and three (3) were undetermined due to their distance from the road and lack of visibility. The Applicant prepared an Architectural Resources Survey Report which documented survey results within the MW-Patnode APE and includes an evaluation of adverse effects on eligible and undetermined properties. WSP concluded that the MW-Patnode Line will not adversely affect any historic properties identified in the APE. For the few properties whose eligibility is setting-critical, the existing transmission line has already reduced the properties' setting and they retain sufficient integrity for SR/NRHP eligibility.

The Applicant has submited the reports to SHPO on 9/1/2021, which concured with the findings on 12/6/2021.

Table 4-18: Documented Architectural Resources in the Architectural APE for MW-Patnode

USN/NRHP No.	PROPERTY ADDRESS	HISTORIC NAME	EXISTING DESIGNATION STATUS
01907.000115	108 Campbell Road, Clinton, NY	Dwelling	Undetermined
01909.000081	94 Ryan Road, Ellenburg, NY	Dwelling	Eligible
03304.000018	426 Scanlon Road, Bombay, NY	Storage Barn	Not Eligible
03307.000011	4815 Route 11, Burke, NY	Farmstead	Not Eligible
03307.000033	230 Finney Road, Burke, NY	Dwelling	Eligible
03307.000042	388 County Route 36, Burke, NY	Dwelling	Not Eligible
03307.000043	Cook Road, Burke, NY	Ridgeway Cemetery	Eligible
03307.000052	CR 32 and Pikeville Road, Burke, NY	St. George's Cemetery	Eligible
03307.000053	290 Finney Road, Burke, NY	Dwelling	Eligible
03307.000056	672 County Route 36, Burke, NY	Dwelling	Not Eligible
03308.000051	7212 State Route 374, Chateaugay, NY	Dwelling	Not Eligible
03308.000072	528 Hartnett Road, Chateaugay, NY	Dwelling	Eligible
03315.000082	4606 State Route 11, Malone	Dwelling	Not Eligible
03315.000087	4613 State Route 11 East, Malone	Dwelling	Undetermined
03319.000040	809 Fay Road, Westville, NY	Aaron Carter Barns	Not Eligible
03319.000041	808 Fay Road, Westville, NY	Aaron Carter Residence	Not Eligible
03319.000043	753 Fay Road, Westville, NY	Henderson West Property	Not Eligible
03319.000050	3971 State Route 37, Westville, NY	Dwelling	Not Eligible
03319.000052	3989 State Route 37, Westville, NY	Dwelling	Not Eligible
03319.000053	599 State Route 122, Westville, NY	Dwelling	Not Eligible
03346.000092	881 County Route 3, Fort Covington, NY	Dwelling	Not Eligible

Adirondack-Porter

Forty-one (41) previously identified historical properties were located in the architectural APE (Table 4-19). Four (4) of these properties are listed in the SR/NRHP, and five (5) have been formally determined eligible for SR/NRHP listing. Six of the remaining properties have an undetermined status, with the remainder having been previously determined not eligible for listing in the NRHP.

The Applicant prepared an Architectural Resources Survey Report which documented survey results within the Adirondack-Porter Line APE and includes an evaluation of adverse effects on eligible and undetermined properties. WSP concluded that the Adirondack-Porter Line will not adversely affect any historic properties identified in the APE. For the few properties whose eligibility is setting-critical, the existing transmission line has already reduced the properties' setting and they retain sufficient integrity for SR/NRHP eligibility.

The Applicant has submited the reports to SHPO on 9/1/2021, which concured with the findings on 12/6/2021.

Table 4-19: Documented Architectural Resources in the Architectural APE for the Adirondack-Porter Study Area

USN/ NRHP No.	PROPERTY ADDRESS	HISTORIC NAME	EXISTING DESIGNATION STATUS
10NR06102 / 04913.000078	8778 Erie Canal Road	Moser Farm	Listed
04901.000067	8694 Erie Canal Road	Dwelling	Not Eligible
04917.000024	6704 Erie Canal Road	Bodway Residence	Not Eligible

USN/ NRHP No.	PROPERTY ADDRESS	HISTORIC NAME	EXISTING DESIGNATION STATUS
04904.000016	5073 Jones Road	Dwelling	Not Eligible
04901.000085	9551 Bellfort Road	St. Vincent de Paul's Church	Eligible
04910.000021	Shibley Road	Northbrook Powerhouse	Undetermined
04901.000006	9533 Belfort Road	Belfort Hydroelectric Plant	Eligible
04901.000068	9299 Erie Canal Road	Dwelling	Not Eligible
04901.000087	9533 Belfort Road	Dwelling	Undetermined
04904.000013	7201 Brantingham Road	Joyce Hill Residence	Not Eligible
04901.000061	Belfort Road	PIN 7752.48 Belfort Road Bridge	Not Eligible
04901.000093	River Road and Hoch Road	Taylorville Powerhouse	Eligible
04904.000015	4517 Lyons Falls Road	Dwelling	Not Eligible
04913.000099	7631 Soft Maple Road	Petrie	Not Eligible
05NR05437 / 6520.000044	NY 365	Wethersfield Stone Schoolhouse	Listed
08NR05866	9941 Star Hill Road	Baron von Steuben Memorial	Listed
11NR06208	River Road	Wildwood Cemetery & Mary Lyon Fisher Memorial Chapel	Listed
04910.000013	7283 Holmes Road	Dwelling	Not Eligible
04947.000021	3406 Pearl Street	Axtell House	Not Eligible
04947.000022	3332 Pearl Street	Marmon House	Eligible
04910.000015	7786 Lyonsdale Road	Dwelling	Not Eligible
04947.000023	3394 North Pearl Street	Brown House	Not Eligible
04947.000033	3318 Pearl Street	Joshua Smith	Undetermined
04947.000029	3373 North Pearl Street	Dwelling	Not Eligible

USN/ NRHP No.	PROPERTY ADDRESS	HISTORIC NAME	EXISTING DESIGNATION STATUS
04908.000028	2968 Canal Street	Lombardo	Not Eligible
04947.000001	Pearl Street	Caleb Lyon House	Undetermined
06513.000165	Church Road at Trenton Road	Salem Church and Cemetery	Eligible
06513.000174	10144 Church Road	Dwelling	Not Eligible
04947.000039	14337 Pearl Street	Ashley Young Residence	Not Eligible
06519.000031	9340 Ellis Road	Dwelling	Not Eligible
04947.000015	7312 East Main Street	Bolich House	Not Eligible
06504.000017	Hawkinsville Road	Excelsior Works and Dam	Undetermined
04947.000034	3201 River Road	Port Leyden Cemetery	Undetermined
04947.000037	7186 East Main Street	Dwelling	Not Eligible
04947.000019	3422 Pearl Street	Worden House	Not Eligible
06513.000097	6348 Mallory Road	Dwelling	Not Eligible
04947.000035	3455 N Pearl Street	Dwelling	Not Eligible
04910.000023	7367 Wildcat Road	White	Not Eligible
04947.000038	3368 Pearl Street 13433	Dwelling	Not Eligible
06513.000195	6415 Mallory Road	Dwelling	Not Eligible
06513.000197	5921 Edic Road	Dwelling	Not Eligible

4.2.11. Aesthetic, Visual, and Recreational Resources

The aesthetic, visual, and recreational resources section addresses the requirements of 16 NYCRR § 86.5 regarding potential visual impacts of the Project. The Visual Resource Assessment ("VRA"), prepared for the Project, is included in Appendix G. The VRA inventories visual resources within a 3-mile radius of the proposed transmission lines and substations (the Visual

Study Areas ["VSA"]). The VRA describes the appearance of the proposed Project; defines the existing visual setting of the Visual Study Area; inventories the existing visually sensitive resources in the Visual Study Area; classifies the major Landscape Similarity Zones ("LSZs") and user groups; evaluates the potential visibility of the Project; and simulates and assesses the proposed Project's visual impacts. The conclusions of the VRA are based on the results of viewshed analysis, field evaluations, and computer-assisted visual simulations performed for the Project. Sections of the VRA related to existing visual setting are summarized below.

4.2.11.1. Viewer/User Groups

Three categories of viewer/user groups were identified within the VSAs.

4.2.11.1.1. Through-Travelers/Commuters

Through-travelers and commuters passing through the area view the landscape from motor vehicles on their way to work or other destinations. They are typically moving, have a relatively narrow field of view oriented along the axis of the roadway, and are destination oriented. Drivers on major roads within the VSAs (e.g., US-11, NY-37, NY-30 within the MW-Patnode VSA, and I-790, NY-12, NY-12D, NY-365, SR-74 within the Adirondack-Porter VSA) will most often be focused on the road and traffic conditions but will also have the opportunity to observe roadside scenery. Passengers in moving vehicles will have greater opportunities for prolonged views of the surrounding countryside than will drivers, and so may have greater perception of changes in the visual environment. Commuters' and travelers' sensitivity to visual quality is variable. However, these views will generally be peripheral, and viewers are accustomed to overhead transmission/utility lines in the landscape and along area roadways. It is assumed that through-

travelers will generally have limited perception of, or sensitivity to, visual change, while local commuters and travelers may be sensitive to changes in views of areas that they travel through on a regular basis.

4.2.11.1.2. Local Residents

Local residents include those who live and work within or in close proximity to, the VSA. These individuals generally view the landscape from their yards, homes, local roads, schools, and places of employment, and are the group with the greatest opportunity for regular views of the proposed Project. For both MW-Patnode and Adirondack-Porter VSAs, the majority of residents live outside of the population centers in relatively low-density rural areas and in small villages and hamlets throughout the study area. The largest concentrations of local residents for the MW-Patnode VSA are in the Town of Malone (14,139), Town of Massena (12,883), and Village of Chateauguay (833). For the Adirondack-Porter VSA, the largest concentrations of local residents are in the City of Utica, which has a total population of 62,235, followed by the Town of Marcy (8,982), and the Town of Boonville (4,555). Except when involved in local travel, residents are likely to be stationary and have frequent or prolonged views of the landscape. Local residents may view the landscape from ground level or from elevated viewpoints such as windows in the upper stories of their homes. Residents' sensitivity to visual quality is variable and may be tempered by the aesthetic character/setting of their neighborhood or workplace. However, it is assumed that local residents may be very sensitive to changes in views from their homes, yards, and local roads.

4.2.11.1.3. Tourists/Recreational Users

Tourists and recreational users include local residents and out-of-town visitors involved in cultural and recreational activities at parks, historic sites, and in undeveloped natural settings such as state forests and trails (e.g., Otter Creek State Forest, Robert Moses State Park, the North Country National Scenic Trail, and Toby Road Park). These viewers are concentrated at the recreational and cultural sites located within the visual study area and view the landscape from area highways while on their way to these destinations, as well as from the destinations themselves. This group includes snowmobilers, cyclists, boaters, hunters, anglers, hikers, and those involved in more passive recreational activities such as picnicking, sightseeing, and walking. Visual quality may or may not be an important part of the recreational experience for these viewers. However, for some, scenery will be a very important part of their experience, and scenic quality typically enhances the quality of any recreational experience. Tourists and recreational users will often have continuous but changing views of landscape features while engaged in their activities.

4.2.11.2. Visually Sensitive Resource Inventory

Visually sensitive resources (VSRs) are discussed below according to the Project components where they are located. Resources are discussed in terms of national, statewide, regional, or local perspective.

Resources of statewide significance were identified in accordance with guidance provided by NYSDEC Program Policy DEP-00-02 Assessing and Mitigation Visual Impacts (NYSDEC 2000), which defined specific types of properties as VSRs of statewide significance. This includes properties, structures, or districts listed on or eligible for inclusion in the national or state register

of historic places; state parks; NYS or national heritage areas; state forest preserves; national wildlife refuges; national natural landmarks; rivers designated as national or state wild, scenic, or recreation rivers; resources (site, area, lake, reservoir, or highway) designated or eligible for designation as scenic; scenic areas of statewide significance; state or federally designated trails; Adirondack park scenic vistas; and state natural and historic preserve areas.

Resources of regional or local significance generally include town/county parks and recreational facilities (e.g., trails, bike paths, athletic fields), designated open space (e.g., land trust properties, conservation lands), schools, cemeteries, waterbodies, and areas of intensive land use (e.g., village centers, and major transportation corridors). For the purposes of analysis, identified resources are classified and discussed in terms of four categories: (1) Properties of Historic Significance; (2) Designated Scenic Resources; (3) Public Lands and Recreational Resources; and (4) High-Use Public Areas.

MW-Patnode

Sixty-two (62) VSR's were identified within the MW-Patnode VSA. These include: Two (2) Properties of Historic Significance; Two (2) Designated Scenic Resources; Thirty-one (21) Public Lands and Recreational Resources; and twenty-six (25) High-Use Public Areas. These resources are summarized in the VRA (see Appendix G).

Adirondack-Porter

One-hundred seventy-two (172) visually sensitive resources were identified within the Project VSA. These include: Twenty-five (25) Properties of Historic Significance; Ten (10) Designated

Scenic Resources; Eighty-four (84) Public Lands and Recreational Resources: and fifty-three (53) High-Use Public Areas (See Figure 4-8). These resources are summarized in the VRA (see Appendix G).

4.2.12. Land Use

The *New York State Open Space Conservation Plan* ("NY Open Space Plan") encourages state and local stakeholders to take advantage of opportunities to implement conservation recommendations as these stakeholders develop strategies for achieving conservation goals. Revisions to the NY Open Space Plan were approved in 2016. The 2016 NY Open Space Plan focuses on four major areas: promoting outdoor recreation; addressing climate change; ensuring clean water, air, and land for a healthy public and vibrant economy; and protecting, using, and conserving our natural resources and cultural heritage. The state conservation goals include maintaining viable and representative samples of all ecosystem types in the state; linking state lands to create large-scale biodiversity reserves; maintaining evolutionary and ecological processes (i.e., disturbance regimes, hydrological processes, and nutrient cycles); increasing effectiveness of conservation actions by considering site or parcel location on the landscape; and accounting for human use and impact. The NY Open Space Plan includes a list of more than 100 regional priority conservation projects across the state. Priority conservation projects located in the vicinity of the MW-Patnode and Adirondack-Porter Study Areas are as follows:

- **Riparian buffers and wetland protection projects aimed to reduce the impacts of storms and flooding on human and natural communities** – The NY Open Space Plan indicates conservation programs and strategies that focus on protecting wetlands,

floodplain forests, and lake shore coastlines should be the first line of defense to protect adjacent private property and communities from increased storm intensity, flooding, and rising coastlines. The MW-Patnode Study Area crosses several wetlands, as discussed in Section 4.2.8.2.

- **Significant Wetlands** – The NY Open Space Plan indicates conservation programs and strategies that focus on strategically preserving, restoring, and/or creating a matrix of natural systems sufficiently complex and interconnected should be self-sustaining while performing the critical natural functions necessary to sustain us. This conservation project focuses on the protection of significant natural wetland communities, which provide ecological diversity for flora and fauna and protection of water quality.

4.2.12.1. Merchantable Land Uses and Resources

Merchantable land uses in and around the Study Area include agriculture, forestry, and mining. These land uses are described in the following sections.

4.2.12.1.1. Agriculture

Article 25-A of the Agriculture and Markets Law authorizes the creation of local agricultural districts. These districts encourage improvement and continued use of agricultural land for the production of food and other agricultural products.

MW-Patnode

The MW-Patnode Study Area intersects portions of three (3) different Agricultural Districts, which are shown on Figure 4-9: Agricultural Districts. Based upon field-delineated land cover

classifications, approximately 285.3 acres of cropland, pasture, and hay fields are within the MW-Patnode Study Area. Corn is the most common crop throughout the MW-Patnode Study Area.

Adirondack-Porter

The Adirondack-Porter Study Area intersects portions of five (5) different Agricultural Districts, which are shown on Figure 4-10: Agricultural Districts. Approximately 318.6 acres of the Adirondack-Porter Study Area consist of cropland, pasture, and hay fields; approximately 230.8 acres are the Adirondack-Porter Proposed ROW. Corn and soybean are the most common crops.

4.2.12.1.2. Forestry

MW-Patnode

Much of the land surrounding the MW-Patnode Study Area is dominated by privately owned forests, interspersed with family farms and small communities. The forests comprise valuable saw timber-sized hardwoods mixed with maturing conifer plantations. The most common forests found in the area are deciduous forests followed by evergreen forests. Common forest types include floodplain forest and red-maple hardwood swamp. The forested areas generally occur outside of the MW-Patnode Study Area, adjacent to cleared and maintained ROW. A portion of the proposed Haverstock Substation is covered by deciduous forest. Additional information regarding forests is provided in Section 4.2.2.

Adirondack-Porter

Much of the land surrounding the Adirondack-Porter Study Area is also dominated by privately owned forests, comprising valuable saw timber-sized hardwoods mixed with maturing conifer plantations. The most common forests found in the area are deciduous forests followed by evergreen forests. Common forest types include red-maple hardwood swamp, hemlock hardwood swamp, and rich mesophytic forest. The forested areas generally occur along the edge of the Adirondack-Porter Study Area, adjacent to cleared and maintained ROW. One exception is approximately 4.1 acres of forest located in a ravine within High Tower State Forest. Mixed forest covers a small portion of the Adirondack Substation site, while deciduous forest covers almost the entirety of the Austin Road Substation site. There is no forest cover present at the Edic or Marcy substations expansion sites. Additional information regarding forests is provided in Section 4.2.2.

4.2.12.1.3. Mining

Refer to Section 4.2.9.2 for discussion of mining activity in the Study Area.

4.2.13. Electromagnetic Field Strength and Noise

4.2.13.1. Electromagnetic Fields

EMF is found wherever there is electricity. Appliances, computers, electrical wiring, electrical equipment, and power lines all produce EMFs. Electric fields are produced by voltage and increase in strength as the voltage increases. Electric field strength is measured in units of volts per meter ("V/m"). Magnetic fields result from the flow of current through wires or electrical devices and increase in strength as the current increases. Magnetic fields are measured in units of milligauss

("mG"), and most electrical equipment must be turned on (i.e., current must be flowing) for a magnetic field to be produced. Electric fields are often present even when the equipment is switched off, if it remains connected to the source of electric power.

Electric fields are shielded or weakened by materials that conduct electricity—even materials that conduct poorly, including trees, buildings, and human skin—and are completely shielded by materials such as metal and the earth. Magnetic fields, however, pass through most materials and are therefore more difficult to shield. Both electric fields and magnetic fields decrease rapidly as the distance from the source increases; therefore, they are highest closest to transmission lines (i.e., directly underneath) and decrease as the distance from the conductor to the edge of transmission line ROW corridor increases.

The applicable electric field strength standards established by the Commission are set forth in Opinion No. 78-13 (issued June 19, 1978) and reaffirmed in the Commission's Interim Policy Statement on Magnetic Fields, issued September 11, 1990 (Interim Policy). The 1978 Opinion established an electric field strength interim standard of 1.6 kilovolts per meter ("kV/m") for electric transmission lines, at the edge of the ROW, one meter above ground level, with the line at the rated voltage. The Interim Policy established a magnetic field strength interim standard of 200 mG, measured at one meter above ground level, at the edge of the ROW. This measurement is based on the expected circuit currents being equal to the winter-normal conductor rating.

As a rebuild of existing transmission facilities subject to Article VII of the Public Service Law, the preliminary geometry of the re-built Moses-Willis 1 & 2, Willis-Patnode, and Willis-Ryan lines for the MW-Patnode Project component, and the Adirondack to Porter Lines 11, 12, and 13

for the Adirondack to Porter Project component, were analyzed to generate typical electrical and magnetic field levels for comparison with the required guidelines and existing conditions. Analyses were performed using the Corona and Field Effects Program developed by the Bonneville Power Authority ("BPA") in conjunction with the U.S. Department of Energy ("USDOE").

For the purposes of the analyses, the following transmission line data was entered for typical spans within each area of interest: average span length; average mid-span sag at conductor winter normal temperature and winter normal conductor ratings (as outlined in the Interim Policy); average structure height; typical structure configuration; polarity/phasing arrangement; and, in the case of shared ROW, the location of the maximum mid-span sags of the other line(s) coincided at the same longitudinal location.

The results of the EMF analysis are provided in the EMF Analysis report (*see* Appendix H). As indicated by the results of the analysis, existing and proposed EMF levels for the MW-Patnode Project component are calculated to be below the NYPSC limits of 1.6 kV/m for electric fields and 200 mG for magnetic fields at the ROW edges.

For the Adirondack-Porter Project component, existing and proposed EMF levels are calculated to be below the NYPSC limits of 1.6 kV/m for electric fields and below 200 mG for magnetic fields at the ROW edges in all but two short cross section segments. In the two short cross section segments where the edge of ROW values are greater than 200 mG, the circuits located in the corridor were constructed prior to 1990 (and unchanged as part of the proposed Project). The proposed Project minimally alters the magnetic field values at the edge of ROW, with one cross-

section increasing in value slightly (<1%) and the other cross-section decreasing in value by approximately 5%.

4.2.13.2. Noise

Transmission Line Proposed ROWs

The primary background noise sources in the Study Area along the existing transmission line ROWs are traffic on surrounding roadways, agricultural activities, local vehicular operation, lawn mowing and other residential home activities, aircraft over flights, and natural sounds (e.g., birds, insects).

Existing operational noise within the Study Area along the Proposed ROWs is associated with transmission line electrostatic or "corona" effect, which occurs during humid days and precipitation events. Corona-generated audible noise may be of concern with voltages of 345 kV and higher, only during foul weather, when rain droplets can cause exacerbation of the corona effect. Existing residences directly adjacent to the Study Area may notice the corona effect depending on the relative distance to the Study Area and background noise levels.

Substations

The Applicant also conducted a sound study to quantify the existing sound environment in proximity to the new substations (Haverstock, Willis 345/230 kV, Adirondack, and Austin Road) and existing substations where expansions include installation of new noise-emitting equipment (Massena and Edic). The sound study consisted of continuous ambient measurements during the daytime and nighttime at various measurement locations in proximity to the substations. No noise

generating equipment was added at Marcy and therefore no acoustic assessment was performed for this site.

Continuous measurements were taken over two-day spans for the Edic and Austin Road Substations from March 30 to 31, 2021. Continuous measurements were collected during daytime and nighttime periods over two-day spans for the Adirondack, Haverstock, and Willis 345/230 kV Substations from March 16 to 19, 2021. Ambient measurements for the Massena Substation were collected from April 14 to 21, 2021.

The measurement locations were selected because they were accessible and representative of existing ambient sound levels in the direction of noise-sensitive receptors. The substations and selected measurement locations are in rural areas with nearby residences. Sounds observed at the measurement locations included clearly audible highway and local traffic, as well as insect and bird noise. Transformer noise was audible at one of the Edic Substation measurement locations due to the existing transformers. Complete results of the ambient sound surveys are provided in Appendix J, Substation Acoustic Assessment.

4.3. Effects on Vegetation, Wildlife, Hydrology, Topography, Geology, Soils, Cultural and Scenic Resources, and Land Use *(16 NYCRR § 86.5(b)(1))*

16 NYCRR § 86.5. (b) The applicant shall state: (1) what changes, if any, the construction and operation of the proposed facility might induce in the physical or biological processes of plant life or wildlife through any permanent or significant temporary change in the hydrology, topography or soil of the area;

The Project is the rebuild of Moses-Willis 1 & 2, Willis-Patnode, and Willis-Ryan lines for the MW-Patnode Project component, and the 230 kV Adirondack – Chases Lake Line 13, Adirondack – Porter Line 13, and Chases Lake – Porter Line 11, as well as the extension of the Rector Road –

Austin Road Line 10, for the Adirondack to Porter Project component. Due to the use of existing ROW for the majority of the Project, the construction of the proposed facility would have temporary and minor impacts to plant life and wildlife as described in more detail in this section. On the Proposed ROW, the operation of the Project is not anticipated to have a permanent or significant change in the hydrology, topography, geology, or soil of the area.

The new substations (Haverstock and Willis 345/230 kV for MW-Patnode, Adirondack and Austin Road for Adirondack-Porter) would require new development on previously undisturbed land. Substation expansions (Marcy and Edic for Adirondack-Porter) would be located adjacent to the fence lines of the existing substations, thereby minimizing environmental impacts.

An assessment of the potential impacts to each resource that may result from Project construction or operation is provided in the following sections. Measures to reduce impacts are described, and where impacts have been determined to be unavoidable, appropriate mitigation measures are proposed.

The Applicant currently maintains their ROW based on existing permits, plans, and regulatory guidance documents (collectively, Best Management Practices, or ("BMPs"). The construction, operation, and maintenance of the Project would be performed using the methods described in these documents with the ultimate goal of protecting the environment. These documents are listed below and are available upon request:

1. New York State Standards and Specifications for Erosion and Sediment Control (http://www.dec.ny.gov/docs/water_pdf/sect2resplan.pdf)

2. New York Utility Company Best Management Practices for Preventing the Transportation of Invasive Species, Environmental Energy Alliance of New York ("EEANY"), January 2015
3. NYPA's Systemwide Long Range Transmission Right-of-Way Vegetation Management Plan and Program, Revision Date November 3, 2016
4. National Grid's Transmission Right-of-Way Management Program, Revision dated April 2014
5. New York State Department of Agriculture and Markets ("NYSDAM") Guidelines for Electric Transmission Right-of-Way, dated April 27, 2011
6. NYSDEC GENERAL PERMIT GP-0-21-002 Utility ROW Vegetation Management, expiration date April 6, 2026

These documents provide a framework of BMPs to be used; final BMPs for construction, operation, and maintenance of the Project will be incorporated into the Project's EM&CP.

Mitigation and protection measures are discussed in more detail in Section 4.4.

4.3.1. Construction Impacts

A detailed construction schedule will not be finalized until final Project approval is granted and contracts have been awarded to all contractors. However, it is anticipated that the Project would be constructed in phases or sections and that one section would typically be worked on at a time, although there may be overlap between sections. The Applicant may choose to demolish and rebuild one line at a time or demolish and rebuild sections of multiple lines at the same time. In addition, all substation construction work will occur in parallel with the transmission line

construction. Details of construction sequencing will be determined during final design and described in the EM&CP.

A typical transmission line work sequence within a section would be as follows:

- Surveying new structure locations;
- Site preparations, including erosion and sediment controls and flagging ROW and wetland limits;
- Improving temporary access roads as necessary and laydown areas;
- Mobilizing equipment;
- Foundation installation for new structures;
- Removing old structures;
- Installing new structures and insulators;
- Pulling new conductors and OPGW;
- Clipping in of new conductors and OPGW;
- Placing new line in service; and
- Final restoration and site demobilization.

A typical substation work sequence would be as follows:

- Surveying new substation location;
- Site preparation, including erosion and sediment controls;
- Installing access roads, as necessary, and grading and drainage;
- Mobilizing equipment;

- Foundation installation for new substation equipment;
- Underground raceway and grounding installation;
- Installing new equipment and substation structures and control house;
- Installing bus work and equipment interconnections;
- Installing wiring;
- Testing and commissioning of equipment, relaying, and protection;
- Placing substation equipment into service; and
- Final restoration and site demobilization.

4.3.1.1. Vegetation

MW-Patnode

Impacts to vegetation would be minimized by following an existing maintained ROW for the majority of the rebuilt transmission lines and using existing access roads wherever possible. However, both temporary and permanent impacts to the identified vegetative community types would result from the construction of the proposed Project. Construction-related impacts to vegetation include clearing of trees and brush and increased exposure/disturbance of soil along access roads and at structure sites, laydown areas, and pulling stations.

According to correspondence with NYNHP and online consultation with the USFWS IPaC, no RTE plant species have been documented in the MW-Patnode Study Area; therefore, it is anticipated that no impacts to threatened or endangered plant species would occur during construction of the Project.

The introduction or spread of invasive plant species are potential threats to sensitive ecological resources (e.g., wetlands and streams) due to construction activities. Activities that may increase risks associated with invasive species include the movement of topsoil, gravel, and construction equipment and site restoration. Populations of invasive species typically establish most readily in places where the ground has been disturbed and soil has been exposed. Invasive species can cause harm to the natural ecology of an area, often by out-competing native species. The approximately 42.3 acres of invasive plant species populations within the MW-Patnode Proposed ROW will be managed to prevent their spread to areas not currently containing invasive species. Specific management measures will be included in the EM&CP. Areas with existing populations of invasive species that are temporarily disturbed during construction are likely to have invasive species return during revegetation due to the existing seedbed.

The Applicant does not anticipate needing to clear any forested habitat within the proposed MW-Patnode ROW. Approximately 8.0 acres of forestland would be cleared to construct and operate the proposed Haverstock Substation, and 1.6 acres of clearing in the ROW would be needed for the transmission lines coming into the substation. The Willis 345/230 kV Substation would not require any forestland clearing at the substation site, however, 2.2 acres of clearing would be needed for the transmission lines coming into the substation to the north.

Adirondack-Porter

Impacts to vegetation would be minimized by following an existing maintained ROW for the majority of the rebuilt transmissions lines and using existing access roads wherever possible. However, both temporary and permanent impacts to the identified vegetative community types

would result from the construction of the proposed Project. Construction-related impacts to vegetation for the Adirondack-Porter Study Area are similar to the impacts to the MW-Patnode Study Area mentioned above.

According to correspondence with NYNHP and online consultation with the USFWS IPaC, no RTE plant species were documented in the Adirondack-Porter Study Area; therefore, it is anticipated that no impacts to threatened or endangered plant species would occur during construction of the Project.

Activities that may increase risks associated with invasive species are similar to those mentioned above for the MW-Patnode Study Area. The approximately 68.9 acres of invasive plant species populations within the Adirondack-Porter Proposed ROW will be managed to prevent their spread to areas not currently containing invasive species. Specific management measures will be included in the EM&CP.

Approximately 74.8 acres of tree clearing is required within the Adirondack-Porter Proposed ROW, mostly due to slight expansion of clearing limits associated with the new 345 kV line. Tree clearing is also required to extend the Rector Road to Chases Lake Line 10 to the proposed Austin Road Substation (8.4 acres) and for the interconnection into the Marcy Substation (0.9 acres).

Approximately 1.6 acres of forestland would be cleared to construct and operate the proposed Adirondack Substation including within the substation footprint and the associated interconnections. Approximately 19.3 acres of forestland would be cleared for the Austin Road Substation. No forestland would be cleared as part of the Edic Substation expansion. The Marcy Substation expansion would require 0.3 acres of forestland clearing.

4.3.1.2. Wildlife

The rebuilding of the existing transmission lines along with new substations and substation upgrades for both MW-Patnode and Adirondack-Porter may result in some unavoidable but mostly temporary impacts to wildlife. Direct impacts of the proposed Project on fish and wildlife resources could include the following:

- Incidental injury and mortality due to construction activity and vehicle movements,
- Temporary habitat disturbance during construction,
- Construction-related silt and sedimentation impacts on aquatic organisms, and
- Temporary disturbance of wildlife due to increased noise and human activity during construction.

Incidental injury and mortality would likely be limited to slow-moving or sedentary species that are unable to relocate from disturbed areas during construction. It is expected that mobile species would vacate construction areas prior to substantial amounts of disturbance. Incidental injury and mortality would be minimized by avoiding disturbance of forest and wetlands, to the extent practicable, and using existing cleared ROW and access roads for most construction activities.

Habitat loss and alteration would be minimized by routing the lines within the existing maintained ROW, for much of the Project. Because the Proposed ROW is currently cleared and maintained for the operation of the existing lines most of the Project's potential impacts to wildlife and wildlife habitat would be temporary and restricted to the period of construction. Human activity, soil disturbance, and loss of vegetation would end after construction is complete. Disturbed areas would then be restored.

Some permanent habitat loss would occur from construction of the new substations: approximately 12.2 acres of a mixture of forest, scrub/shrub, grassland/herbaceous, and wetlands habitat associated with the Haverstock Substation; approximately 6.8 acres of cultivated crop habitat associated with the Willis 345/230 kV Substation; approximately 1.6 acres of forested areas, scrub/shrub, and hay/pasture habitat associated with the Adirondack Substation; approximately 10.4 acres of forested areas, scrub/shrub, and hay/pasture habitat associated with the Austin Road Substation; approximately 1.2 acres of forest, grassland/herbaceous, and wetlands habitat associated with the Marcy Substation expansion; and approximately 0.2 acres of developed, open space associated with the Edic Substation expansion.

Wetlands and areas of open water or running water that could provide habitat for aquatic species would be avoided or minimized through appropriate siting and, to the extent practicable, the use of previously disturbed crossings. Where unavoidable, these habitats would be crossed with temporary methods that would be removed following construction. Low impact stream and wetland crossing techniques, if applicable (such as dry crossings) would be developed for the EM&CP. As a result, any impact to aquatic or wetland-dependent species would be minor and short term.

4.3.1.3. Rare, Threatened, and Endangered Species

4.3.1.3.1. Federally Listed Species

MW-Patnode and Adirondack-Porter

Northern Long-eared Bat

The Project would result in approximately 88.9 acres of forest removal that could provide potential habitat for NLEB. USFWS issued a 4(d) rule of the ESA for this species, which was published in the *Federal Register* on January 14, 2016. The 4(d) rule prohibits "incidental take" within white-nose impacted areas of the NLEB's range when a proposed action is (1) within a known hibernaculum, (2) includes tree removal within 0.25 mile of a known hibernaculum, or (3) cuts or destroys a known, occupied maternity roost tree or other trees within a 150-foot radius from the maternity roost tree during the pup season from June 1 through July 31. Incidental take for other activities is covered under the Programmatic Biological Opinion associated with the 4(d) rule.

Although the Project is within the range of the NLEB, according to NYNHP and USFWS data, no known occurrences of NLEB hibernacula or summer roosts exist in the Proposed ROW or its vicinity. Based on field surveys, suitable summer habitat exists along the edge of the Proposed ROW in forested areas. Based on the NYNHP dataset, the closest known NLEB hibernacula is greater than 15 miles away from the Project Study Area. Additionally, there are no known roost trees within seven (7) miles of the Project Study Area. As such, the Applicant believes that any potential impact to the NLEB resulting from the removal of forest will be minimal and will be covered under the 4(d) rule.

In New York, a permit is required for the "take" of a state-protected species under the Uniform Procedures Act not only when there is a direct impact to the species, but also when there is an adverse modification to its habitat, which refers to the alteration of occupied habitat that is likely to negatively affect one or more essential behaviors of a species. "Occupied" habitat for NLEB is defined by NYSDEC as those areas within five (5) miles of a known hibernacula or 1.5 miles from a documented summer occurrence. NYNHP and USFWS data indicate that the Proposed ROW is not within "occupied" habitat. Therefore, no take permit or further avoidance and minimization measures are required under State law.

4.3.1.3.2. State-Listed Species

MW-Patnode

Bald Eagle

To assess and address potential Project impacts on bald eagles, USFWS and NYSDEC recommend adherence to the USFWS' 2007 *National Bald Eagle Management Guidelines* (USFWS 2007). NYSDEC provides additional guidelines in the Conservation Plan for bald eagles in New York (NYSDEC 2016c). The largest protective buffer identified in the guidelines for eagle nests is one (1) mile wherein blasting activities or other load noises are restricted between January 1 and September 30. Because no nests were observed within one (1) mile of the Proposed ROW, the Project is not expected to disturb nesting eagles.

Avoiding Project activities during the wintering period (December 1 to March 31) is usually sufficient to avoid impacts on wintering bald eagles. During this time, the NYSDEC generally

recommends restricting tree removal within 0.25 mile of deep winter roosts, aircraft within 0.25 mile from and 1,500 feet above ground level at communal roosts sites, and blasting no closer than 0.5 mile with a visual buffer between the activity and communal roost and foraging sites and one (1) mile with no visual buffer.

Because most of the Project involves rebuilding an existing transmission line within an existing ROW, impacts on foraging and winter roost habitat would be minimal. For instance, the Applicant does not anticipate clearing any forested habitat within the Proposed MW-Patnode ROW. Approximately 8.0 acres of forestland would be cleared to construct and operate the Haverstock Substation; however, as mentioned in Section 4.2.7.2, this area does not provide suitable habitat for the bald eagle. The approximately 8.0 acres of tree clearing for the Haverstock Substation is not expected to impact bald eagles because this area was not identified as significant habitat and no documented bald eagle nests are nearby.

Temporary disturbance to wintering eagles foraging and roosting in the area may occur during construction, which could include temporary displacement of eagles using the area. The presence of construction personnel and equipment in the vicinity of potential foraging and wintering habitat are temporary in nature so no long-term and/or significant effect on eagles is anticipated during construction. For construction of the lines, no blasting or use of aircraft within protective buffers for wintering eagles is planned, and, as discussed, tree clearing would be minimal. NYNHP did not identify the locations of any deep winter roosts in the Proposed ROW; therefore, the Project as currently designed is not anticipated to significantly impact bald eagles or their habitat, and no additional permits, minimization, or avoidance measures should be required.

Eastern Sand Darter

No direct impacts to the Grasse, St. Regis, or Little Salmon River would occur for this Project; however, the potential exists for introduction of silt-laden runoff to these waterways. NYNHP considers siltation to waterways causing habitat loss a major threat to the species. As such, the EM&CP would identify appropriate soil erosion and sediment controls to be implemented during construction to avoid these potential impacts.

Mooneye

No in-water work is planned for this Project; however, the potential exists for introduction of silt-laden runoff to waterways. As such, the EM&CP would identify appropriate soil erosion and sediment controls to be implemented during construction to avoid these potential impacts.

Upland Sandpiper

The section of the Study Area east of Grasse River and west of Haverstock Road is predominantly wetland habitat dominated by reed canary grass. Due to well-grazed short grass height in an active cow pasture and the presence of relatively steep slopes and shrub cover east of Fregoe Road and west of Grasse River, it is unlikely that this area can support upland sandpiper. The habitat west of Fregoe Road is unsuitable, as it predominantly comprises dense, scrubby regenerative forest dominated by small apple trees and invasive shrubs. There is limited herbaceous habitat between shrub patches, occurring under the existing transmission towers. Because the Project does not contain suitable habitat, it is unlikely that there will be direct impacts to upland sandpiper.

Blanding's Turtle

Two wetlands had one or more of the habitat characteristics to support Blanding's turtles. No potential upland nesting habitat was found. Although the Applicant was able to avoid siting structures and in one of the suitable Blanding's turtle habitats, the other suitable habitat was too expansive to span and a pair of structures will be located within the suitable habitat. Access will also be required through the suitable habitat areas to remove existing structures. Neither potential habitat area is located in proximity to any of the proposed substations. Final details regarding Blanding's turtle habitat protection measures, if necessary, will be provided in the EM&CP.

Adirondack-Porter

Loggerhead Shrike

Because the Project involves rebuilding an existing transmission line mostly within an existing ROW, impacts on foraging and habitat would be minimal due to insignificant changes to land use.

4.3.1.4. Hydrology

4.3.1.4.1. Surface Waters and Groundwater

MW-Patnode

Project access road improvement and/or construction would likely require surface water crossings in some locations. The Applicant would use existing access roads wherever possible; however, upon final design, it is possible that additional permanent or temporary access roads may need to be constructed, existing roads may need to be improved, or existing culverts may need to be

replaced. The Applicant intends to use temporary construction mat bridges or other temporary bridges for any new access road stream crossings. Temporary bridges typically would not require instream work; therefore, at this time the Applicant does not anticipate temporary or permanent impacts to surface waters. In addition, siltation and sedimentation from soils exposed during construction could temporarily affect streams in the Proposed ROW. Permanent/temporary construction impacts at or near permanent/temporary stream crossings could include loss of habitat for aquatic organisms, constriction or alteration of stream flow, restriction of upstream or downstream passage by aquatic organisms, loss of streamside vegetation and associated shade, streambed disturbance, bank erosion, and downstream turbidity and siltation. These impacts can affect the survival, movement, and reproduction of aquatic organisms and may be particularly significant if they occur on trout streams during the spawning season (October 1-April 30). According to NYSDEC-assigned stream classifications, none of the streams identified during the field delineations are classified as trout spawning (ts) streams, while 10 streams are classified as trout supporting (t) streams.

The construction process could also impact groundwater if excavation occurs below the water table. Project-related wetland impacts may also have an impact on groundwater because many wetlands serve as groundwater recharge areas. Project construction also could introduce pollutants to groundwater from the discharge of petroleum or other chemicals. Such discharges could occur in the form of minor leaks from fuel and hydraulic systems, as well as more substantial spills that could occur during refueling or due to mechanical failures and other accidents. These discharges would be minimized by prohibiting refueling within or adjacent to surface water or wetlands and by adhering to the Project's EM&CP, which will include a Stormwater Pollution Prevention Plan

("SWPPP"); maintaining erosion and sediment control BMPs; and adhering to spill prevention, control, and countermeasures.

Given that the proposed transmission line must aerially cross larger river systems such as the St. Regis and Grasse Rivers, as well as their tributaries, floodplain areas cannot be avoided in their entirety. However, structures have been sited outside of floodplains wherever feasible. In addition, the Applicant has sited each proposed substation and substation expansion outside of floodplains.

At this time, Project design includes the preliminary locations of construction access roads; however, final access road design is not known. Additional details will be provided in the EM&CP.

As noted in Section 4.2, two (2) tributaries (totaling 778 feet) would be impacted within the Haverstock Substation site.

Adirondack-Porter

Impacts to surface waters and groundwater for the Adirondack-Porter Study Area are similar to those mentioned above for the MW-Patnode Study Area. According to NYSDEC-assigned stream classifications, 14 of the streams identified during the field delineations are classified as trout spawning (ts) streams and 43 streams are classified as trout supporting (t) streams.

Given that the proposed transmission line must aerially cross larger river systems, as well as their tributaries, floodplain areas cannot be avoided in their entirety. However, structures have been sited outside of floodplains wherever feasible. In addition, the Applicant has sited each proposed substation outside of floodplains.

At this time, Project design includes the preliminary locations of construction access roads; however, final access road design is not known. Additional details will be provided in the EM&CP.

4.3.1.4.2. Wetlands

At this time, the Project design includes the locations of proposed transmission structures, substations, and preliminary locations of access roads. The Applicant has and will continue to avoid or minimize impacts to wetlands to the maximum extent practicable through ongoing Project design. For example, wherever practicable, new pole locations have been placed outside of wetland boundaries. The Applicant will use temporary construction matting for access roads and work pads in wetlands and regulated wetland adjacent areas. Additionally, construction access would use existing access roads to the greatest extent practicable to minimize new wetland crossings. Direct impacts to wetlands would primarily occur where construction would require temporary access to work areas through wetlands. Direct wetland impacts will also occur where the footprint of new or expanded substations are unable to avoid wetlands. In addition, there are several locations where the Applicant is unable to span wetlands and transmission structures will be placed in wetlands. Permanent impacts from structures within wetlands will be minimized due to the small footprint of monopole structures. Construction activities may have indirect impacts on wetland water quality and vegetation as a result of earth disturbance and soil erosion, siltation, and sedimentation elsewhere on the Proposed ROW. The majority of these impacts would be temporary and could be avoided or minimized through appropriate construction and restoration BMPs (to be detailed in the EM&CP). The Applicant will also be removing structures from wetlands, providing a positieve impact to wetlands.

The Applicant has assumed a 30-foot width of access roads to calculate impacts. Final access road locations and widths will be determined during the EM&CP process, and additional impacts to wetlands and state-regulated adjacent areas will be minimized to the greatest extent practicable. Additional avoidance, minimization, and/or mitigation measures for potential impacts to wetlands, if required, will be determined during the development of the EM&CP and the USACE permit application process in consultation with USACE.

MW-Patnode

Based upon the results of the field delineations and current design, the MW-Patnode component of the Project may permanently impact approximately 0.3 acres of wetlands under USACE jurisdiction, which includes approximately 0.1 acre of wetlands that are also NYDEC jurisdictional wetlands. Preliminary permanent impacts from 154 structures within wetlands equal approximately 0.2 acre, while preliminary permanent impacts from the Haverstock Substation equal approximately 0.4 acres. Total permanent impacts to state-regulated adjacent areas are anticipated to be <0.1 acre. Preliminary temporary wetland impacts from temporary construction matting for access roads across wetlands equal approximately 51.0 acres. Table 4-20 summarizes preliminary calculations of impacts to delineated wetlands (including all USACE wetlands, as well as those designated as NYSDEC wetlands) and state-regulated adjacent areas for MW-Patnode.

Table 4-20: Preliminary Permanent Construction Impacts to Delineated Wetland Areas and State-Regulated Adjacent Areas: MW-Patnode Study Area

Regulated Area	Total Area of Temporary Disturbance	Total Area of Permanent Disturbance
PFO	0.4	0.3
PSS	17.6	0.1
PEM	12.3	0.1

Regulated Area	Total Area of Temporary Disturbance	Total Area of Permanent Disturbance
USACE Wetlands Total	**30.3**	**0.4**
PFO	0	0.3
PSS	16.5	0.1
PEM	4.2	0.1
USACE/NYSDEC Wetlands Total	**20.7**	**0.1**
Wetlands Total	**51.0**	**0.5**
Adjacent Areas	**15.0**	**<0.1**

Notes:

1. Totals may not add due to rounding errors.
2. Permanent impacts are based on foundation size (diameter) as designed and described in Exhibit 5 and existing access road locations. Final design will be assessed, and impact calculations will be updated, if necessary, for the EM&CP.
3. Laydown areas, temporary access roads, pulling stations, and other temporary workspace areas are not yet designed, therefore temporary impacts associated with these features are not yet known.
4. Additional wetland and stream delineations will be completed in 2021 for off-ROW access roads, once final design is completed. Impact calculations will be updated, if necessary, for the EM&CP.

Temporary and permanent impacts may be adjusted once final design has been completed for the EM&CP and additional wetland delineations are conducted for any off-ROW access roads.

Adirondack-Porter

Based upon the results of the field delineations and on current design, the Adirondack-Porter component of the Project may permanently impact approximately 0.4 acres of wetlands under USACE jurisdiction, which includes <0.1 acres of wetlands that are also NYDEC jurisdictional wetlands. Preliminary permanent impacts due to 124 structure locations are approximately 0.1 acres while preliminary permanent impacts from the Marcy Substation equal approximately 0.4 acres. Total permanent impacts to state-regulated adjacent areas from structure placement is anticipated to be <0.1 acres. Preliminary temporary wetland impacts associated with construction matting across wetlands for access total 45.7 acres. Approximately 6.8 acres of permanent conversion of USACE jurisdictional palustrine forest wetland (“PFO”) to palustrine emergent

wetland ("PEM") and/or palustrine scrub/shrub wetland ("PSS") along the Adirondack-Porter ROW are expected. Approximately 0.3 acres of permanent conversion of NYSDEC jurisdictional PFO to PEM and/or PSS and approximately 1.7 acres of permanent conversion of forested NYSDEC jurisdictional regulated adjacent area to herbaceous and/or scrub/shrub habitats along the Adirondack-Porter ROW are expected. Table 4-21 summarizes preliminary calculations of impacts to delineated wetlands (including all USACE wetlands, as well as those designated as NYSDEC wetlands) and state-regulated adjacent areas Adirondack-Porter.

Temporary and permanent impacts may be adjusted once final design has been completed for the EM&CP and off-ROW wetland delineations are complete.

Table 4-21: Preliminary Permanent Construction Impacts to Delineated Wetland Areas and State-Regulated Adjacent Areas: Adirondack-Porter Study Area

Regulated Area	Total Area of Temporary Disturbance	Total Area of Permanent Disturbance
PFO	0.1	0.1
PSS	20.6	0.1
PEM	14.2	0.2
PUB	<0.1	0
USACE Wetlands Total	**34.9**	**0.4**
PFO	0.1	0
PSS	2.0	<0.1
PEM	8.7	<0.1
PUB	0	0
USACE/NYSDEC Wetlands Total	**10.7**	**<0.1**
Wetlands Total	**45.7**	**0.4**
Adjacent Areas	**8.4**	**<0.1**

1. Notes:
2. Totals may not add due to rounding errors.
3. Permanent impacts are based on foundation size (diameter) as designed and described in Exhibit 5 and existing access road locations. Final design will be assessed, and impact calculations will be updated, if necessary, for the EM&CP.
4. Laydown areas, temporary access roads, pulling stations, and other temporary workspace areas are not yet designed, therefore temporary impacts associated with these features are not yet known.
5. Additional wetland and stream delineations will be completed in 2021 for off-ROW access roads, once final design is completed. Impact calculations will be updated, if necessary, for the EM&CP.

4.3.1.5. Topography, Geology, Soils

Because the majority of the ROW is already established, construction of the proposed Project would not have a significant adverse impact to the topography, geology, or soils within the Proposed ROW. New permanent access roads would result in additional impervious surfaces, although they will be minimized as much as practicable by using existing access roads, using pervious surface best management practices, such as scarification or installing post construction storm water controls. In addition, existing permanent gravel access roads may require repair or improvement. Soil impacts associated with temporary access roads, pole removal and replacement, laydown areas, and access improvements would generally be temporary due to post-construction restoration efforts to recover environmental quality. Utilizing previously disturbed existing ROW and existing infrastructure would significantly minimize potential impacts to topography, bedrock, and soil conditions.

Temporary disturbance to soils within the Proposed ROW would result from construction activities that could include grading for work areas and installation of temporary access roads. Grading would normally be performed only if necessary to provide a safe, level surface for the passage of construction equipment. Grading would not be required where terrain is flat and open. However, in areas of rock outcropping or irregular terrain, minimal rough grading may be required. Permanent disturbances would be limited to installation of new structures, permanent access roads, and removal of existing structures. The Applicant's procedures for removal of wood poles and

storage and management of treated wood poles taken out of service are described in Section 4.4.6 below.

MW-Patnode

Based upon aerial photo interpretation and field observations, approximately 10.2 miles of the MW-Patnode Proposed ROW traverse areas that appear to have been in recent agricultural production. In these areas, the access roads and work at structure sites would temporarily impact soils associated with agricultural production. As described in Section 4.2.9, approximately 61.9% of the soils within the MW-Patnode Proposed ROW are either prime farmland, prime farmland if drained, or farmland of statewide importance. However, these soils are located throughout the Proposed ROW and are not limited to, or necessarily, within active agricultural lands.

No significant impact to existing geologic features is expected from Project construction. Rock outcrops have largely been avoided during Project siting. Depth to bedrock in the MW-Patnode Proposed ROW is greater than 200 centimeters (79 inches) throughout the majority of the Project (97.5% of mapped soil areas), which would be sufficient to accommodate Project construction. Bedrock is comprised of sedimentary rocks such as limestone, dolostone and sandstone, which may be mechanically excavated and would not likely require blasting, or similar means and methods of removal. Bedrock unable to be mechanically excavated may require blasting. Because blasting would only be used if other techniques, such as augering or ripping, are not practicable, widespread blasting is not anticipated.

Adirondack-Porter

Based upon aerial photo interpretation and field observations, approximately 7.0 miles of the Adirondack-Porter Proposed ROW traverse areas that appear to have been in recent agricultural production. In these areas, the access roads and work at structure sites would temporarily impact soils associated with agricultural production. As described in Section 4.2.9, approximately 42.5% of the soils in the Adirondack-Porter Proposed ROW are either prime farmland, prime farmland if drained, or farmland of statewide importance. However, these soils are located throughout the Proposed ROW and are not limited to, or necessarily, within active agricultural lands.

No significant impact to existing geologic features is expected from Project construction, and rock outcrops have largely been avoided during Project siting. Depth to bedrock in the Adirondack-Porter Study Area is greater than 200 centimeters (79 inches) throughout the majority of the Project (94.9% of mapped soil areas), which would be sufficient to accommodate Project construction. Bedrock composition is variable, and may comprise sedimentary rocks such as sandstone and limestone or more competent materials such as gneiss, marble, quartzite, or other crystalline rocks. While the former are relatively easily excavated and would not likely require blasting or similar means and methods of removal, the latter, more competent materials could require blasting for removal. Because blasting would only be used if other techniques, such as augering or ripping, are not practicable, widespread blasting is not anticipated.

4.3.1.6. Cultural Resources

MW-Patnode

Based on the results of the Phase IB archaeological survey and the results of the Phase II site evaluations for the previously identified archaeological sites, no eligible archaeological resources will be impacted by the Project. SHPO concurred with the findings of the Phase II reports via letter dated March 7, 2022.

Based on the results of the architectural survey and report, WSP concludes that the MW-Patnode Line will not adversely affect any historic properties identified in the APE. For the few properties whose eligibility is setting-critical, the existing transmission line has already reduced the properties' setting and they retain sufficient integrity for SR/NRHP eligibility.

Adirondack-Porter

Based on the results of the Phase IB archaeological survey, no eligible archaeological resources will be impacted by the Project.

Based on the results of the architectural survey and report, WSP concludes that the Adirondack-Porter Line will not adversely affect any historic properties identified in the APE. For the few properties whose eligibility is setting-critical, the existing transmission line has already reduced the properties' setting and they retain sufficient integrity for SR/NRHP eligibility.

4.3.1.7. Visual and Aesthetic Resources

During construction of the Project, some increased visibility of construction equipment may occur, particularly at road crossings, nearby residential development, and open space areas. Construction impacts are short term/temporary impacts that will last only for the duration of construction. Upon completion of construction, construction vehicles and equipment will depart, and disturbed portions of the site will be restored.

4.3.1.8. Land Use

The Project would be developed largely within existing ROW and, therefore, would be consistent with current land uses. The Applicant does not anticipate needing to clear any forested habitat within the Proposed MW-Patnode ROW. Approximately 8.0 acres of forestland would be permanently converted to construct and operate the proposed Haverstock Substation. The Willis 345/230 kV Substation itself would not impact any forestland but is located within agricultural land. The ROW connection to the Willis 345/230 kV Substation would require 2.2 acres of forest to be cleared. Approximately 1.6 acres and 19.3 acres of forestland would be permanently converted to construct and operate the proposed Adirondack and Austin Road Substations respectively. Land use within the existing ROW along the MW-Patnode components is not expected to change. Minor expansion of the ROW along the Adirondack-Porter Project components resulting in 53.9 acres of forestland that would be permanently converted. The majority of this tree clearing will take place in the expanded ROW connecting the Chases Lake substation to the proposed Austin Road substation. The Marcy Substation expansion is minimal and immediately adjacent to the existing Marcy Substation fenceline in an already disturbed area.

Within the MW-Patnode Proposed ROW, the proposed Haverstock Substation would change the existing land use of the site from rural/undeveloped to developed/utility, while the Willis 345/230 kV Substation would change the existing land use from agricultural to developed/utility land. Similar changes would occur within the Adirondack-Porter Proposed ROW for the proposed Adirondack and Austin Road Substations. The Applicant will incorporate appropriate mitigation measures into the final design of the substations as needed to ensure construction of the new substations does not interfere with or adversely affect adjacent land uses. Such measures will be included in the EM&CP.

During construction, temporary impacts to agricultural operations will occur as a result of installing the new and removing old structures, construction matting placement for access roads, work pads, and/or establishment of additional workspace areas. All work within agricultural areas will be coordinated with NYSDAM staff, each affected landowner and conducted generally in accordance with NYSDAM guidelines and/or that are agreed upon between all parties. There will potentially be short-term disruptions in agricultural operations in limited areas during construction. However, significant long-term impacts to active agricultural areas are not anticipated from the Project. The Project would have minimal adverse impacts on active farming operations once built because of the reduced number of proposed structures. The EM&CP will provide more detail regarding temporary and permanents impacts to agricultural areas.

Potential encroachments within the Proposed ROW would be surveyed, and individual abutting property owners or occupants would be contacted to address potential encroachments on a case-by-case basis. Any additional encroachments identified during the preparation of the EM&CP

would be similarly addressed. Adjacent landowners would be afforded the opportunity to remove any encroaching structures or uses prior to the start of construction.

Impacts to nearby landowners are anticipated to be limited to short-term impacts during construction. These impacts are expected to be typical of any large construction project and may include noise, dust, and local traffic inconvenience. Landowners will be notified of the schedule for construction activities. Temporary construction impacts such as these would primarily occur in areas where the Proposed ROW crosses public roadways.

4.3.1.9. Noise

The construction of overhead transmission lines and substations typically includes the following noise-generating activities:

- Site and vegetation clearing;
- Foundation installation;
- Excavation/concrete placement (as needed);
- Structure installation, and;
- Wire stringing.

Noise generated during construction is primarily from two sources: (1) diesel engines, which power construction vehicles and (2) the noise generated from rock drills and jack hammers (if needed). At this time it is unknown if blasting may be required; if blasting is required a blasting plan will be developed as part of the EM&CP.

Engine noise is the dominant source of temporary noise from equipment operation. Contractors will be required to maintain functional mufflers on all applicable equipment. Maximum sound levels associated with the construction equipment typically used in overhead transmission line construction projects are provided in Table 4-22. Each piece of equipment presented in Table 4-22 is not used in all phases of construction, and equipment is not operated continuously and not operated concurrently.

Table 4-22: Typical Maximum Noise Levels of Major Construction Equipment

Equipment Type	Construction Equipment Noise Levels at 50 Feet (dBA)	Construction Equipment Noise Levels at 100 Feet (dBA)
Industrial Mower	88	82
Crane (movable)	94	75
Dump Trucks	96	70
Chainsaw	84	78
Drill Rig Truck	98	73
Grader	91	79
Concrete Mixer Truck	88	73
Bulldozers	95	76
Pickup Trucks	55	49
Backhoes	92	72
Vibratory Hammer	101	95
Wire Tensioning Equipment	80	74
Pavement Saw	77	71
Impact Pile Driver	101	95
Water Pump	71	64
Roller	80	74
Welder	74	68
Compactor	83	77
Cable Pulling Machine	80	74
Splicing Trailer	50	46
Oil Pump	75	69
Source: National Grid, Northern New York Priority Transmission Project Substation Sound Study, 2021, and FHWA Roadway Construction Noise Model.		

The use of helicopters has been found to be effective in areas where access is limited. Helicopters are used to replace upper structural members, install pulling devices, replace insulators, connect wire, and other related tasks. Helicopters generally fly at low altitudes, resulting in temporary increases to ambient sound levels in the area where the helicopter is operating, as well as along its flight path. Typically, helicopters may generate noise levels of 89 dBA to 99 dBA at ground-level receptors when in flight at an elevation of 200 feet. If used, helicopter operations would occur for short periods of time during daytime hours. The use of helicopters does not completely eliminate the need for ground access by field crews. Ground access is still required to pull/tension wire, install structure grounds, or replace lower structural members.

A variety of construction equipment sources would be associated with individual phases of construction. Table 4-23 contains a list of sound levels typically associated with each major construction phase for both overhead lines and represent the maximum sound levels associated with each anticipated construction equipment source. Sound levels are presented for standard distances of 50, 100, 400, 1,000, and 2,000 linear feet.

Table 4-23: Typical Range of Sound Levels by Construction Phase – Overhead Lines

Construction Phase	Typical Range of Sound Levels (dBA)				
	50 Feet	100 Feet	400 Feet	1,000 Feet	2,000 Feet
Site and Vegetation Clearing	77	71	59	51	45
Site Grading and Compaction	81	75	63	55	49
Trenching and Foundations	89	83	71	63	57
Equipment Pads	85	79	67	59	53
Equipment Installation	83	77	64	57	51
Source: National Grid, Northern New York Priority Transmission Project Substation Sound Study, 2021, and FHWA Roadway Construction Model					

The data presented in Table 4-23 indicate that, for the nearest residences, construction sound levels would temporarily exceed ambient levels for short-term periods, depending upon the intensity of work activity and the type of equipment or noise source. For the majority of residences farther from the corridor, construction noise would be much lower and would generally be below ambient levels.

As demonstrated in Table 4-23, construction noise would be attenuated with distance. Other factors, such as vegetation, terrain, and obstacles such as buildings, would act to further reduce noise levels. Noise levels presented in Table 4-23 are those that would be experienced by people outdoors and without the mitigating effects of vegetation, topography and intervening structures. A building would provide significant attenuation of associated construction noise. For instance, sound levels can be expected to be up to 27 dBA lower indoors with windows closed (USEPA, 1978). Even in homes with open windows, indoor sound levels can be reduced by up to 17 dBA.

The magnitude of temporary noise impacts was estimated by using the known noise levels of construction equipment, the distance to noise receptors, and the assumed construction methodology. Noise receptors located beyond 500 feet of the Proposed ROW would not experience significant adverse impacts. As such, only receptors within 500 feet of the Proposed ROW were identified.

Noise-level changes resulting from construction activity associated with the proposed Project would be minimal. Construction noise would be temporary and vary according to the construction equipment in use, the distance to noise receptors (e.g., residences), intervening ground cover and existing background or ambient noise. Generally, temporary noise levels are mitigated by the

attenuating effects of distance, the intermittent and short-lived character of the noise, the presence of existing vegetation, the presence of homes and buildings (particularly in the more suburban areas), and the use of functional mufflers on all construction equipment. Transmission line construction is generally of short duration and temporary in nature as construction progresses along the Proposed ROW. No one residence would be exposed to significant noise levels for an extended period. To mitigate any construction noise impacts it is anticipated that the Certificate would include a condition that limits construction hours, as well. Comparable work activity and the associated magnitude of noise level change include public works projects and tree service activity.

MW-Patnode

Noise receptors within 500 feet of the MW-Patnode Proposed ROW include 114 residences and one house of worship. The house of worship is located south of the Town of Constable at the intersection of Rt. 30 and Stewart Road. The residences nearest the MW-Patnode Proposed ROW are located in the Town of Westville. These residences are situated approximately 60-70 feet from the centerline of the closest transmission line and are generally located near roadways that cross the ROW.

As shown in Table 4-23, these noise-sensitive receptors would experience noise levels somewhat less than 54 dBA to 86 dBA during the noisiest periods of construction. Construction activity required for a tower structure would occur approximately 200 feet from the house of worship, and noise levels expected at this receptor would be significantly lower than 54 dBA to 86 dBA during the noisiest periods of construction. These noise levels do not account for any reduction due to ground cover or topography and may be lower.

The nearest noise-sensitive receptor is located approximately 125 feet from the Haverstock Substation. As shown in Table 4-23, theis noise-sensitive receptor would experience noise levels between 83 dBA and 89 dBA during the noisiest periods of construction.

The nearest receptor, a residence on Hartnet Road, is located approximately 680 feet from the proposed Willis 345/230 kV Substation expansion. As shown in Table 4-23, this receptor could experience noise levels between 63 dBA and 89 dBA during the nosiest periods of construction. These noise levels do not account for any reduction due to ground cover or topography and may be lower.

Adirondack-Porter

Noise receptors within 500 feet of the Adirondack-Porter Proposed ROW include 109 residences, one pet cemetery, and six recreational facilities The pet cemetery is located where the alignment crosses Church Road at the southern end of the alignment within approximately 40 feet of construction activity for one of the proposed towers. The recreational facility (golf club) is located just west of Hawkinsville. One part of the facility is located approximately 380 feet from construction activity for one of the proposed towers. The alignment passes through or adjacent to several designated public open spaces, including Steuben Memorial State Historic Site and Penn Mountain State Forest, located approximately 2 miles northwest of Remsen, High Towers State Forest, located northeast of Lyons Falls, and Otter Creek State Forest, located east of Otter Creek.

The closest residential receptor to construction activity associated with the Adirondack-Porter Proposed ROW is located just south of Shuetown Road. This receptor is approximately 130 feet from construction activity for a proposed tower. A second receptor is located just north of Moose

River Road, approximately 170 feet from the nearest proposed tower. Generally, residential receptors are located near roadways that cross the alignment throughout its length.

As shown in Table 4-23, these noise-sensitive receptors would experience noise levels somewhat less than 54 dBA to 86 dBA during the noisiest periods of construction. Any construction-related noise experienced in the public open spaces would be temporary and short-term. The noise levels identified above do not account for any reduction due to ground cover or topography and may be lower.

Construction at each of the substations will last for extended durations, but most activities will not occur simultaneously at any location. For example, there will be periods during which concrete needs to dry and no work with heavy machinery would occur. The nearest noise sensitive receptors to each site are residential properties. The substations and their approximate distances to the nearest residence are shown below. These distances may change during final design of the Project.

- • Adirondack Substation – 2,000 ft to residences
- • Haverstock Substation – 125 ft to residences
- • Willis 345/230 kV Substation – 700 ft to residences
- • Massena Substation – 650 ft to residences

Construction noise will likely be audible near the respective substations. Construction noise mitigation measures that could be implemented include the following actions:

1. Maximize the distance between stationary equipment and noise sensitive receptors to the extent practicable;

2. Route construction equipment away from noise sensitive receptors to the extent practicable;
3. Turn off idling equipment when not in use; and
4. Utilize construction equipment with proper mufflers.

Due to the temporary nature of the construction activities and best practices with regards to controlling construction noise in the directions of noise sensitive areas, no adverse impacts with respect to construction noise are anticipated.

4.3.2. Operation Effects

4.3.2.1. Vegetation

MW-Patnode

Following construction, vegetation within the Proposed ROW would be reestablished and allowed to regenerate to the pre-existing successional communities. The Proposed ROW would continue to be periodically maintained in accordance with NYPA's *Systemwide Long-Range Transmission Right-of-Way Vegetation Management Plan and Program* (*see* Appendix I). The Proposed ROW would thus continue to provide habitat for wildlife that prefers old-field and shrub-dominated habitat. Along classified trout streams crossed by the line (and other stream crossings where possible), vegetated streamside buffer areas would be maintained to provide fish cover, wildlife travel corridors, and shade (to maintain cool water temperature).

With the exception of the new Haverstock Substation and the Willis 345/230 kV Substation the majority of the Project vegetation removal would be largely confined to the maintained ROW. No

permanent or significant changes in character or species composition are anticipated in grassland, pasture, scrub/shrub, cultivated crop, emergent wetlands, or woody wetland areas because these communities would be reestablished following construction.

The proposed Haverstock Substation would permanently remove 12.2 acres of vegetation (8.0 acres forested), while the Willis 345/230 kV Substation would permanently remove 6.8 acres of agricultural land.

Adirondack-Porter

Operation effects and minimization efforts for the Adirondack-Porter Study Area are similar to those of the MW-Patnode Study Area described above. Differences in effects are outlined below.

The proposed Adirondack Substation, Austin Road Substation, and Marcy and Edic Substation expansions would permanently remove 10.7 acres, 10.4 acres, 1.2 acres, and 0.2 acres of vegetation, respectively of which the forested portion of that clearing would be approximately, 1.6 acres, 10.3 acres, 0 acres, and 0 acres, respectively. In addition, approximately 53.9 acres and 9.0 acres of forest cover will be converted to herbaceous and/or scrub/shrub habitats along the Adirondack-Porter Proposed ROW and the areas immediately around the Austin Road Substation fenceline, respectively.

4.3.2.2. Wildlife

After restoration, habitat on the Proposed ROW would be maintained in low growing vegetation similar to the current conditions. With the reduced number of structures in the Proposed ROW for

both the MW-Patnode and Adirondack-Porter Project components, a slight increase in the acreage of early successional communities is expected.

While the new substations and substation expansions would result in the permanent loss of habitat, the combined area (approximately 38.2 acres) would not cause any population-level effects or redistribution of wildlife in the local areas.

4.3.2.3. Hydrology

Following construction, any permanent impacts to wetlands or streams, as described in Section 4.3.1.4, would remain. Operations and maintenance of the MW-Patnode and Adirondack-Porter transmission lines would utilize any permanent access roads certified during this Article VII process. Therefore, there would be no additional effects of the Project during operations.

4.3.2.4. Topography, Geology, Soils

The Project largely utilizes an existing utility ROW. After construction activities have been completed, permanent access roads will be used during operation and maintenance of the proposed structures, and no disturbance to topography, geology, or soils would be anticipated by operation and maintenance activities.

4.3.2.5. Cultural Resources

MW-Patnode

Based on the results of the Phase IB archaeological survey and the results of the Phase II site evaluations for the previously identified archaeological sites, no eligible archaeological resources

will be impacted by the Project. SHPO concurred with the findings of the Phase II reports via letters dated March 7, 2022.

Based on the results of the architectural survey and report, WSP concludes that the MW-Patnode Line will not adversely affect any historic properties identified in the APE. For the few properties whose eligibility is setting-critical, the existing transmission line has already reduced the properties' setting and they retain sufficient integrity for SR/NRHP eligibility.

Adirondack-Porter

Based on the results of the Phase IB archaeological survey, no eligible archaeological resources will be impacted by the Project.

Based on the results of the architectural survey and report, WSP concludes that the Adirondack-Porter Line will not adversely affect any historic properties identified in the APE. For the few properties whose eligibility is setting-critical, the existing transmission line has already reduced the properties' setting and they retain sufficient integrity for SR/NRHP eligibility.

4.3.2.6. Visual and Aesthetic Resources

The Applicant evaluated the potential visibility of the Project and simulated and evaluated the proposed Project's visual impacts. The conclusions presented below are based on the results of viewshed analysis, field evaluations, and computer-assisted visual simulations performed for the Project, as detailed in the Visual Resource Assessment (Appendix G).

MW-Patnode

Results of the viewshed analysis indicate that views of the existing MW-Patnode structures could be available from approximately 11.8 percent (34.1 square miles) of the VSA (289.9 square miles), and visibility of the proposed structures could be possible from approximately 19.8 percent (57.3 square miles) of the VSA. This represents an 8.0 percent (23.2 square miles) increase in potential transmission line visibility (expanded visibility) within the MW-Patnode VSA as a result of the Proposed Project. The increase in potential visibility can be attributed to the proposed height increase of the structures and, to a lesser degree, some new areas of potential visibility resulting from changes in structure placement.

The majority of expanded Project visibility occurs in area comprised of open land. Thirty-seven (37) of 52 VSRs identified within the MW-Patnode VSA have potential visibility of the existing structures. With the proposed structures in place, the number of VSRs with potential views of the Project increases to 44.

The visual simulations provided in the VRA (see Appendix G) suggest that, when viewed across the ROW, the proposed galvanized monopole structures are more noticeable and visually prominent than the existing wood H-frames, but often appear cleaner and simpler in form than the existing structures. When viewed down the ROW, the proposed structures are noticeably larger and taller than the existing wood H -frames. The height of the proposed structures also results in longer distance visibility when viewed down the ROW. Because the Project utilizes an existing cleared ROW and is replacing an existing transmission line, perceived change in land use/contrast with existing landscape character will be limited.

Tree clearing and the addition of the proposed transmission and substation structures significantly alters the character of the view in the vicinity of the Haverstock Substation. However, the substation's visual impact will be limited due to the small number of viewers traveling along Fregoe Road, which dead ends at the Snell Lock, and by the presence of existing transmission infrastructure in the area.

Adirondack-Porter

Results of the viewshed analysis indicate that views of the existing structures could be available from approximately 10.1 percent (36.2 square miles) of the Adirondack-Porter VSA, and visibility of the proposed structures could be possible from approximately 13.2 percent (47.2 square miles) of the VSA. This represents a 3.1 percent (11.0 square miles) increase in visibility (expanded visibility) within the Adirondack-Porter VSA resulting from the Project resulting from the proposed height increase of the structures.

The majority of expanded visibility occurs in small, contiguous areas of boundary expansion in open areas (agricultural fields, large water bodies and rivers) where visibility of the existing structures is possible from adjacent areas, and in narrow bands along roads, rivers, or other transmission line ROWs. Ninety-two (92) of 172 VSRs identified within the Adirondack-Porter VSA have potential visibility of the existing structures. With the proposed structures in place, the number of VSRs with visibility of the Project increases to 113.

The visual simulations provided in the VRA (see Appendix G) suggest that, when viewed across the ROW, the proposed galvanized monopole structures are more noticeable than the existing structures, as they extend higher into the sky. However, the structures appear more consistent in

height with the lattice structures on the Massena to Marcy 765 kV line and strengthen the presence of utility infrastructure. When viewed down the ROW, the new structures are noticeably larger and taller, and the paired conductors appear heavier against the sky. However, there are now fewer visible structures within the cleared ROW, and their vertical configuration appears to take up less space within the ROW. The new structures also present a cleaner, simpler design, and their height is more compatible with the lattice structures on the Massena to Marcy 765 kV line. Overall, from vantage points looking down the ROW, the Project does not significantly alter the character or scenic quality of the existing view.

Addition of the proposed Austin Road Substation will replace the continuous line of trees along the far edge of the transmission line ROW with a variety of structures within the substation. The existing H-frame structures on the Adirondack-Porter line will be replaced by a new galvanized steel structures that are light gray in color, like the proposed substation equipment. The vertical line and light color of the new poles are similar to the existing wood poles, but the new structures are noticeably larger and more abundant. Although associated with an existing transmission line ROW, the abundance of new utility infrastructure in what was formerly a relatively undeveloped setting adds visual clutter and changes the character of the view. However, the abundance of forest in this area will fully or substantially screen views of the substation from viewpoints other than this specific location on Austin Road.

4.3.2.7. Land Use

The Project would be developed largely within the existing ROW and, therefore, would be consistent with current land uses. The Applicant does not anticipate needing to clear any forested

habitat within the proposed MW-Patnode ROW, so adjacent logging activities would not be directly impacted. Operation of the Project would not indirectly impact logging activities on adjacent lands as long as all of those activities would occur off the Proposed ROW and do not interfere with operation of the Project.

Because the rebuilt lines would be located almost entirely within the existing ROW, the Applicant does not anticipate any changes to existing uses adjacent to the Proposed ROW or in surrounding areas. Reducing the number of structures within the Proposed ROW would provide a benefit by reducing the number of obstacles encountered on active cropland.

Operation of the proposed Haverstock, Willis 345/230 kV, Adirondack, and Austin Road Substations, as well as the Marcy and Edic Substation expansions, would permanently change the existing land use of the site from rural/undeveloped to developed/utility. The Applicant will consider vegetative screening and other mitigation measures as needed to ensure operation of the new substations does not interfere with or adversely affect adjacent land uses. Such measures will be included in the EM&CP.

4.3.2.8. Noise

The MW-Patnode and Adirondack-Porter Study Areas are primarily rural undeveloped or agricultural land use, and secondarily, rural residential land use. In most cases, the proposed transmission lines will be located 500 feet or more from residential buildings, although there are some instances where the lines will be located within 65 feet from a residential building. Dense evergreen tree cover, and/or dense leaf-on deciduous tree cover, in many cases would act as a noise

barrier both during construction periods and for noise from the transmission line once it is constructed.

Corona-generated audible noise may be of concern with voltages of 345 kV and higher, only during foul weather, when rain droplets can cause exacerbation of the corona effect. The preliminary geometry of the re-built Moses-Willis 1 & 2, Willis-Patnode, and Willis-Ryan lines for the MW-Patnode Project component, and the Adirondack to Porter Lines 11, 12, and 13 for the Adirondack to Porter Project component, were analyzed across a sample of typical cross sections to generate typical audible noise levels for fair and rain conditions. Analyses were performed using the Corona and Field Effects Program developed by the BPA in conjunction with USDOE (*see* Appendix H).

As set forth in Appendix H, median audible noise levels from operation of the new transmission lines were calculated to be below the Environmental Protection Agency's (EPA) day-night reference level (USEPA, 1974) in all segments of the MW-Patnode and Adirondack-Porter Project components.

The new substations (Haverstock, Willis 345/230 kV, Adirondack, and Austin Road) and three of the existing substations that will be expanded (Marcy, Edic, and Massena) include noise-emitting equipment in the form of transformers, capacitor banks, HVAC equipment, and emergency generators. The Applicant conducted noise modeling to determine if sound levels from operation of the new/expanded substations will be in compliance with applicable regulations and guidance, including the NYSDEC Program Policy Guideline entitled, *Assessing and Mitigating Noise Impacts, Document DEP-00-1,* and guidance issued by DPS in November 2020 for addressing noise impacts of substations subject to Article VII entitled *General Recommendations for*

Applications for Substations, Stations, and Converter Stations under Article VII. Under the NYSDEC's guidance policy, sound pressure increases of more than 6 dBA over the baseline conditions is a threshold for when adverse noise impacts may begin to occur. The DPS noise guidance include a design goal of 35 dBA for the Project equipment at noise sensitive receivers near substations. The DPS document provides recommendations and guidance for sound level design goals and modeling parameters which can be used for estimating noise impacts from the Project. Noise modeling results are provided in Appendix J and summarized below.

The noise modeling results show that the Adirondack Substation and new equipment for the Edic and Massena Substations, as designed, would meet the NYSDEC guidance of an increase in sound levels less than 6 dBA, and the DPS design goal of 35 dBA for the Project equipment at the noise sensitive receivers near the substations.

The noise modeling results show that the Haverstock Substation, the Willis 345/230 kV Substation, and the Austin Road Substation, as designed, would exceed the NYSDEC and DPS guidance requirement at multiple noise sensitive receivers near the substations. However, the noise modeling also shows that each of these substations, through low-noise or ultra-low-noise equipment design, are capable of meeting the NYSDEC and DPS sound level design goals at neighboring residences. The Applicant will review equipment sound levels once all vendor-provided sound level data is available, and the substation designs will be reconsidered to determine the most-cost effective solutions for meeting sound level design goals.

4.4. Mitigation and Protection Measures

4.4.1. Scenic, Recreational, and Historic Areas (16 NYCRR § 86.5(b)(2)(i))

16 YCRR § 86.5. (b) The applicant shall state: (2) what efforts, if any, have been made to assure: (i) that any right-of-way avoids scenic, recreational and historic areas; The Applicant will identify mitigation and protection measures for scenic, recreational, and historic areas as part of its ongoing consultation with OPRHP. Such measures will be provided once identified and/or included in the EM&CP. Visibility (16 NYCRR § 86.5(b)(2)(ii)) 16 NYCRR § 86.5. (b) The applicant shall state: (2) what efforts, if any, have been made to assure: (ii) that any right-of-way will be routed to minimize its visibility from areas of public view.

The Project would be constructed largely on existing ROW. The proposed structures would be taller than the existing structures, but the total number of structures on the ROW would be reduced. The Applicant performed a visual impact assessment of the new structures (*see* Section 4.3.2.6 and Appendix G). The results of the assessment suggest there is limited visual impact of the proposed Project. Locating the new line within an existing transmission corridor is considered the best means of reducing perceived visual contrast and change in land use.

4.4.2. Right-of-Way Siting (16 NYCRR § 86.5(b)(2)(iii))

16 NYCRR § 86.5. (b) The applicant shall state: (2) what efforts, if any, have been made to assure: (iii) that any right-of-way has been planned to avoid heavily timbered areas, high points, ridge lines and steep slopes.

The Project is being constructed largely on existing ROW. All planning efforts to-date have been conducted to construct and operate the Project within the existing Moses-Willis 1 & 2, Willis-Patnode, and Willis-Ryan ROWs for the MW-Patnode Project component and the Adirondack to Porter ROW for the Adirondack-Porter Project component, thereby avoiding siting new ROW within large forested areas, along ridges, or on steep slopes or high points. The Applicant sited the one new transmission line included in the Project, Rector Road-Austin Road Line 10, immediately

adjacent to the existing utility corridor, within an existing ROW easement, in order to minimize tree clearing.

4.4.3. Natural Landscape and Land Use (16 NYCRR § 86.5(b)(2)(iv))

16 NYCRR § 86.5. (b) The applicant shall state: (2) what efforts, if any, have been made to assure: (iv) that the selection of any proposed right-of-way preserves the natural landscape and minimizes conflict with any present or future planned land use;

The Project would be constructed on largely on existing ROW, with the exception of new or expanded substations and a short 12.5' widening of vegetation clearing rights near the Moose River in Lyonsdale. The Project would not affect the natural landscape or change the current land use. Because the Project would reduce the number of existing transmission structures, land use may improve once the old structures have been removed. For example, reducing the number of structures within the Proposed ROW on active cropland would provide a land use benefit by reducing the number of obstacles encountered for farmers.

The Project would not affect the goals of the 2016 *New York State Open Space Plan*. Likewise, construction and operation of the Project would have a negligible effect on local or regional land use patterns or land use planning because it would be located almost entirely within the existing ROW.

All work within agricultural areas would be conducted in accordance with NYSDAM guidelines and NYPA's BMP documents. Additional agricultural protection and restoration measures are described in Section 4.4.6.1.

The conversion of vegetative cover types for the proposed Haverstock, Willis 345/230 kV, Adirondack, and Austin Road Substations, the Marcy and Edic Substation expansions, and the ROW widening near the Moose River is not anticipated to adversely affect land use patterns in the area. Furthermore, operation of the Project would not impact logging activities on adjacent lands because all of those activities occur off the Proposed ROW and would not interfere with operation of the Project.

Potential encroachments within the Proposed ROW would be surveyed, and individual abutting property owners or occupants would be contacted to address potential encroachments on a case-by-case basis. Any additional encroachments identified during the preparation of the EM&CP would be similarly addressed. Adjacent landowners would be afforded the opportunity to remove any encroaching structures or uses prior to the start of construction.

4.4.4. Right-of-Way Clearing Widths (16 NYCRR § 86.5(b)(3))

16 NYCRR § 86.5. (b) The applicant shall state: (3) what, if any, plans have been formulated to keep any right-of-way clearing to the minimum width necessary to prevent interference of vegetation with the proposed facility;

The Project would be constructed almost entirely on existing ROW. The existing MW-Patnode ROW is 225-feet-wide. The new design of two single-circuit 345 kV steel monopole structures for the Moses to Willis 1&2 transmission lines (e.g., the new Haverstock-Willis 1&2) and two double-circuit 230 kV steel monopole structures for the Willis-Patnode/Ryan 1&2 lines for MW-Patnode requires a certificated Proposed ROW width of 225 feet. The existing Adirondack-Porter ROW varies between 375 and 500 feet but is generally maintained at the 230 kV operational width of a minimum of 245 feet in accordance with National Grid's TROWMP. In general, the proposed

Adirondack-Porter 345 kV lines will be constructed and operated within the existing ROW; however, some additional vegetation clearing will be necessary to clear the ROW from the existing 245 feet to 275 feet in width, as necessary to support 345 kV operations. For the portion of the Project that includes the Rector Road to Chases Lake Line 10 230 kV line, the clearing will be to the full ROW width of 375 feet. There will also be a minor expansion of cleared ROW for approximately 0.3 miles near the Moose River from Shuetown Road and Lyonsdale Road in Lyonsdale from 250 feet to 262.5 feet wide.

The Proposed ROW widths and locations were designed to reduce impacts to the maximum extent practicable. As noted above, the Proposed ROW for the rebuilt transmission lines would be located almost entirely within the existing ROWs along the MW-Patnode and Adirondack-Porter corridors. These areas are largely in early successional vegetation currently and would continue to be maintained in a similar manner upon completion of the Project. The Applicant does not anticipate needing to clear any forested habitat within the MW-Patnode Proposed ROW. Tree clearing along the Adirondack-Porter ROW will typically require expanding the clearing limits by approximately 15 feet on either the east or west side of the existing ROW. One exception is the extension of the Rector Road to Chases Lake Line 10 to the Proposed Austin Road Substation which will require widening the east side of existing ROW by 85 feet.

4.4.5. Soil Stability, Protection of Vegetation and Adjacent Resources (16 NYCRR § 86.5(b)(4))

16 NYCRR § 86.5. (b) The applicant shall state: (4) what, if any, schedule or method of clearing the right-of-way has been formulated to take into account soil stability, protection of natural vegetation, and the protection of adjacent resources (including the protection of any natural habitat for wildlife);

Construction of the Project would generally involve the following activities:

- Installation and maintenance of erosion and sediment control,
- ROW preparation, switchyard and substation site grading and construction of improvements to existing access and new access roads, as necessary,
- Structure erection and removal and switchyard/substation installation,
- Stringing of conductors, and
- Clean-up and restoration.

The Applicant would coordinate the construction activities of all consultants and contractors to ensure that appropriate environmental standards are met. Where possible, existing natural vegetation buffers would be maintained adjacent to highway crossings, streams, rivers, and wetlands. The placement of structures in wetland areas and on steep slopes would be avoided where possible. During construction and operation, the Applicant would comply with all applicable water quality standards for streams and wetlands, as required.

The Applicant would prepare an EM&CP in accordance with the Project's Certificate and orders issued by the Commission to accommodate in any design, construction, ownership, or maintenance contracts associated with the Project.

4.4.5.1. Soil Stability

Impacts associated with soil disturbance (erosion, sedimentation) would be minimized by siting the Project within the previously disturbed ROW.

Existing wood poles will be completely removed from the ground in their entirety or cut at the surface where the pole is technically infeasible to be removed or where removal would cause

adverse environmental effect. Soils that are excavated for the removal of existing poles would be backfilled into the same hole following pole removal. Any excess soils would be reused onsite or properly disposed of at approved offsite locations. If excavated soils are deemed unsuitable for use as backfill, suitable clean fill would be used.

Specific erosion control measures would be provided as a part of the final construction documentation and EM&CP to be developed for this Project. Prior to commencing construction activities, erosion and sediment controls would be installed, as needed, between the work areas and any downslope surface waters or wetlands, to reduce the risk of soil erosion and siltation. Following construction, disturbed areas would be stabilized and restored in accordance with the EM&CP.

Soils located within agricultural lands would be further protected during and after construction; full restoration of soils in active agricultural lands would occur. In agricultural areas, pole installation would occur only at times when soils are unsaturated to protect the soil horizons from mixing. To the extent practicable, work would be completed in winter months to avoid saturated soil conditions. For excavation activities occurring in warm-weather months, topsoil in the work area would be protected through the use of timber mats, low ground pressure equipment, and/or temporary topsoil segregation and stockpiling. After pole installation, topsoil would be replaced and de-compacted as necessary to restore areas to preconstruction conditions. Additional agricultural protection and restoration measures will be detailed in the EM&CP.

4.4.5.2. Protection of Natural Vegetation

Mitigation measures to avoid or minimize impacts to vegetation during construction would include:

- Identifying and delineating sensitive areas (such as wetlands) where no disturbance or vehicular activities are allowed;
- Educating the construction workforce on respecting and adhering to the physical boundaries of off-limit areas;
- Employing BMPs during construction; and
- Maintaining an organized and safe work area within the designated construction sites.

Following construction activities, temporarily disturbed areas would be seeded (and stabilized with mulch if necessary), to reestablish vegetative cover in these areas. Other than in active agricultural fields, annual rye or a seed mix of native plant species appropriate to the Project area would be used to revegetate these areas. Restoration procedures will be detailed in the Project's EM&CP.

In areas used for agricultural production, measures to protect and restore agricultural lands would be implemented during and after construction in accordance with NYSDAM guidelines or landowner/agricultural operator requests to minimize adverse impacts to the extent practicable. An agricultural inspector will be onsite to ensure compliance with commitments made to NYSDAM and/or landowners. NYPA will also work with landowners and NYSDAM regarding compensation for crop loss or damages suffered during construction activities. See Section 4.4.6.1 for further discussion of measures proposed to avoid or mitigate impacts to agricultural land.

Additionally, the Applicant has specific procedures for handling and storage of treated wood poles taken out of service. Any existing wood structure being removed as part of the Project would abide by those procedures which will be addressed in the EM&CP.

4.4.5.3. Protection of Adjacent Resources (including the protection of natural habitat for wildlife)

No rare, threatened or endangered plant species were observed during field investigations or identified by resource agencies as potentially occurring in the Study Area; therefore no mitigation measures are required to protect threatened or endangered plant species.

To reduce the potential introduction or spread of invasive plant species in regulated areas within the Study Area, the Applicant will prepare an Invasive Species Plan that includes may include implementation of the following measures, as appropriate: (1) construction materials inspection, (2) construction equipment sanitation, and (3) proper site restoration.

Impacts to fish and wildlife resources would be limited by reducing on-ROW and off-ROW disturbance to the extent possible. By routing the line and confining most construction activity to the existing ROWs, incidental injury and mortality and habitat alteration would be minimized. Silt and sedimentation impacts on aquatic species would be avoided or reduced to the extent practicable using sediment and erosion controls as described within the EM&CP. Stream and wetland crossings would be reduced to the minimum number possible by using existing crossings, whenever practicable. Whenever possible, crossings will be avoided by accessing structures from either side of a stream or wetland. Where new crossings are required, crossing techniques would be used to minimize adverse effects on aquatic organisms at, and downstream of, the crossing

locations. Site-specific crossing methods would be depicted on the construction drawings contained within the EM&CP. Potential crossing methods may include temporary bridges, culverts, or fords. As discussed in Section 4.4.11, areas disturbed during construction would be restored to their pre-construction soil profile and contours, seeded with an annual rye or native seed mix, and allowed to re-vegetate naturally.

ROW management would involve periodic maintenance to maintain early successional vegetation in accordance with NYPA's or National Grid's *System-wide Long-Range Transmission Right-of-Way Vegetation Management Plan and Programs*, as applicable. The Proposed ROW would thus continue to provide food and cover for wildlife that prefers old-field and shrub-dominated habitat. Along classified trout streams crossed by the lines (and other stream crossings where possible), vegetated streamside buffer areas would be maintained to the extent practicable to provide fish cover, wildlife travel corridors, and shade (to maintain cool water temperature).

Impacts to wetland and streams as a result of vehicle crossings would be minimized by using existing crossing locations whenever possible, and construction matting for new wetland crossings. Crossing methods as identified above, equipment restrictions, and erosion and sedimentation control measures would be used to reduce impacts to water quality, surface water hydrology, and aquatic habitat.

Vegetation clearing along stream banks would be minimized, and disturbance to the bed and banks of protected streams would be avoided with the use of less disruptive crossing techniques such as timber matting.

Where vehicular crossings of surface waters and wetlands are required, the Applicant would employ the BMPs associated with particular streamside and wetland activities. Specific mitigation measures for protecting wetlands and surface water resources would be applied where practicable, and include the following:

- *No Equipment Access Areas*: Where impacts are not otherwise permitted, "No Equipment Access," would be designated to confine the use of motorized equipment to designated access roads and work areas only.
- *Restricted Activities Area*: Where feasible, a 100-foot adjacent area for state-regulated wetlands and 50 feet for state-protected streams, referred to as a "Restricted Activities Area," would be established where the Proposed ROW crosses streams, wetlands, and other bodies of water. Restrictions would include:
    - No deposition of cut slash or loose branches within or adjacent to a waterbody;
    - No accumulation of construction debris within the Project area;
    - No degradation of stream banks;
    - No equipment cleaning, washing, or refueling; and
    - No storage of any petroleum or chemical material.
- *Vehicular/Equipment Crossings of Wetlands and Streams*: Vehicle crossings of streams and wetlands would be avoided wherever possible. Along the Proposed ROW, vehicle crossings would be accommodated using existing functioning culverts or temporary construction matting. Watercourses would not be obstructed in such a way that impedes the free movement of water during vehicle/equipment crossings. Construction mats would span the stream from top of bank to top of bank with a clearance at least three (3)

feet above mean high water mark, and would be installed in wetland locations that are narrow or previously disturbed, whenever possible. Temporary crossings would be removed, and the water resource would be restored to preexisting conditions following removal of temporary crossings.

- *Sediment and Siltation Control*: A formal soil erosion and sedimentation control plan would be included as part of the EM&CP to be submitted at a later date. The Applicant's BMPs also outline proposed erosion and sediment control measures proposed for this Project. Areas of exposed soil resulting from Project construction would be seeded and/or mulched to minimize erosion and siltation. An Environmental Monitor would be onsite throughout construction to determine if changes to the SWPPP and sediment and erosion control measures are necessary. Such measures would be implemented on an as-needed basis to ensure the protection of water quality in surface waters, wetlands, and/or groundwater that could be impacted by the Project. Where control devices are installed, they would be inspected throughout the duration of construction until completion of all restoration work (final grading and seeding), to ensure that they remain functional and effective. Inspections would occur at a minimum once weekly and following any significant storm events.

As noted above, the Project is likely to require a wetland and/or stream disturbance permit from USACE in accordance with Section 404 of the Clean Water Act. Compensatory mitigation, if required, would be performed as a part of the Project construction activities. Such mitigation is typically required for permanent impacts only. Wetlands temporarily disturbed during construction

would be restored to their original grade and allowed to reestablish naturally following construction.

The type and descriptions of all proposed wetland and stream crossings have not yet been determined but will be provided in the EM&CP. Preliminary calculations based on structure foundation design and access roads are provided in Section 4.3.1.4. To ensure minimization of impacts to wetland resources during construction, the Applicant would provide the construction contractor copies of the EM&CP, applicable USACE permits (Section 404), applicable Article 15 and Article 24 permits through the NYSDEC or DPS, 401 Water Quality Certification, and site-specific plans detailing construction methodologies and natural resource protection measures.

Fuel storage and vehicle refueling restrictions would be employed to protect against leaks or accidental spilling of equipment fuels or lubricants. Appropriate emergency cleanup procedures have been developed to ensure proper agency notification (if necessary) and clean-up of any spills to mitigate the potential impact of such occurrences.

Where grading must occur, temporary erosion control measures would be applied to stabilize disturbed soils. Permanent disturbances would be limited to installation of new structures. Human activity, soil disturbance, and temporary loss of vegetation and habitat would end after construction is complete. Following construction, disturbed areas would be restored to pre-construction conditions.

4.4.6. Protection of Vegetation and Topsoil Not Cleared (16 NYCRR § 86.5(b)(5))

16 NYCRR § 86.5. (b) The applicant shall state: (5) what, if any, plans have been made to protect vegetation and topsoil not cleared, from damage from construction and operation of the facility;

Mitigation measures to be taken to avoid or minimize impacts to vegetation and soil not cleared by the Project during construction would include:

- Identifying and delineating sensitive areas (such as wetlands) where no disturbance or vehicular activities are allowed;
- Educating the construction workforce on respecting and adhering to the physical boundaries of off-limit areas;
- Employing BMPs during construction; and
- Maintaining an organized and safe work area within the designated construction sites.

ROW management would involve periodic maintenance to maintain early successional vegetation in accordance with NYPA's or National Grid's *Systemwide Long-Range Transmission Right-of-Way Vegetation Management Plan and Programs*, as applicable.

4.4.7. Explosives and Pollutants near Waterbodies (16 NYCRR § 86.5(b)(6))

16 NYCRR § 86.5. (b) The applicant shall state: (6) what, if any, provision has been made to protect fish and other aquatic life from harm from the use of explosives or pollutants in or near streams and other bodies of water;

All work, including the use of explosives, near streams and waterbodies will adhere to the pollutant control measures to be detailed in the EM&CP as well as contained in the SWPPPs in order to protect fish and other aquatic life from harm. The Applicant will avoid blasting in or in close proximity to streams and ponds to the greatest extent possible. Any necessary blasting activities, including the transport, handling, and disposal of explosives and explosives packaging, would be conducted in accordance with applicable safety regulations and codes and performed only by certified and licensed blasters. Examples of such safety procedures include (but are not limited to)

waiting to load holes with explosives until all holes in the given location are drilled, preventing construction vehicle access to areas with live explosives, and the use of and adherence to all warning horns and/or alarms signifying imminent blasts. Blasting mats would be used when necessary to minimize fly rock. In areas of dense and/or consolidated rock, pole anchors may be used to bolt the transmission poles to the rock in lieu of blasting. Prior to blasting, the Applicant would determine if there are any structures or underground facilities in the area close to the work location. Blasting would not be performed in areas where subsurface facilities such as wells are located close to work areas.

Blasting notification would consist of prior notice to affected property owners and tenants, as well as the use of appropriate warning horns (or equivalent) immediately prior to a blast to warn construction workers and others who may be near the construction site. When requested by local authorities, the Applicant would provide notice of planned blasting at least four hours in advance.

4.4.8. Pesticides and Herbicides (16 NYCRR § 86.5(b)(7))

16 NYCRR § 86.5. (b) The applicant shall state: 7) what, if any, pesticide or herbicide will be used in construction or maintenance of the proposed facility (including the volumes and manner of use);

During construction and operation, the Applicant would follow the procedures and specifications in their respective Systemwide Long-Range Transmission Right-of-Way Vegetation Management Plans and Programs. Buffer zones, sometimes referred to as “set-back distances” or “no-spray zones,” generally include sites adjacent to residences, streams, public resorts, scenic areas, restricted wetlands, open water, or other areas of special concern where direct application of herbicides and/or pesticides are prohibited. Any pesticides and herbicides determined to be used during construction and operation of the Project would be approved by NYSDEC for use in New

York, and the Applicant would follow NYSDEC laws and regulations and USEPA-registered label requirements in their use. All pesticide or herbicide application methods would be determined by the Applicant's ROW maintenance staff. Specific information regarding both NYPA and National Grid's planned use of herbicides, including volume and manner of use is detailed below. At this time the Applicant does not intend to use pesticides.

NYPA

For NYPA, herbicide locations for the MW-Patnode and Adirondack Substation portion of the Project will primarily be utilized in areas of new clearing and new construction (Haverstock Substation and associated new transmission), this will be determined by NYPA Forestry personnel. The remaining herbicide applications required to maintain the existing ROW will follow NYPA's SLRTVMP.

In the areas of new clearing or new construction all stumps of noncompatible species will be treated to establish control. All remaining sites that would normally be treated with herbicides during the normal maintenance cycle will continue to be treated on cycle during construction. A quality assurance and quality control inspection will occur the year following the normal maintenance herbicide application. At this time, all NYPA-owned areas of the Project will be reviewed to ensure proper control of noncompatible vegetation. If any areas are found to be unsatisfactory then retreatment will occur.

NYPA employs the process of IVM to ensure that tall growing trees and woody shrubs do not interfere with critically important electric power transmission facilities. IVM balances the use of cultural, biological, physical, and chemical procedures for controlling noncompatible tall growing

woody species while at the same time promoting the desirable low growing plant communities on the utility ROW. NYPA's SLRTVMP describes procedures for herbicide applications, along with a list of approved herbicides including rates and volumes which may be utilized during both construction and maintenance activities. Not all herbicides on the approved list will be used. Alternatives are provided for and the final decision is made by NYPA's Forestry personnel. All herbicide applications are made under the supervision of a certified pesticide applicator and are applied under all label standards for the products applied. Along the ROW, the following is the list of potential herbicides NYPA may use for maintenance along with their mix rates:

- LVF Mix – Method 240 SL 50 oz, Polaris/Arsenal 64 oz, Escort 4 oz., water 100 gal. 1% MSO for birch, box elder, conifer and other waxy leaf species. (40gpa)
- LVF Wetland Mix – Vastlan 2.5%, Nonionic surfactant 1%, Clean water (& dye) 97.25% (20gpa)
- LVF Regular Mix – Vastlan 2%, Milestone 0.25% (32 oz/100 gal), Escort 4 oz./100 equivalent, Nonionic Surfactant 1%, Clean water (& dye) 97.50% (20gpa)
- LVF Regular Mix – Vastlan 2.5%, Arsenal 0.5%, Nonionic Surfactant 1%, Clean water (& dye) 96% (20gpa)
- LVF Wetland Mix - Rodeo/Glyphosate 5.0%, Nonionic Surfactant 1%, Clean Water (& Dye) 94.0% (40gpa)
- LVF Regular Mix – Rodeo/Glyphosate 3.75%, Arsenal 0.5%, Nonionic Surfactant 1%, Clean Water (& Dye) 94.75% (15gpa)
- LVF Regular Mix - Krenite S 4.0%, Escort XP 4 oz./100 equivalent, Arsenal 0.25%, Surfactant 1% (150gpa)

- LVF Late Season / Resistant Target Mix – Rodeo/Glyphosate 3.75%, Arsenal 0.5%, Escort XP 4oz/100 equivalent, Nonionic Surfactant 1%, Clean Water (& Dye) 94.75% (15gpa)
- CTR Growing Season - Glyphosate/Rodeo 30%, Arsenal 3%, Propylene Glycol 10%, Clean Water 57% (8gpa)
- CTR Dormant Season - Garlon 4 1 gal, Stalker 4 oz., Basal Oil 3 gal (10gpa)
- CTR Wetland Mix - Rodeo/Glyphosate 50%, Propylene Glycol 10%, Clean Water 40% (4gpa)
- CTR Growing Season and Wetland Mix – Vastlan 100% (9qtpa)

*Maximum use rates in parenthesis after mix rates.

At substations, NYPA will perform herbicide applications for the bare ground weed control of pre-emergent and post-emergent vegetation inside substations on all stone areas. This will be only for maintenance of these areas and not for any construction activities. This vegetation will be controlled by both pre-emergent and post-emergent chemical methods employing the use of soil sterilant and selective use herbicides. Application will be under the direct supervision of a certified pesticide applicator in New York State.

The following is a list of approved herbicide formulations including mix rates which may be utilized during substation maintenance. Not all herbicides on the approved list will be used. Alternatives are provided for and the final decision is made by NYPA's Forestry personnel. All herbicide applications are applied under all label standards for the products applied.

- Pre-Early Post Emergent Formulation # 1, EsplAnade 200SC @ 5 oz/acre, +Oust Extra @ 3.5 oz/acre

- Pre-Early Post Emergent Formulation # 2 , EsplAnde 200SC @ 5 oz/acre, +Oust Extra @ 3.5 oz./acre , + Rodeo @ 1 gal/99 gallons water
- Pre-Early Post Emergent Formulation #3, Oust Extra @ 3.5 oz/acre, + Pendulum AquaCap @ 4 qts/acre
- Post-Emergent Formulation, 1 gallon Rodeo + 99 gallons water
- Post-Emergent Formulation for Dam Downstream Areas, 1 gallon Rodeo + 99 gallons water, +16 oz. of Arsenal Powerline
- Post-Emergent Formulation for Dam Upstream Areas & Riprap Swales, 1 gallon Rodeo + 99 gallons water

National Grid

For National Grid, the locations where herbicides are to be applied will be determined by the National Grid Transmission Forester on a site-by-site basis during the EM&CP phase of the Project. Overall, short-term and long-term herbicide application required to maintain the ROW will be in accordance with the "National Grid Transmission Right-of-Way Management Program" approved by the Commission and the Certificate Conditions.

In areas requiring tree clearing, the remaining stumps of those species that re-sprout from the stump or root will immediately be treated with herbicide to prevent re-sprouting. All mowed access and work pads (except those in sensitive locations and no-treat buffer zones) will be treated with a cut stubble treatment to prevent the re-sprouting of woody stemmed species. Sites that would normally be treated with herbicide during on-cycle maintenance will be treated with herbicide during construction. Since stump treatment does not produce 100 percent efficacy, it is anticipated that a

treatment may be needed to suppress re-sprouting prior to the next regular maintenance cycle. At the completion of the Project, the final walk down will include the inspections of herbicide efficacy. If required, a follow-up foliar application will be performed on the impacted portion of the right-of-way. If a follow-up application is found to be unnecessary, the ROW will be treated again on the regular maintenance cycle. It is noted that a colored dye may be added to the herbicide mixture to provide a visual indication of which stumps have received herbicide treatment. The dye will be added to the herbicide mixture on site at a rate of approximately 1 drop per quart.

All herbicide applications shall be made under the supervision of a NYS Certified Applicator who shall own or be employed by a NYS registered business. The supervising certified applicator shall be familiar with and understand the provisions of this certificate and shall be present in the field to ensure compliance. All herbicide applications shall be conducted in a safe, effective manner in conformity with Federal and State laws, regulations and permit conditions.

National Grid's approved list of herbicides (including rates/volumes) that may be utilized during clearing and maintenance activities are shown in Table (note that some herbicides on this list may not be utilized on the Project and are provided as an alternative depending on site conditions, weather, species, etc.).

Table 4-24. National Grid Approved List of Herbicides

App Type	Code	Rate	End Use	Custom Blend Concentrate	15 makes	Max Use Rate (GPA)	Notes
Cut Stump Basal	D	Pathfinder II	Packaged Product	n/a	n/a	10.7	
Cut Stump/Basal	U	20% Garlon 4 Ultra, 3% Polaris, 77% Bark Oil EC	20% Garlon 4 Ultra, 3% Polaris, 77% Bark Oil EC	20% Garlon 4 Ultra, 3% Polaris, 77% Bark Oil EC	RTU	10	
Cut Stump/Basal	Ua	20% Garlon 4 Ultra, 1% Polaris, 1% Milestone, 78% Bark Oil EC	20% Garlon 4 Ultra, 1% Polaris, 1% Milestone, 78% Bark Oil EC	20% Garlon 4 Ultra, 1% Polaris, 1% Milestone, 78% Bark Oil EC	RTU	5.46-10.9	
Cut Stump/Basal - Wetland	C	50% Rodeo, 50% Water	50% Rodeo, 50% Water	n/a	n/a	4	NO Custom Blend
Cut Stump/Basal - Wetland	Cx	Vastlan 100%	Vastlan 100%	n/a	n/a	6 quarts/acre in wetland (9 quarts/acre in upland/ terrestrial)	
Hydraulic - (HSF)	F	64 oz Vastlan, 32 oz Tordon 22K, 6.4 oz Milestone, 64 oz surfactant / 100 gal	0.5% Vastlan, 0.25% Tordon 22K, 0.05% Milestone, 0.5% Aqufact surfactant	35% Vastlan, 17.5% Tordon 22K, 3.5% Milestone, 35% surfactant	1050	109	
Hydraulic - (HSF)	Nt	48 oz Vastlan, 32 oz Tordon 22K, 6.4 oz Milestone, 2 oz Escort, 64 oz surfactant / 100 gal	0.375% Vastlan, 0.25% Tordon 22K, 0.05% Milestone, 2 oz Escort/100, 0.5% Aqufact surfactant	26.25% Vastlan, 17.5% Tordon 22K, 3.5% Milestone, 35% surfactant, 189 oz Escort/pallet	1050	109	
Hydraulic - (HF)	Ta	1.5 gal Krenite, 12 oz Polaris, 6.4 oz Milestone, 2 oz Escort, 0.25 gal surfactant / 100	1.5% Krenite, .09% Polaris, 0.05% Milestone, 2 oz Escort/100, 0.25% Aqufact surfactant	75% Krenite, 4.5% Polaris, 2.5% Milestone,	750	109	

App Type	Code	Rate	End Use	Custom Blend Concentrate	15 makes	Max Use Rate (GPA)	Notes
				12.5% surfactant, 135 oz Escort/pallet			
Hydraulic - (HF)	Qt	1 gal Krenite, 12 oz Polaris, 9 oz Method 240 SL, 2 oz Escort, 0.5 gal surfactant / 100	1% Krenite, .09% Polaris, .07% Method, 2 oz Escort/100, 0.5% Aqufact surfactant	50% Krenite, 4.5% Polaris, 3.5% Method 240 SL, 25% surfactant, 135 oz Escort/pallet	750	200	
Hydraulic - (HF)	Va	48 oz Vastlan, 12 oz Polaris, 10 oz Method 240 SL, 2 oz Escort, 0.5 gal surfactant / 100	0.375% Vastlan, 0.094% Polaris, 0.078% Method, 0.5% Aqufact surfactant, 2 oz Escort / 100	26.25% Vastlan, 6.58% Polaris, 5.46% Method 240 SL, 35% Aqufact, 189 oz Escort/pallet	1050	180	
Hydraulic - (HF)	Vb	48 oz Vastlan, 12 oz Polaris, 5 oz Milestone, 2 oz Escort, 0.5 gal surfactant / 100	0.375% Vastlan, 0.094% Polaris, 0.039% Milestone, 0.5% Aqufact surfactant, 2 oz Escort / 100	26.25% Vastlan, 6.58% Polaris, 2.73% Milestone, 35% Aqufact, 189 oz Escort/pallet	1050	140	
Hydraulic - Wetland	Y	2 gal Rodeo, 0.5 gal surfactant / 100	2% Rodeo, 0.5% surfactant	n/a	n/a	100	NO Custom Blend
Hydraulic - Wetland	Vc	Vastlan 1.5%, Nonionic surfactant 1%	Vastlan 1.5%, Nonionic surfactant 1%		n/a	100	NO Custom Blend
Low Volume	M	3.75 gal Rodeo, 32 oz Polaris, 32 oz Milestone, 1 gal surfactant / 100	3.75% Rodeo, 0.25% Polaris, 0.25% Milestone, 1% Aqufact surfactant	62.5% Rodeo, 4.167% Polaris, 4.167% Milestone, 16.667% surfactant	250	21.8-43.6	

App Type	Code	Rate	End Use	Custom Blend Concentrate	15 makes	Max Use Rate (GPA)	Notes
Low Volume	H	5 gal Krenite, 32 oz Polaris, 32 oz Milestone, 4 oz Escort, 1 gal surfactant / 100	5% Krenite, 0.25% Polaris, 0.25% Milestone, 4 oz Escort/100, 1% Aqufact surfactant	66.67% Krenite, 3.33% Polaris, 3.33% Milestone, 1% surfactant, 72 oz Escort/pallet	200	21.8	
Low Volume	Pt	3 gal Krenite, 51 oz Method 240 SL, 32 oz Polaris, 4 oz Escort, 1 gal surfactant / 100	3% Krenite, 0.4% Method 240 SL, 0.25% Polaris, 4 oz Escort/100, 1% Aqufact surfactant	60% Krenite, 8% Method 240 SL, 5% Polaris, 1% surfactant, 108 oz Escort/pallet	300	35.15	
Low Volume	V	5 gal Rodeo, 32 oz Milestone, 4 oz Escort, 1 gal surfactant	5% Rodeo, 0.25% Milestone, 4 oz Escort/100, 1% Aqufact surfactant	66.67% Rodeo, 13.33% surfactant, 72 oz Escort/pallet	200	21.8	
Low Volume	Wa	2 gal Vastlan, 0.25 gal Milestone, 0.5 gal Polaris, 4 oz Escort, 1 gal surfactant / 100	2% Vastlan, 0.25% Milestone, 0.5% Polaris, 4 oz Escort/100, 1% Aqufact surfactant	30% Vastlan, 3.75% Milestone, 7.5% Polaris, 15% Aqufact surfactant, 81 oz Escort/pallet	225	21.8	
Low Volume	Wb	0.5 gal Polaris, 0.5 gal Method 240 SL, 6 oz Escort, 1 gal surfactant / 100	0.5% Polaris, 0.5% Method 240 SL, 6 oz Escort/100, 1% Aqufact surfactant	15% Polaris, 15% Method 240 SL, 30% Aqufact surfactant, 243 oz Escort/pallet	450	28	
Low Volume - Wetland	K	5 gal Rodeo, 1 gal surfactant	5% Rodeo, 1% surfactant	n/a	n/a	40	NO Custom Blend
Low Volume - Wetland	Wc	Vastlan 2.5%, Nonionic surfactant 1%	Vastlan 2.5%, Nonionic surfactant 1%	n/a	n/a	60	NO Custom Blend
Cut Stubble	BB	64 oz Tordon 22K, 16 oz Polaris, 7 oz Milestone, 32 oz surfactant	64 oz Tordon 22K, 16 oz Polaris, 7 oz Milestone, 32 oz Aqufact surfactant - rate/acre	50% Tordon 22K, 12.5% Polaris, 5.46%	RTU	1 gallon conc/acre	

App Type	Code	Rate	End Use	Custom Blend Concentrate	15 makes	Max Use Rate (GPA)	Notes
				Milestone, 25% Aqufact surfactant			
Cut Stubble	Bc	64 oz Tordon 22K, 16 oz Polaris, 10 oz Method, 32 oz surfactant	64 oz Tordon 22K, 16 oz Polaris, 10 oz Method, 32 oz Aqufact surfactant - rate/acre	50% Tordon 22K, 12.5% Polaris, 7.81% Method, 25% Aqufact surfactant	RTU	1 gallon conc/acre	

4.4.9. Appurtenant Structures (16 NYCRR § 86.5(b)(8))

16 NYCRR § 86.5. (b) The applicant shall state: (8) what, if any, plans have been made to locate and design appurtenant structures to minimize the environmental impact of the structures (including visual and noise disturbance); and

The Project proposes the installation of one new 230/345 kV facility (MW-Patnode), a 345 kV facility (Adirondack-Porter), and two new substations (Haverstock and Willis 345/230 kV) for MW-Patnode, and two new substations (Adirondack and Austin Road) and two new substation expansions (Marcy and Edic) for Adirondack-Porter. The locations of these proposed facilities have been included in the environmental studies completed to date.

The proposed Haverstock Substation would be located on an undeveloped parcel and require approximately 8.0 acres of forest clearing. Approximately 0.4 acres of wetlands may be impacted to develop the site. None of the potentially impacted wetlands are state-regulated wetlands. Two tributaries totaling approximately 778 feet are also present on the Haverstock Substation site. No RTE species were found within the substation site. The Applicant has completed cultural resources surveys for the Haverstock Substation, and the results were submitted to SHPO on 2/28/2022. The Phase IB archaeological survey and the Phase II site evaluations indicate that there will be no archaeological impacts at the Haverstock Substation. However, concurance from SHPO is still pending. As stated in Section 4.3.2.6, the Haverstock Substation will alter the character of the existing view. However, the substation's visual impact will be limited due to the small number of viewers traveling along Fregoe Road, which dead ends at the Snell Lock, and is somewhat mitigated by the presence of existing transmission infrastructure in the area. As stated in Section 4.3.2.8, the Applicant will implement an appropriate design for the Haverstock Substation to meet sound level design goals in accordance with DPS and NYSDEC guidance documents.

The proposed Willis 345/230 kV, Adirondack, and Austin Road Substations are on undeveloped land and would require 0 acres, 2.6 acres, and 19.3 acres of forest clearing, respectively. None of these substations are expected to impact wetlands. The Edic and Marcy Substation expansions are developed, open space and will require no tree clearing. No RTE species were found in any of these areas. As stated in Section 4.3.2.6, the Austin Road Substation will alter the character of the existing view. However, the abundance of forest in this area will fully or substantially screen view of the substation from viewpoints other than this specific location along Austin Road. As stated in Section 4.3.2.8, the Applicant will implement an appropriate design for the Austin Road Substation to meet sound level design goals in accordance with DPS and NYSDEC guidance documents.

4.4.10. Cleanup and Restoration (16 NYCRR § 86.5(b)(9))

16 NYCRR § 86.5. (b) The applicant shall state: (9) what, if any, provisions have been made for cleanup and restoration of the project area after construction.

Cleanup and restoration activities would be conducted as construction work progresses along the line. Once construction is complete, final site restoration would be conducted as required at any remaining disturbed sites in accordance with the approved EM&CP. In accordance with the General Guidelines for EM&CPs and issued Certificate Ordering Clauses, the Applicant would prepare detailed plan and profile drawings and an associated narrative depicting and describing restoration activities as part of its EM&CP to be filed with the PSC at a later date.

Cleanup activities would involve removal of all debris from the Proposed ROWs, with the exception of vegetation debris. Restoration activities would involve regrading disturbed soils to restore contours to their pre-construction condition or to match adjacent contours, repair of all streambeds and banks, and site stabilization and vegetation. Any stockpiled soil would be evenly

redistributed near its former location within the Proposed ROWs. In areas with active agricultural land, restoration would occur in accordance with NYSDAM guidelines or alternative methods agreed to with certain landowners. Therefore, adverse impacts on active agricultural land would be minimized to the extent practicable. Site stabilization and restoration would be achieved through seeding and mulching. All erosion control devices would be removed following revegetation.

4.5. Underground Facilities *(16 NYCRR § 86.5(c))*

16 NYCRR § 86.5. (c)(1) If any portion of the proposed facility is to be constructed underground, the applicant shall state what, if any, provisions have been made to avoid clearance of the entire right-of-way. If the clearance proposed will go to the mineral soil, the applicant shall state:(i) the width of the clearance; (ii) what, if any, provisions have been made for the replacement of topsoil removal during construction; (iii) what, if any, provisions have been made for removing excess soil excavated during construction; and (iv) what, if any, plans have been made for stabilizing the cleared area with vegetation and erosion control devices. (2) If any underground portion of the proposed facility will be constructed in or adjacent to a stream or other body of water, the applicant shall state: (i) what, if any, plans have been made to prevent erosion of the banks; (ii) what, if any, techniques (such as cofferdams) will be used; and (iii) what, if any, plans have been made to use the water from such streams or other bodies of water for pipe-testing or other purposes (including volumes of water involved and methods for release of water once used).

No portion of the existing MW-Patnode and Adirondack-Porter lines is underground, and no portion of the Project is proposed to be built underground. As discussed in Exhibit 3, underground alternatives were determined to not be feasible for this Project.

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EXHIBIT 4 FIGURES