



RIVERSIDE SOLAR, LLC

Matter No. 21-00752

900-2.12 Exhibit 11

Terrestrial Ecology

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Appendices

Appendix 11-1. USFWS IPaC Consultation

Appendix 11-2. Invasive Species Management and Control Plan

Acronym List

AES	The AES Corporation, Inc.
BBS	Breeding Bird Survey
BCI	Bat Conservation International
BMPs	Best Management Practices
CBC	Christmas Bird Count
CWA	Clean Water Act
DBH	diameter at breast height
ERM	Environmental Resource Mapper
IBA	Important Bird Area
IPaC	Information for Planning and Consultation
ISMCP	Invasive Species Management and Control Plan
LOD	Limits of Disturbance
NYNHP	New York Natural Heritage Program
NYSAGM	New York State Department of Agricultural and Markets
NYSDEC	New York State Department of Environmental Conservation
ORES	Office of Renewable Energy Siting
POI	point of interconnection
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TNC	The Nature Conservancy
USCs	Uniform Standards and Conditions
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

Glossary Terms

Applicant	Riverside Solar, LLC, a subsidiary of The AES Corporation, Inc. (AES), the entity seeking a siting permit for the Facility from the Office of Renewable Energy Siting (ORES) under Section 94-c of the New York State Executive Law.
Facility	The proposed components to be constructed for the collection and distribution of energy for the Riverside Solar Project, which includes solar arrays, inverters, electric collection lines, and the collection substation.
Facility Site	The parcels encompassing Facility components which totals 1,168 acres in the Towns of Lyme and Brownville, Jefferson County, New York (Figure 2-1).
Limits of Disturbance	The area to which construction impacts will occur, totaling approximately 628 acres.
Study Area	In accordance with the Section 94-c Regulations, the Study Area for the Facility includes a radius of five miles around the Facility Site boundary, unless otherwise noted for a specific resource study or Exhibit. The 5-mile Study Area encompasses 79,169 acres, inclusive of the 1,168-acre Facility Site.
Towns	The Towns of Lyme and Brownville, Jefferson County, New York.

Exhibit 11: Terrestrial Ecology

This Exhibit provides information required in accordance with the requirements of §900-2.12 of the Section 94-c Regulations. Included are descriptions of the various plant communities found at the Facility Site, descriptions of any unique or protected vegetation, and the methods the Applicant will employ to minimize impacts to these vegetation resources.

11(a) Existing Conditions

The Facility Site, as well as adjacent properties within 100-feet of areas to be disturbed by construction and the Facility's point of interconnection (POI), is located within the Ontario Lowlands ecological region (ecoregion), comprising a portion of the Eastern Great Lakes Lowlands ecoregion, as defined by Bryce et al., (2010). This ecoregion separates the Finger Lakes Uplands and Gorges to the south from the Erie/Ontario Lake Plain to the north. Historically, this region was dominated by beech-maple forests, but only scattered woodlots remain due to significant logging and land clearing to support the high agriculture activity of the area. Soils in the Facility Site are loamy, moist Alfisols derived from Limestone and calcareous shale that support dairy farming, livestock, and are suitable for growing fruits, vegetables, and other specialty crops (Bryce et al., 2010).

The Facility Site is comprised predominantly of agricultural land with smaller portions of successional shrubland, hedgerows, and forested land. Historic aerial imagery from 2018, 2017, 2016, 2013, 2011, 2009, 2008, 2006, 2005, 2003, 1994, and 1985 depicts agricultural uses within open areas of the Facility Site and adjacent properties within 100-feet dating back to at least the mid-1980s. Agricultural areas mostly consist of corn and hay fields. The Facility Site was classified through review of the most recent National Land Cover Database (NLCD, 2016), aerial photography, and onsite observations during field visits conducted in June, September, and December 2020.

(1) Plant Communities

The plant communities identified within the Facility Site and adjacent areas are common in the State of New York (Edinger, et al. 2014). Descriptions of plant communities and typical plant species found in each community, as well as those species observed during field visits, are provided below and summarized in Table 11-1.

Table 11-1. Representative Plant Species and Vegetation Community Types

Common Name	Scientific Name
Row Crops	
Corn	<i>Zea mays</i>
Hay/Pasture	
Reed canary grass	<i>Phalaris arundinacea</i>
Timothy grass	<i>Phleum pratense</i>
Maple-basswood Mesic Forest	
Sugar maple	<i>Acer saccharum</i>
American basswood	<i>Tilia americana</i>
White ash	<i>Fraxinus americana</i>
Eastern hophornbeam	<i>Ostrya virginiana</i>
Yellow birch	<i>Betula allegheniensis</i>
Northern red oak	<i>Quercus rubra</i>
Red maple-hardwood swamp	
Red Maple	<i>Acer rubrum</i>
Green ash	<i>Fraxinus pennsylvanica</i>
American elm	<i>Ulmus americana</i>
Yellow birch	<i>Betula allegheniensis</i>
American hornbeam	<i>Carpinus caroliniana</i>
Eastern white pine	<i>Pinus strobus</i>
Swamp white oak	<i>Quercus bicolor</i>
Shagbark hickory	<i>Carya ovata</i>
Northern spicebush	<i>Lindera benzoin</i>
Southern arrowwood	<i>Viburnum dentatum</i>
Silky dogwood	<i>Corus amomum</i>
Sensitive fern	<i>Onoclea sensibilis</i>
Spruce-fir swamp	
Red spruce	<i>Picea rubens</i>
Balsam fir	<i>Abies balsamea</i>
Yellow birch	<i>Betula allegheniensis</i>
Eastern white pine	<i>Pinus strobus</i>
Black ash	<i>Fraxinus nigra</i>
Tamarack	<i>Larix laricina</i>

Table 11-1. Representative Plant Species and Vegetation Community Types

Common Name	Scientific Name
Northern white cedar	<i>Thuja occidentalis</i>
White ash	<i>Fraxinus americana</i>
Northern swamp dogwood	<i>Cornus racemosa</i>
Pin cherry	<i>Prunus pensylvanica</i>
Mountain holly	<i>Nemopanthus mucronatus</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>
Various sedges	<i>Carex</i> spp
Common wood-sorrel	<i>Oxalis montana</i>
Morrow's honeysuckle	<i>Lonicera morrowii</i>
Successional Old Field/Grassland	
Goldenrods	<i>Solidago</i> spp
Timothy grass	<i>Phleum pratense</i>
Queen Anne's lace	<i>Daucus carota</i>
Bedstraw	<i>Galium</i> spp
Common milkweed	<i>Asclepias syriaca</i>
Honeysuckles	<i>Lonicera</i> spp
Dogwoods	<i>Cornus</i> spp
American vetch	<i>Vicia americana</i>
White Clover	<i>Trifolium repens</i>
Common dandelion	<i>Taraxacum officinale</i>
Successional Shrubland	
Red osier dogwood	<i>Cornus alba</i>
Gray dogwood	<i>Cornus racemosa</i>
White meadowsweet	<i>Spiraea alba</i>
Morrow's honeysuckle	<i>Lonicera morrowii</i>
Disturbed/Developed Land	
Multiflora rose	<i>Rosa multiflora</i>
Common buckthorn	<i>Rhamnus cathartica</i>
Emergent Wetland	
Narrowleaf cattail	<i>Typha angustifolia</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Shallow Emergent Marsh	

Table 11-1. Representative Plant Species and Vegetation Community Types

Common Name	Scientific Name
Reed canary grass	<i>Phalaris arundinacea</i>
Narrowleaf cattail	<i>Typha angustifolia</i>
White meadowsweet	<i>Spiraea alba</i>
Fox sedge	<i>Carex vulpinoidea</i>
Soft rush	<i>Juncus effusus</i>
Gray dogwood	<i>Cornus racemosa</i>
Spotted touch-me-not	<i>Impatiens capensis</i>
Forested Wetland	
American elm	<i>Ulmus americana</i>
Swamp white oak	<i>Quercus bicolor</i>
Black willow	<i>Salix nigra</i>
Black spruce	<i>Picea mariana</i>
Gray dogwood	<i>Cornus racemosa</i>
Morrow's honeysuckle	<i>Lonicera morrowii</i>
Shrub Swamp	
White meadowsweet	<i>Spiraea alba</i>
American elm	<i>Ulmus americana</i>
Swamp white oak	<i>Quercus bicolor</i>
Black willow	<i>Salix nigra</i>
Gray dogwood	<i>Cornus racemosa</i>
Morrow's honeysuckle	<i>Lonicera morrowii</i>

Agricultural Land

Active agricultural land that includes cropland/field crops and cropland/row crops is present throughout the majority of the Facility Site. These ecological communities are “either created and maintained by human activities or are modified by human influence” and are therefore altered from their original state prior to human influence (Edinger et al., 2014). Both cropland/field crops and cropland/row crops are found throughout New York State and have a ranking status of “unranked cultural” by the New York Natural Heritage Program (NYNHP). Based on observations and data collected during surveys, the dominant row crop established within the Facility Site is corn (*Zea mays*), and the dominant plants in hay fields within the Facility Site is reed canary grass (*Phalaris arundinacea*) and Timothy grass (*Phleum pratense*).

More information regarding agricultural resources within the Facility Site can be found in Exhibit 15 of the Application.

Forested Land

Forested communities within the Facility Site are predominantly comprised of deciduous species including maple-basswood mesic forests, red maple-hardwood swamps, spruce-fir swamps, and successional northern hardwoods (Edinger et al., 2014). The largest forest patches are in the western and eastern portions of the Facility Site and are approximately 42 and 79 acres, respectively, and are not connected to one another outside the Facility Site but do extend offsite.

The Nature Conservancy (TNC) has defined matrix forest blocks as large contiguous areas capable of supporting species that require interior forest conditions (Anderson and Bernstein, 2003). None of the forests at the Facility Site are part of a TNC matrix forest block or serve as a corridor to a TNC matrix forest block. A small percentage of the forested land at the Facility Site can be classified as edge forest, which is defined as forested land within 300 feet of the forest's edge along agricultural land and roads. Refer to Section 11(b) for further discussion.

Maple-basswood mesic forest (Heritage Rank: G4 S3 [Apparently secure globally, typically 21 to 100 occurrences in New York State])

Maple-basswood mesic forest communities occur on moist, well-drained soils with a neutral pH. The dominant trees include sugar maple (*Acer saccharum*), American basswood (*Tilia americana*), and white ash (*Fraxinus americana*). Common associates occurring in the community are eastern hophornbeam (*Ostrya virginiana*), yellow birch (*Betula allegheniensis*), northern red oak (*Quercus rubra*), and American beech (*Fagus grandifolia*). The shrub layer typically includes alternate-leaved dogwood (*Cornus alternifolia*) and witch hazel (*Hamamelis virginiana*). A high diversity of calcium-rich indicator herbs are predominant in the ground layer and are usually correlated with calcareous bedrock. Characteristic species of the herbaceous layer include wild leek (*Allium tricoccum*), lady fern (*Athyrium filix-femina*), blue cohosh (*Caulophyllum thalictroides*), false Solomon's seal (*Maianthemum racemosum*), and bloodroot (*Sanguinaria*).

Typical Maple-basswood mesic forest communities identified during environmental field surveys at the Facility Site include sugar maple, American basswood, shagbark hickory (*Carya ovata*), eastern hophornbeam, and northern red oak.

Red maple-hardwood swamp (Heritage Rank G5 S4S5 [Demonstrably secure globally, apparently or demonstrably secure in New York State])

Red maple-hardwood swamps occur in poorly drained depressions, usually on inorganic soil, but occasionally on muck or shallow peat. It is a broadly defined community with several regional variants. Generally, red maple (*Acer rubrum*) is either the only canopy dominant or codominant with one or more hardwoods, including green ash (*Fraxinus pennsylvanica*), American elm (*Ulmus americana*), and yellow birch. Other trees present typically include American hornbeam (*Carpinus caroliniana*) and eastern white pine (*Pinus strobus*). The shrub layer is usually well-developed and may be quite dense due to characteristic shrubs such as northern spicebush (*Lindera benzoin*), southern arrowwood (*Viburnum dentatum*), and silky dogwood (*Corus amomum*). The herbaceous layer may be quite diverse and is often dominated by ferns, including sensitive fern (*Onoclea sensibilis*).

Typical Red maple-hardwood swamp communities identified during environmental field surveys at the Facility Site include red maple, swamp white oak (*Quercus bicolor*), shagbark hickory, American hornbeam, and American hophornbeam.

Spruce-fir swamp (Heritage Rank G3G4 S3 [Apparently secure globally, either rare or local throughout its range in New York State])

A conifer or sometimes mixed swamp that occurs on acidic muck to shallow peat. This community typically occurs in a drainage basin, and in some cases filling the basin. These swamps are usually dense, with a fairly closed canopy. The dominant trees are usually red spruce (*Picea rubens*) and balsam fir (*Abies balsamea*), with either one being dominant or potentially codominant. Other trees with low percent cover include yellow birch, white pine, black ash (*Fraxinus nigra*), tamarack (*Larix laricina*), and northern white cedar (*Thuja occidentalis*). The shrub layer is often sparse, with characteristic species such as mountain holly (*Nemopanthus mucronatus*) and saplings of the canopy trees. Characteristic herbs are cinnamon fern (*Osmunda cinnamomea*), various sedges (*Carex* spp.), and common wood-sorrel (*Oxalis montana*).

Typical Spruce-fir swamp communities identified during environmental field surveys at the Facility Site include red spruce, white ash, northern swamp dogwood (*Cornus racemosa*), Morrow's honeysuckle (*Lonicera morrowii*), and pin cherry (*Prunus pensylvanica*).

Successional Old Field

This community is defined as a meadow dominated by forbs and grasses that occur on sites that have been cleared or plowed due to agriculture or development, and subsequently abandoned. Most old field communities are irregular and infrequently mowed. As such, conditions favor the establishment and spread of representative old field species. Characteristic herbaceous species include many goldenrods (*Solidago* spp.), timothy grass, Queen Anne's lace (*Daucus carota*), bedstraw (*Galium* spp.), and common milkweed (*Asclepias syriaca*). Shrubs can be present within old field communities but typically represent less than 50 percent of the community (Edinger et al., 2014). Common shrubs found in this community are honeysuckles (*Lonicera* spp.) and dogwoods (*Cornus* spp.). If not maintained by infrequent mowing, this relatively short-lived community succeeds to a successional shrubland, woodland, or forest community.

Typical vegetation species recorded during environmental field surveys at the Facility Site include timothy grass, American vetch (*Vicia americana*), white clover (*Trifolium repens*), and common dandelion (*Taraxacum officinale*).

Successional Shrubland

Successional shrubland consists of shrublands that have established after a site has been cleared (e.g., for agriculture, logging, or development) or was disturbed by natural events. This community is defined by at least a 50 percent cover of shrub species (Edinger et al., 2014). Successional shrublands are transitory communities between old field and successional forest communities. Characteristic shrubs found within the Facility Site are red osier dogwood (*Cornus alba*), gray dogwood (*Cornus racemosa*), white meadowsweet (*Spiraea alba*), and Morrow's honeysuckle.

Disturbed/Developed Land

Disturbed/developed land is characterized by the presence of buildings, roadways, quarries, residential areas, commercial properties, industrial sites, and maintained greenspaces (e.g.,

mowed lawns, gardens, parks) or other areas with extreme anthropogenic influence (Edinger et al., 2014). Developed land communities in the Facility Site include mowed lawn (Heritage Rank: unranked cultural), mowed roadside/pathway (Heritage Rank: unranked cultural), and rural structure exterior (Heritage Rank: unranked cultural). Vegetation within these areas tend to be sparse when not artificially planted or influenced. However, when present, certain species that thrive in disturbed environments act as pioneer species or become directly or indirectly introduced. Often in developed areas, non-native plant species flourish in a community which generally characterizes old field appearances and functions. Non-native species such as multiflora rose (*Rosa multiflora*), common buckthorn (*Rhamnus cathartica*), and various upland grasses generally populate these developed areas (Edinger et al., 2014).

Farm Pond/Artificial Pond

Two farm pond/artificial pond community types are located within the Facility Site. These ponds are 0.25-acres and 0.15-acres in size (0.35-acres total) and are less than 150 feet apart. They are manmade and maintained as farm ponds on agricultural property. These community types are common throughout New York State and are unranked by the NYNHP.

Riverine Communities

Riverine communities delineated within the Facility Site include one unconfined river (Heritage Rank G4S3S4), six intermittent and two ephemeral streams (Heritage rank: G4 S4), and one ditch/artificial intermittent stream (Heritage Rank: unranked cultural). A total of 11,195 feet of stream was delineated at the Facility Site during field evaluations.

As described by Edinger et al. (2014), unconfined rivers cover a broad variety of low gradient streams. The unconfined river identified onsite is Horse Creek; a medium-sized, perennial waterbody which extends for 1,542 feet in the western portion of the Facility Site. Perennial streams tend to flow throughout the year, except during severe drought conditions.

Intermittent streams include “the community of a small, intermittent, or ephemeral streambed in the uppermost segments of streams systems” (Edinger et al., 2014). Within this riverine community type, streams can be further classified by their usual level of flow regime.

Intermittent streams flow only during certain times of year from alternating springs, snow melt, or from seasonal precipitation runoff. Ephemeral streams flow sporadically and are entirely dependent on precipitation from storm events or periodic snow melts. They tend to flow above

the water table and are often found as drainage features adjacent to or within the headwaters of a more major stream system. Within the Facility Site, six streams were classified to have a flow regime of intermittent, while two streams were classified as ephemeral. Stream substrates typically included silt and clay, with some streams containing cobble or gravel, with a depth primarily between 0-6 inches. Although aquatic vegetation grows within some of these communities, emergent wetland vegetation often grows along the periphery of riverine communities. Typical emergent wetland species associated with riverine communities within the Facility Site include reed canary grass. Waterbody and stream habitat types are further described in Exhibit 13.

Palustrine Communities

Palustrine communities consist of non-tidal, perennial wetlands which are characterized by the presence of emergent vegetation (Edinger et al., 2-14). Palustrine wetland communities delineated within the Facility Site include shallow emergent marshes (G5 S5), deep emergent marshes (Heritage Rank G5 S5), shrub swamps (Heritage Rank: G5 S5), red maple-hardwood swamps (Heritage Rank G5 S4S5), and spruce-fir swamp (Heritage Rank G3G4 S3). A total of 104.22 acres of palustrine wetlands were delineated onsite. Emergent marshes within the Facility Site are dominated by reed canary grass, narrowleaf cattail, white meadowsweet, fox sedge (*Carex vulpinoidea*), soft rush (*Juncus effusus*), gray dogwood, and spotted touch-me-not (*Impatiens capensis*). Shrub swamps observed within the Facility Site were dominated by gray dogwood, swamp white oak, American elm, black willow, Morrow's honeysuckle, and white meadowsweet. Dominant vegetation in the forested wetlands observed within the Facility Site typically included American elm, swamp white oak, black willow, and black spruce in the tree stratum, and gray dogwood and Morrow's honeysuckle within the shrub stratum. Wetland habitat types are further described in Exhibit 14.

Invasive Species

Invasive vegetative species are of special concern as their spread is likely to cause some degree of environmental, human health, or economic harm. The result can be a rapid spread of invasive species populations, which can alter ecological communities and diminish biological diversity. Normal dispersal methods for invasive plant species include wind, water, and wildlife; however, anthropogenic means of spread (e.g., construction activity) have the potential to accelerate their distribution. An Invasive Species Management and Control Plan (ISMCP) has

been drafted for the Facility as was developed in accordance with 6 NYCRR Part 575 (Appendix 11-2). The intent of the ISMCP is to outline a clear plan to minimize the spread of invasive species that are present within the Facility. As part of the Project field efforts, ecological resource surveys were performed for the Riverside Solar Project in the summer of 2020. During ecological resource surveys and wetland and stream delineations, TRC biologists documented occurrences of invasive species within the Project Area to be utilized as a baseline survey for future monitoring efforts.

11(b) Temporary and Permanent Impacts to Vegetative Communities

Construction and operation of the Facility will result in unavoidable temporary and minor permanent impacts to agricultural land (pasture and row crops), forested land, and successional shrubland. Areas that are temporarily impacted will be restored to their original condition following the completion of construction. Permanent impacts to plant communities will occur in areas designated for permanent operation of the Facility. Locations of Facility components and corresponding vegetative community types that would be impacted as a result of construction and operation are shown on Figure 11-1 and described in further detail below. Table 11-2 provides the approximate acreage of the vegetative communities that would be affected during construction and operation of the Facility. Calculations of specific impacts to these communities within the Facility Site are based on the Design Drawings included as Appendix 5-1 of Exhibit 5.

Table 11-2. Vegetation Type Construction and Operation Impacts

Vegetative Type	Component	Impacts (Acres)	
		Temporary	Permanent
Cropland/Row Crops	Limits of Disturbance (LOD)	4.72	-
	Laydown Yard	0.97	-
	Gravel Area	-	0.02
	Array Area	-	19.69
	Fence Line	-	0.27
	Access	-	1.67
	Inverters	-	0.01
	Culverts	-	0.03
	Grading	-	1.99
	Clearing	-	0.53

Table 11-2. Vegetation Type Construction and Operation Impacts

Vegetative Type	Component	Impacts (Acres)	
		Temporary	Permanent
	Fenced Area		45.61
	Subtotal	5.69	69.83
Cropland/Field Crops	Collection Trench	0.06	
	Construction Entrance	0.01	-
	HDD Pits	0.03	-
	Laydown Yard	17.27	-
	LOD	15.88	-
	Access	-	8.61
	Array Area	-	77.24
	Fence Line	-	0.76
	Grading	-	3.29
	Gravel Area	-	0.23
	Inverters	-	0.07
	Junction Box	-	0.00
	Met Stations	-	0.00
	Riprap	-	0.01
	Clearing	-	0.48
	Fenced Area	-	181.93
	Subtotal	33.25	272.62
Forested Land	Collection Trench	0.00	-
	Laydown Yard	0.13	-
	LOD	0.50	-
	Access	-	1.80
	Array Area	-	18.32
	Culverts	-	0.01
	Fence Line	-	0.36
	Grading	-	0.17
	Gravel Area	-	0.02
	Inverters	-	0.01
	Clearing	-	59.76
	Fenced Area	-	0.88

Table 11-2. Vegetation Type Construction and Operation Impacts

Vegetative Type	Component	Impacts (Acres)		
		Temporary	Permanent	
	Subtotal	0.63	81.34	
Successional Shrubland	Collection Trench	0.00	-	
	Construction Entrance	0.00	-	
	Laydown Yard	0.35	-	
	LOD	1.54	-	
	Access	-	0.75	
	Array Area	-	6.86	
	Fence Line	-	0.12	
	Grading	-	2.16	
	Gravel Area	-	0.02	
	Inverters	-	0.01	
	Met Stations	-	0.00	
	Clearing	-	23.76	
	Fenced Area	-	2.87	
		Subtotal	1.90	36.54
	Successional Old Field	LOD	7.41	-
		Access	-	2.64
Array Area		-	33.22	
Fence Line		-	0.30	
Grading		-	3.38	
Gravel Area		-	0.04	
Inverters		-	0.03	
Riprap		-	0.00	
Clearing		-	7.69	
Fenced Area		-	66.14	
	Subtotal	7.41	113.44	
Developed Pervious	Construction Entrance	0.00	-	
	LOD	0.20	-	
	Access	-	0.13	
	Culverts	-	0.00	
	Grading	-	0.02	

Table 11-2. Vegetation Type Construction and Operation Impacts

Vegetative Type	Component	Impacts (Acres)	
		Temporary	Permanent
	Clearing	-	0.00
	Subtotal	0.20	0.15
Developed Impervious	LOD	0.22	-
	Access	-	0.18
	Array Area	-	0.00
	Fence Line	-	0.00
	Grading	-	0.03
	Fenced Area	-	0.04
	Subtotal	0.22	0.25
PSS Delineated Wetland	LOD	0.04	-
	Array Area	-	0.09
	Fence Line	-	0.00
	Clearing	-	1.45
	Fenced Area	-	0.09
	Subtotal	0.04	1.63
PEM Delineated Wetland	LOD	0.59	-
	Access	-	0.00
	Array Area	-	0.01
	Culverts	-	0.01
	Fence Line	-	0.00
	Grading	-	0.00
	Riprap	-	0.02
	Clearing	-	1.26
	Fenced Area	-	0.01
	Subtotal	0.59	1.31
PEM Screened Wetland	LOD	0.00	-
	Subtotal	0.00	-
PFO Delineated Wetland	Clearing	-	0.24
	Subtotal	-	0.24
	Total Impacts	49.92	577.37

Impacts to Agricultural Land

Limits of Disturbance (LOD) to agricultural land for the construction and operation of the Facility include approximately 381.4 acres and consist of 38.94 acres of temporary impacts, 113.91 acres of permanent impacts and 228.55 acres of conversion. See Exhibit 15 for further description of agricultural resources within the Facility Site. Temporary impacts are limited to collection line installation limited vegetative clearing and proposed laydown yards. Permanent impacts are associated with the installation of the collection substation, construction of permanent access roads, installation of solar arrays and inverter pads.

Pre-existing hayfields that will be temporarily impacted will be re-seeded with a native grass seed mix following construction. In accordance with the *New York State Department of Agricultural and Markets (NYSAGM) Guidelines for Solar Energy Projects* (NYSAGM, 2019), temporarily disturbed active agricultural areas will be stripped of topsoil, which will be set aside prior to construction and will be replaced upon completion of the construction phase of the Facility. During the life of the Facility, agricultural areas underneath and in the immediate vicinity of the solar panels will be maintained as grasses and forbs that require periodic mowing. Agricultural areas with row crops will be converted for the useful life of the Facility due to the installation of the solar arrays, since the plant community that will be maintained beneath the arrays will be different from the pre-existing row crops. Agricultural land that is used for Facility components will be restored following Facility decommissioning and agricultural operations may resume at that time (refer to Exhibit 23 for further information).

Impacts to Forested Land

Forested land within the Facility Site consists of both small, isolated patches and larger forested areas that extend offsite. Impacts to forested land have been avoided and minimized to the extent practicable. No temporary laydown yards or work areas are proposed in forested areas to minimize the amount of tree clearing required for the Facility. The Applicant plans to remove stumps only where certain Facility components will be located. The Facility requires a total of 127.47 acres of tree clearing for construction of the Facility; 14.34 acres of which will be selective tree clearing.

Most solar arrays in the Facility Site have been sited outside of forested areas to decreased fragmentation of existing forest community types. Fragmentation can result from the creation of openings, farmland expansion, creation or widening of road corridors, or the establishment of

developed areas. To the extent practicable, connectivity of forested corridors with surrounding forest patches has been maintained, including areas where forested wetland communities are found. Isolated patches occurring within the Facility Site are unlikely to support conditions consistent with interior forest, or communities of forest-obligate and forest interior species, whereas larger forested areas promote connectivity to extensive forest habitat in the surrounding vicinity.

Clearing for the Facility will result in the creation of 79.1 acres of peripheral forest area, defined as forest within 300 feet of the forest edge. The additional peripheral forest will be created through the addition of permanent access roads and solar arrays within existing forest patches. The creation of peripheral forest can result in edge effects which affect animal and plant populations or community structures that occur at the boundary of fragmented habitats. These effects are most evident in species that exhibit edge-sensitivity. Increasing the amount of peripheral forest in this landscape is not likely to result in additional edge effects. Physical barriers resulting from this action are minor and unlikely to alter existing avian communities or significantly change their behaviors.

Approximately 6 acres of vegetative screening will be planted, offsetting the impact to forested land. The proposed vegetative screening contains native trees and shrubs. A Landscape Plan, included on Sheet PV-C.13.00 of Appendix 5-1, depicts the vegetative screening that will screen the Facility components to reduce visibility and also help maintain the visible greenery in the landscape that makes up the rural character. Facility components were sited away from forested land to the maximum extent practicable to prevent wildlife habitat loss.

Impacts to Successional Shrubland, Successional Old Field, and Developed/Disturbed Land

Construction of the Facility will result in temporary and permanent impacts to successional shrubland, successional old field, and developed/disturbed land communities as outlined in Table 11-2 above.

Temporary impacts to these cover types will occur from the initial, limited clearing for purposes of construction access and the installation of underground collection lines. Following construction, these areas will be restored and will return to their preexisting condition. Permanent loss will occur to approximately 9.91 acres of successional shrubland communities

and 0.40 acres of developed land communities that will occur from the siting of certain Facility components as outlined in Table 11-2, above.

As described herein, the impacts to the representative plant communities within the Facility Site are not expected to result in the significant loss or extirpation of any representative plant community.

11(c) Avoidance and Minimization of Impacts to Vegetative Community Types

As described in the preceding sections of this Exhibit 11, impacts to the vegetative communities present at the Facility Site have been avoided and minimized to the extent practicable.

Preliminary Facility siting efforts considered the results of field surveys conducted at the Facility Site and focused on siting Facility components on contiguous parcels, confining Facility component locations to the smallest area possible, and avoiding potential fragmentation of vegetative community types. To minimize impacts to plant communities, solar panels and laydown yards will be located within previously disturbed agricultural areas and open fields to the maximum extent practicable. Linear Facility components such as access roads and collection lines will be co-located to avoid and minimize impacts to plant communities. The design of the Facility includes avoidance of unnecessary impacts to grasslands, interior forests, wetlands, shrublands, and early successional forests and results in only marginal impacts to these areas. No significant natural communities are located within the Facility Site.

The construction of the Facility will be typical of that for a project this size in a rural, agricultural landscape in New York. The Applicant will implement appropriate Best Management Practices (BMPs) to ensure that impacts related to Facility construction and/or operation are limited to the Facility Site and are minimized to the extent practicable. This includes implementation of a comprehensive erosion and sediment control plan as part of the Facility's Stormwater Pollution Prevention Plan (SWPPP) for the Facility. Prior to the commencement of construction activities, temporary erosion and sediment controls shall be installed to prevent erosion of the soils and prevent water quality degradation in wetlands and waterbodies. Anticipated stormwater practices may include vegetated swales and level spreaders. A Preliminary SWPPP is included as Appendix 13-1 of this Application. The Applicant will also comply with the Uniform Standards and Conditions (USCs) as presented in Subpart 900-6 of the Section 94-c Regulations, including proper notification procedures and compliance with other applicable regulations (such as Sections 401 and 404 of the Clean Water Act [CWA]). As the impacts associated with

construction of the Facility are typical, the use of alternative technologies during construction is not likely to reduce impacts and/or benefit the Facility significantly.

11(d) Wildlife Species Likely to Occur in Ecological Communities Onsite

The following section contains lists of the species of mammals, birds, amphibians, terrestrial invertebrates, and reptiles that are likely to occur in the vegetative community types identified in the preceding sections of this Exhibit. A complete list of species likely to occur within the Facility Site has been included in Appendix 12-1: Wildlife Site Characterization Report. In addition, specific information and mapping regarding bird and bat migration routes, as applicable is provided below and on Figure 11-2. Wildlife and wildlife habitat were documented during ecological surveys conducted onsite, including wetland and stream delineations, breeding bird surveys, and winter raptor surveys, in conjunction with publicly available data from the following sources:

- NYNHP database;
- New York State Amphibian and Reptile Atlas Project (Herp Atlas);
- New York State Breeding Bird Atlas and range maps;
- US Geological Survey (USGS) Breeding Bird Survey data;
- National Audubon Society Christmas Bird Count data;
- Hawk Migration Association of North America hawk watch count data;
- eBird;
- The Nature Conservancy data; and
- The Kingbird publication.

Table 11-3 identifies the terrestrial species likely to occur in the vegetative community types described at the Facility Site and also identifies species observed during field surveys or site visits.

Table 11-3. Wildlife Species Likely to Occur and/or Observed in Vegetative Community Types

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
Agricultural			
	Woodchuck	<i>Marmota monax</i>	Likely to occur
	White-tailed deer	<i>Odocoileus virginianus</i>	1)
	Barn swallow	<i>Hirundo rustica</i>	Likely to occur
	Bobolink	<i>Dolichonyx oryzivorus</i>	1)
	European starling	<i>Sturnus vulgaris</i>	Likely to occur
	Kildeer	<i>Charadrius vociferous</i>	Likely to occur
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	1)
	Short-eared owl	<i>Asio flammeus</i>	2) & 3)
	Upland sandpiper	<i>Bartramia longicauda</i>	Likely to occur
	Horned lark	<i>Eremophila alpestris</i>	Likely to occur
	Vesper sparrow	<i>Pooecetes gramineus</i>	Likely to occur
	Northern harrier	<i>Circus cyaneus</i>	2) & 3)
Forested Land			
	Coyote	<i>Canis latrans</i>	1)
	Eastern chipmunk	<i>Tamias striatus</i>	1)
	Eastern cottontail	<i>Sylvilagus floridanus</i>	1)
	Eastern gray squirrel	<i>Sciurus carolinensis</i>	1)
	Eastern raccoon	<i>Procyon lotor lotor</i>	1)
	Fisher	<i>Martes pennant</i>	Likely to occur
	Gray fox	<i>Urocyon cinereoargenteus</i>	Likely to occur
	Long-tailed weasel	<i>Mustela frenata</i>	Likely to occur
	North American porcupine	<i>Erethizon dorasatum</i>	Likely to occur
	Red fox	<i>Vulpes Vulpes</i>	1)
	Red squirrel	<i>Tamiasciurus hudsonicus</i>	Likely to occur
	Striped skunk	<i>Mephitis mephitis</i>	Likely to occur
	Various mice	<i>Mus spp.</i>	Likely to occur
	Various moles	<i>Condylura spp., Scalopus spp., Sorex spp.,</i>	Likely to occur
	Various shrews	<i>Blarnia spp., Cryptotis spp., Sorex spp.</i>	Likely to occur

Table 11-3. Wildlife Species Likely to Occur and/or Observed in Vegetative Community Types

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
	Various bats	<i>Myotis spp., Eptesiscus spp., Lasiurus spp., Permimyotis spp.</i>	Likely to occur
	Virginia opossum	<i>Didelphis virginiana</i>	Likely to occur
	White-tailed deer	<i>Odocoileus virginianus</i>	1)
	Common garter snake	<i>Thamnophis sirtalis</i>	Likely to occur
	Northern leopard frogs	<i>Lithobates pipiens</i>	1)
	Wood frogs	<i>Rana sylvatica</i>	1)
	Eastern American Toad	<i>Anaxyrus americanaus</i>	Likely to occur
	Gray tree frog	<i>Hyla versicolor</i>	Likely to occur
	Spring peeper	<i>Pseudacris crucifer</i>	Likely to occur
	Black-capped chickadee	<i>Poecile atricapillus</i>	1)
	Black-throated green warbler	<i>Setophaga virens</i>	1)
	Eastern wood-pewee	<i>Contopus virens</i>	Likely to occur
	Hermit thrush	<i>Catharus guttatus</i>	1)
	Red-bellied woodpecker	<i>Melanerpes carolinus</i>	1)
	Scarlet tanager	<i>Piranga olivacea</i>	1)
	Sharp-shinned hawk	<i>Accipiter striatus</i>	3)
	Cooper's hawk	<i>Accipiter cooperii</i>	3)
	Bald eagle	<i>Haliaeetus leucocephalus</i>	2) & 3)
Successional Shrubland			
	Coyote	<i>Canis latrans</i>	1)
	Eastern chipmunk	<i>Tamias striatus</i>	1)
	Eastern cottontail	<i>Sylcilagus floridanus</i>	1)
	Eastern gray squirrel	<i>Sciurus carolinensis</i>	1)
	Gray fox	<i>Urocyon cinereoargenteus</i>	Likely to occur
	Red fox	<i>Vulpes Vulpes</i>	1)
	Striped skunk	<i>Mephitis mephitis</i>	Likely to occur
	Various mice	<i>Mus spp.</i>	Likely to occur
	Various shrews	<i>Blarnia spp., Cryptotis spp., Sorex spp.</i>	Likely to occur

Table 11-3. Wildlife Species Likely to Occur and/or Observed in Vegetative Community Types

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
	Various moles	<i>Condylura spp., Scalopus spp., Parascalops spp.</i>	Likely to occur
	Virginia opossum	<i>Didelphis virginiana</i>	Likely to occur
	White- tailed deer	<i>Odocoileus virginianus</i>	1)
	Woodchuck	<i>Marmota monax</i>	1)
	Common garter snake	<i>Thamnophis sirtalis</i>	Likely to occur
	Eastern American Toad	<i>Anaxyrus americanus</i>	Likely to occur
	Eastern milk snake	<i>Lampropeltis triangulum</i>	Likely to occur
	Spring peeper	<i>Pseudacris crucifer</i>	Likely to occur
	Northern leopard frog	<i>Lithobates pipiens</i>	Likely to occur
	American goldfinch	<i>Carduelis tristis</i>	1)
	American woodcock	<i>Scolopax mino</i>	1)
	Baltimore oriole	<i>Icterus galbula</i>	1)
	Brown thrasher	<i>Toxostoma rufum</i>	Likely to occur
	Chipping sparrow	<i>Spizella passerina</i>	Likely to occur
	Common yellowthroat	<i>Geothlypis trichas</i>	Likely to occur
	Eastern towhee	<i>Pipilo erythrophthalmus</i>	Likely to occur
	Field sparrow	<i>Spizella pusilla</i>	Likely to occur
	Gray catbird	<i>Dumetella carolinensis</i>	Likely to occur
	Song sparrow	<i>Melospiza melodia</i>	Likely to occur
Successional Old Field			
	Coyote	<i>Canis latrans</i>	1)
	Eastern cottontail	<i>Sylcilagus floridanus</i>	1)
	Gray fox	<i>Urocyon cinereoargenteus</i>	Likely to occur
	Striped skunk	<i>Mephitis mephitis</i>	Likely to occur
	Various mice	<i>Mus spp.</i>	Likely to occur
	Various shrews	<i>Blarnia spp., Cryptotis spp., Sorex spp.</i>	Likely to occur
	Various moles	<i>Condylura spp., Scalopus spp., Parascalops spp.</i>	Likely to occur
	White-tailed deer	<i>Odocoileus virginianus</i>	1)
	Woodchuck	<i>Marmota monax</i>	1)

Table 11-3. Wildlife Species Likely to Occur and/or Observed in Vegetative Community Types

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
	Common garter snake	<i>Thamnophis sirtalis</i>	Likely to occur
	Eastern American Toad	<i>Anaxyrus americanus</i>	Likely to occur
	Eastern milk snake	<i>Lampropeltis triangulum</i>	Likely to occur
	Green frog	<i>Rana clamitans</i>	Likely to occur
	Northern leopard frog	<i>Lithobates pipiens</i>	Likely to occur
	Spring peeper	<i>Pseudacris crucifer</i>	Likely to occur
	American goldfinch	<i>Carduelis tristis</i>	1)
	American woodcock	<i>Scolopax minor</i>	1)
	Bobolink	<i>Dolichonyx oryzivorus</i>	1)
	Eastern kingbird	<i>Tyrannus tyrannus</i>	Likely to occur
	Field sparrow	<i>Spizella pusilla</i>	Likely to occur
	House wren	<i>Troglodytes aedon</i>	Likely to occur
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	1)
	Savannah sparrow	<i>Passerculus sandwichensis</i>	1)
	Henslow's sparrow	<i>Ammodramus henslowii</i>	3)
	Grasshopper sparrow	<i>Ammodramus saviarum</i>	2) & 3)
Developed/Disturbed Land			
	Multiflora rose	<i>Rosa multiflora</i>	Likely to occur
	Common buckthorn	<i>Rhamnus cathartica</i>	Likely to occur
	Various upland grasses	Various	Likely to occur
Notes:			
1) Site visit, Spring and Summer of 2020.			
2) State-Listed Wintering Grassland Raptor Survey, Winter of 2019 and 2020.			
3) Grassland Breeding Bird Survey, Spring of 2020.			

Agricultural

Active agriculture, such as field and row crops, provides marginal habitat for most species. Mammal species that may be present in these areas include woodchucks and white-tailed deer; however, both species are likely only to use these community types in a transient nature due to the frequent disturbance regime associated with active agriculture. Mammals may eat agricultural crops as a supplement to natural food sources.

Although agricultural areas may be too frequently disturbed for nesting and breeding, some birds use these for foraging and as a stop-over during migration. As grassland breeding bird surveys were performed during the active agricultural season, incidental observations of bird species utilizing agricultural areas for foraging or stop-over include Barn swallow (*Hirundo rustica*); Boblink (*Dolichonyx oryzivorus*); European starling (*Sturnus vulgaris*); Killdeer (*Charadrius vociferous*); and Red-winged blackbird (*Agelaius phoeniceus*).

Breeding bird surveys were performed from late May through July of 2020. The objective of the breeding bird surveys was to determine the presence and site use by State-listed threatened, endangered, or special concern, grassland bird species during the breeding season. A total of 1,464 grassland bird observations of 68 species occurred within the Facility Site during the Study Period. Two State-listed threatened species were documented during the Study. Northern harrier (*Circus cyaneus*) was observed on four occasions, with two observations during regular surveys and two incidentally outside of the prescribed survey window. Twelve observations of Henslow's sparrows (*Ammodramus henslowii*) were documented, including one incidental observation, during daytime surveys. These observations are believed to represent six individuals. Henslow's sparrows and northern harriers were also documented during evening surveys. No nests or nesting behavior were observed for any listed species. The most frequently observed species during surveys was the ring-billed gull (*Larus delawarensis*), bobolink (*Dolichonyx oryzivorus*), red-winged blackbird (*Agelaius phoeniceus*), savannah sparrow (*Passerculus sandwichensis*), and American goldfinch (*Spinus tristis*). The full survey report can be found in Appendix 12-2 of Exhibit 12.

A winter raptor study was conducted at the proposed Facility Site from December 6, 2019 to March 30, 2020. The objective of the winter raptor surveys was to determine the presence and Facility Site use by state-listed grassland raptor species during the winter season and assess the need for any additional studies to determine impacts to these species from the proposed Facility. A total of 29 raptor observations of eight species and one unknown buteo was recorded during the stationary surveys. Thirty-nine raptor observations representing nine species, were recorded during the driving surveys, including three species not observed during stationary surveys. Four state-listed species were observed including the bald eagle (*Haliaeetus leucocephalus*; state-threatened) northern harrier (*Circus cyaneus*; state-threatened) sharp-shinned hawk (*Accipiter striatus*; state-species of special concern) and the short-eared owl (*Asio flammeus*; state-endangered). Snowy owl (*Bubo scandiacus*) was the most observed raptor species during the stationary surveys. Turkey vulture (*Cathartes aura*) and red-tailed hawk

(*Buteo jamaicensis*) were the most observed raptor species during the driving surveys. The full survey report can be found in Appendix 12-3 of Exhibit 12.

Forested Land

Forests contain many characteristics and components that can be utilized to the benefit of individual organisms. Some features include decreased anthropogenic disturbance levels, lower light levels, relatively protected nesting sites, increased shelter structure, dry shelter sites, concealment/camouflage, variable food sources, and high moisture levels.

Representative mammals that have habitat requirements which overlap with conditions present in the forested habitat within the Facility Site and vicinity are included in Table 11-3 above. Many of the species noted in Table 11-3 are adapted to increasingly fragmented habitats and are considered generalists which may inhabit a wide range of habitat types, including agricultural, residential, and urban landscapes.

Reptiles and amphibians are believed to inhabit forest communities within the Facility Site, based on observations of northern leopard frogs (*Lithobates pipiens*) and wood frogs (*Rana sylvatica*) in forested wetlands onsite. Additional species with potential to utilize forest communities at the Facility Site include Common garter snake (*Thamnophis sirtalis*); Eastern American Toad (*Anaxyrus americanaus*); gray tree frog (*Hyla versicolor*); and spring peeper (*Pseudacris crucifer*).

Bird species observed within forested habitats in the Facility Site during site visits completed in the spring and summer of 2020 include Black-capped chickadee (*Poecile atricapillus*); Black-throated green warbler (*Setophaga virens*); Eastern wood-pewee (*Contopus virens*); Hermit thrush (*Catharus guttatus*); Red-bellied woodpecker (*Melanerpes carolinus*); and Scarlet tanager (*Piranga olivacea*).

Successional Shrubland

Successional shrublands occur on sites that have been cleared (for farming, logging, development, etc.) or otherwise disturbed. This community has at least 50 percent cover of shrubs. Successional shrublands are dynamic and variable habitats characterized by successional vegetation regeneration. A multitude of species which regenerates naturally following the disturbance provides cover for birds and small mammals that prefer open habitats but are heavily preyed upon.

Mammals, reptiles and amphibians that may utilize successional shrubland communities within the Facility Site include several of the same species identified in forested land with the exception of eastern raccoon (*Procyon lotor lotor*); fisher (*Martes pennant*); long-tailed weasel (*Mustela frenata*); North American porcupine (*Erethizon dorasatum*) red squirrel (*Tamiasciurus hudsonicus*); various bats (*Myotis* spp., *Eptesiscus* spp., *Lasiurus* spp., *Permimyotis* spp.); Woodchuck (*Marmota monax*); Eastern milk snake (*Lampropeltis triangulum*); and wood frogs (*Rana sylvatica*).

Bird species that utilize successional shrubland habitat and with potential to occur in the Facility Site include American goldfinch (*Carduelis tristis*); American woodcock (*Scolopax minor*); Baltimore oriole (*Icterus galbula*); Brown thrasher (*Toxostoma rufum*); Chipping sparrow (*Spizella passerina*); Common yellowthroat (*Geothlypis trichas*); Eastern towhee (*Pipilo erythrophthalmus*); Field sparrow (*Spizella pusilla*); Gray catbird (*Dumetella carolinensis*); and Song sparrow (*Melospiza melodia*).

The successional shrublands at the Facility Site provide a variety of food and cover for wildlife. The location of some of the successional shrublands in relation to open fields means they provide some wildlife protection from predators. Invasive shrubs such as multiflora rose, common buckthorn, and Morrow's honeysuckle may dominate the successional shrublands over time. If left unmanaged, the successional shrubland may advance into successional hardwood forests. While each of the species mentioned above may use successional shrubland, none use this habitat type exclusively.

Successional Old Field

The open grassland habitats of successional old fields contain a mix of herbaceous plant species, including grasses, sedges, and rushes. These open areas provide habitat for species

that prefer open grassland and a variety of forage material. Successional old field habitats typically include flowering forbs, which provide food for pollinators such as bees, flies, and butterflies, and grasses which support macroinvertebrate populations and provide nesting material and cover for grassland nesting species. Mammals, reptiles and amphibians believed to utilize grassland communities within the Facility Site are similar to those of successional shrublands.

Several bird species that utilize successional old fields were observed during field surveys and include American goldfinch (*Carduelis tristis*); American woodcock (*Scolopax minor*); Bobolink (*Dolichonyx oryzivorus*); Eastern kingbird (*Tyrannus tyrannus*); Field sparrow (*Spizella pusilla*); House wren (*Troglodytes aedon*); Red-winged blackbird (*Agelaius phoeniceus*); and Savannah sparrow (*Passerculus sandwichen*).

While each of the species may use successional shrubland, none use this habitat type exclusively. If left unmanaged, successional old field habitat will turn into successional shrubland over time.

Terrestrial Invertebrates

As common inhabitants of the community types onsite and in the vicinity of the Facility Site, numerous terrestrial invertebrates are likely to occur within the Facility Site. Terrestrial invertebrates include a variety of arthropods, including insects (e.g., beetles, bugs, ants, bees, butterflies, moths, cockroaches, mantis, stick insects, dragonflies, mosquitoes, fleas, crickets, grasshoppers, fireflies, cicadas, and flies), arachnids (e.g., various spider species, ticks, and mites), and myriapods (e.g., millipedes and centipedes), among many others. Terrestrial species include earthworms and nematodes, which are very common invertebrates that live in the topsoil. Mollusks are another vast group of invertebrates. Of this immense group, a portion of mollusks are terrestrial, including snails and slugs. Invertebrates are often the keystone components to the health of habitats and ecosystems and support more familiar vertebrate species. Most of the terrestrial invertebrates' important services include pollination, decomposition, nutrient cycling, and the promotion of soil fertility for plant growth. Terrestrial invertebrates are also a vital food source for many larger species within ecosystems due to their population abundance. Terrestrial invertebrates common and abundant in Upstate New York are presumed present within the Facility Site.

USGS Breeding Bird Survey

The USGS Breeding Bird Survey (BBS) is conducted by the Patuxent Wildlife Research Center of the USGS. This survey is an international avian monitoring program that is designed to track the status and trends of North American bird population over a large scale and long timeframe. Each survey route is approximately 24.5 miles long. During the survey, 3-minute point counts are conducted at 0.5-mile intervals. During the point counts, every bird seen or heard within a 0.25-mile radius is recorded (Pardieck et al., 2015).

There is one survey route located in the vicinity of the Facility Site. The Watertown route is located approximately 10 miles southeast of the Facility Site, and the route traverses north to south. A total of 114 species have been documented during the lifetime of the Watertown survey route, which has been surveyed 20 out of the last 54 years, with the most recent survey in 2012. Most birds documented have been common species found within the forests, forest edge shrublands, old fields, and wetlands throughout New York State.

The most common species documented on the Watertown survey route include mourning dove (*Zensida macroura*); rock pigeon (*Columba livia*); ring-billed gull (*Laurus delawarensis*); American crow (*Corvus brachyrhynchos*); red-winged blackbird; American robin (*Turdus migratorius*); song sparrow; European starling, and savannah sparrow (*Passerculus sandwichensis*).

Of the species documented by the USGS BBS, 52 of them have been observed at the Facility Site during field surveys (Appendix 12-2, Appendix 12-3). Most of these observed species are common and widely distributed throughout their respective ranges. Additionally, many of the species listed are habitat generalists, which are adapted to changing and increasingly human-altered landscapes. Facility development is not expected to impact any species at the population level, or significantly impact local population in proximity to the Facility Site.

Audubon Christmas Bird Count

Data from the Audubon Christmas Bird Count (CBC) was obtained to gain understanding on year-round wintering avian inhabitants of the Facility Site. The CBC provides a summary of avian species that inhabit regions during the early winter months. The primary objective of the CBC is to monitor the status and distribution of wintering bird populations in the Western Hemisphere. Counts occur in a single day during a three-week period around Christmas. A 15-

mile diameter search area is created around a central point in a given area and all bird species and individuals observed within this search radius are recorded on the day of the count. The closest CBC circle to the Facility Site is the Watertown search area (Audubon Count Code: NYWA). The center of this search area is approximately 6 miles southeast from the Facility Site, and the entire Facility Site is within the 15-mile search radius. A total of 53 avian species were reported during the 2020 count which took place on December 19, 2020. The exact location of these observations is not provided in the source data; therefore, these observations only serve to indicate that these species are locally occurring.

Hawk Migration Association of North America

Hawk Migration Association of North America is a non-profit organization consisting of over 200 members and affiliate organizations which collectively aim to record and summarize data on raptor populations and migration across the North American continent. Hawkwatch stations are independently operated and report data wither as part of long-term monitoring, or short-term, research-focused efforts. The closest Hawkwatch station to the Facility Site is Derby Hill Hawkwatch in Mexico, New York. This station is 37 miles south of the Facility Site. Given the proximity of the Hawkwatch station to the Facility Site, data collected there has little relevancy to the Facility and is therefore not summarized here.

Osprey

An osprey nest was observed within the Facility Site during the breeding bird surveys. This nest is identified in Figure 6 of Appendix 12-2. Ospreys are listed as species of special concern. This nest will be avoided and no impacts to this species are anticipated.

Sharp-shinned Hawk

There was one sharp-shinned hawk observation during the wintering grassland raptor surveys. Impacts to this species will be avoided and minimized through minimal tree clearing (138.3 acres). Additionally, surrounding forested habitat will remain.

A complete list of avian species that were observed or are presumed to occur within the Facility Site based on the data above can be found in Appendix 12-1.

11(e) Wildlife, and Wildlife Habitat Impacts from Construction and Operation

(1) Impacts to Wildlife and Wildlife Habitat

A direct and permanent loss of 184.26 acres of wildlife habitat will result from the Facility. habitat loss represents 15.77 percent of the total 1,168 acres included in the Facility Site. Of this percentage, approximately 11 percent of the loss is to forested land, 10 percent to successional shrublands, while the majority, 62 percent, is to active agriculture. As stated previously, active agriculture supports wildlife habitat of marginal quality, and revegetation efforts following construction may improve habitat quality for grassland-associated species. Considerable habitat is available in the surrounding area including 81.34 acres of forest, 36.54 acres of shrubland, and 113.44 acres of open habitat (i.e. grasslands, old fields). In comparison to the surrounding 5-mile Study Area, less than one percent of habitat will be lost or converted due to the Facility, which represents an insignificant impact to habitat availability in the local area.

Grassland Birds

The Facility is located within the St. Lawrence River Valley Grassland Focus Area as defined by the NYSDEC Grassland Landowner Incentive Program, which promotes habitat protection for grassland birds. Additionally, the Facility is located adjacent to a recognized Continental Important Bird Area (IBA), the Fort Drum IBA which supports an abundance and diversity of grassland and shrub breeding communities. More detailed information regarding IBA's and Grassland Focus Areas can be found within the Wildlife Site Characterization Report (Appendix 12-1).

Overall, construction of the Facility will result in temporary impacts to 7.41-acres of grassland habitat and conversion of 73.83-acres of habitat for grassland species, including grassland birds to support Facility components during its useful life. While some of this acreage will be employed for Facility components, the area between and under solar arrays will be converted to successional old field with vegetative structures and floristic diversity comparable with natural grassland and meadow habitat. These areas will constitute improved habitat quality for species of grassland birds which are not adapted to using active agriculture during breeding, nesting, and post-breeding periods (DeVault et al., 2014). The disturbance regime associated with Facility operations will be less frequent than what is typical of agricultural operations, again reducing the overall direct impact to grassland nesting birds and representing an improvement to the existing habitat within the Facility Site.

Bats

Consultation with the New York State Department of Environmental Conservation (NYSDEC) and the United States Fish and Wildlife Service (USFWS) was conducted to determine the presence and extent of occupied habitat for state and federally listed bat species which have the potential to occur within the Facility Site. Consultation with the USFWS was conducted through the Information for Planning and Consultation (IPaC) system on (November 23, 2020). The Official Species List indicated the potential for Indiana bats (*Myotis sodalis*) and northern long-eared bats (*Myotis septentrionalis*) to be present within the vicinity of the Facility Site (see Appendix 11-1).

Based upon a review of the NYSDEC Environmental Resource Mapper (ERM) and consultation with the NYNHP, the Facility is located within two-miles of a known maternity roost for Indiana bats, and three-miles of a known hibernaculum for northern long-eared bats.

Forested habitat within the Facility Site contains structures which may provide roosting and foraging habitat for bat species. Tree species with a diameter at breast height (DBH) greater than five-inches observed included red maple, sugar maple, American basswood, swamp white oak, green ash, white ash, red spruce, yellow birch, American elm, American beech, white pine, cottonwood (*Populus deltoides*), and quaking aspen (*Populus tremuloides*). There are forested areas and forested riparian corridors within the Facility Site, which could be used as foraging, travelling, and roosting habitat.

The LOD for the proposed Facility includes temporary impacts to 0.5 acres of forested habitat. However, all tree clearing will be conducted during the winter (November 1 to March 31) to avoid impacts to threatened and endangered bat species which will also reduce impacts to other roosting bat species. Based on range distribution information provided by the NYNHP, USFWS, Bat Conservation International (BCI), NYSDEC Nature Explorer and the NYSDEC State Wildlife Action Plan (SWAP), the following species have the potential to occur within the Facility Site: Big brown bat (*Eptesicus fuscus*); Eastern red bat (*Lasiurus borealis*); Eastern small-footed bats (*Myotis leibii*); Hoary bat (*Lasiurus cinereus*); Indiana bat; Little brown bat (*Myotis lucifugus*); Northern long-eared bat; Silver-haired bat (*Lasionycteris noctivagans*); and Tri-colored bat [eastern pipistrelle] (*Perimyotis subflavus*).

Amphibians and Reptiles

Immediate disturbances during the construction phase of the Facility may cause temporary disruption of amphibians and reptiles at the Facility Site. Amphibians and reptiles observed or that have the potential to occur within the Facility Site based on the New York Amphibian and Reptile Atlas Project (Herp Atlas) database and other sources are listed in above in Table 11-3. The USFWS IPaC Official Species List did not identify any federally listed amphibians or reptile species within the vicinity of the Facility Site. Additionally, the NYNHP response did not identify any known occurrences of state-listed amphibian or reptile species within the vicinity of the Facility Site. Wetlands and streams delineated in 2020 within the Facility Site may provide habitat for the reptiles and amphibians listed in Section 11(d). Siting of Facility components and the final layout of solar arrays have been designed to avoid wetlands and streams to the maximum extent practicable, as such impacts to amphibian and reptile species has been avoided and minimized to the maximum extent practicable.

Travel between habitats that may be used by amphibians and reptiles may be temporarily disrupted. Amphibians and reptiles are less mobile than other species, therefore, injury and mortality are more likely to result from the construction of the Facility than to other more mobile taxa. However, no amphibian or reptilian species of concern have been identified within the Facility Site.

Game Species

Immediate disturbances during the construction phase of the Facility will cause temporary disruption of local game species (e.g., white-tailed deer, ruffed grouse, and wild turkey). However, other than nest sites (eggs) and infant fawns, these species are very mobile. Consequently, injury and mortality are not expected from immediate disturbance. After the construction phase of the Facility is completed, game species generally will adapt to the cleared areas and perimeter fencing. The perimeter fencing will inhibit travel and foraging of larger game species such as white-tailed deer; therefore, it is presumed they will search for new foraging habitat elsewhere within the Facility Site and in the surrounding areas.

(2) Construction-related Impacts to Wildlife

Direct and indirect impacts to wildlife will occur due to Facility construction. Impacts are anticipated to be restricted to incidental injury and mortality due to various construction activities, displacement due to increased human activity during construction, and habitat

disturbance and/or loss (including the loss of travel corridors) due to clearing, earth-moving, and the siting of Facility components. Each listed impact is addressed in more detail below.

Incidental Injury and Mortality

Although calculating the incidental injury and/or mortality of wildlife individuals is inherently difficult, it is understood that construction activities could generate injury or mortality to local wildlife in isolated random occurrences. It is presumed that injury and mortality will be inflicted more directly upon sedentary species during construction (e.g. small or young mammals, reptiles, invertebrates, and amphibians). Species which are more mobile have a better ability to vacate construction areas prior to the onset of disturbance.

Mortality events due to vehicular activity is presumed to increase due to increased traffic from construction activities within the Facility Site. Upon the completion of construction, traffic is expected to return to more standard patterns and frequencies so mortality events due to vehicular traffic will reduce to pre-construction levels. A full analysis of traffic volumes associated with construction and operation of the Facility is provided in Exhibit 16.

Wildlife Displacement

Facility construction may cause both temporary and permanent wildlife displacement. The extent of displacement will vary between species and will fluctuate depending on the nature and season timing of construction activities. Displacement impacts such as noise or human presence may affect breeding, nesting, denning, and other routine use (e.g., travel foraging, communication, and territorial marking). If construction begins before the initiation of breeding, nesting, denning, or other routine activities, then the associated wildlife will generally avoid the impact area and navigate through or re-establish in adjacent habitat. If construction occurs while the area is in use by a wildlife individual, then the species that are accustomed to similar land clearing disturbances are expected to relocate and use similar habitats near the construction impact area. Species unable to relocate may become at risk to incidental injury or mortality. Displacement impacts due to the Facility will be relatively minor due to the availability of habitat nearby for many local wildlife species. These animals will remain within or adjacent to the Facility Site. Additionally, portions of the Facility Site are actively farmed/hay, and therefore subject to considerable disturbance throughout the growing season. Construction activities are not expected to exceed the existing level of disturbance which would otherwise occur due to routine agricultural activities in the Facility Site.

Further, avoidance of wetland habitat to the maximum extent practicable has been incorporated in Facility siting and design to mitigate temporary or permanent loss of wetland habitat and displacement of wetland-associated species.

Habitat Disturbance and Loss

Approximately 626.46 acres of wildlife habitat will be impacted during construction of the Facility. However, 381.04 acres of the 626.46 acres of potential wildlife habitat to be impacted, are currently active agricultural areas that are disturbed regularly and provide limited habitat for wildlife due to these regular disturbances and anthropogenic pressures of active farming practices.

Specifically, it is anticipated that approximately 1.90 acres of successional shrubland, 7.41 acres of successional old fields, and 38.94 acres of active agricultural lands will be temporarily disturbed during construction. Temporary disturbance to forested land will be 0.63 acres. Concurrently, approximately 20.70 acres of forested land, 9.91 acres of successional shrubland, 39.61 acres of successional old field, and 113.91 acres of active agricultural lands will be permanently impacted due to the Facility. Note, disturbed/developed areas were excluded from these calculations as wildlife habitat in these areas are presumably present but more marginal in nature where wildlife has adapted to survive in a disturbed setting. The Facility avoids direct impacts to open-water habitats. See Exhibit 13 for a detailed discussion on impacts to surface water defined by onsite wetland and waterbody delineations conducted within the Facility component impact areas.

(3) Operation and Maintenance Related Impacts to Wildlife

Operation-related impacts, or impacts that can potentially occur to vegetation, wildlife, and wildlife habitat while the solar facility is functioning include direct habitat loss and habitat degradation through forest fragmentation, disturbances associated with solar array operation and maintenance, and specific mortality due to solar array collisions. Once construction has been completed and the Facility is operational, there will be few, if any, impacts to wildlife.

Mortality during the operations phase is expected to be negligible. Though few peer-reviewed studies exist which estimate mortality from solar arrays, research indicates collision risk is the primary cause for injury and death (Smith and Dwyer), 2016. Mortality events at solar facilities resulting from collision with facility components is estimated at ranging from 2.49 birds/MW/year

(Kosciuch et al., 2020) to 9.9 birds/MW/year (Walston et al., 2016), representing less than one percent of anthropogenic sources of avian mortality. Annual mortalities were estimated across all operational utility-scale solar facilities in the US at the time of study (2016), with estimates ranging from approximately 37,800 to 136,800 deaths per year. Comparatively, collisions with windows or buildings, the greatest source of avian mortality from anthropogenic sources, causes between 365 and 988 million avian mortalities annually (Walston et al., 2016). However, even these estimates may overstate facility-related mortality as some events could not be directly attributed to collision with facility infrastructure. The solar panels, energy storage system, and substation are stationary so will not impact wildlife due to their operation.

During the operational phase of the Facility, disturbance will be limited, and displacement impacts are likely to be negligible. Routine maintenance, including mowing the grass, will occur approximately two to three times a year, depending on seasonal conditions. Most wildlife which will be within the fenced in areas of the Facility are mobile enough to avoid being impacted due to the mowing activity.

(4) Summary Impact Table

Table 11-4 quantifies anticipated temporary and permanent impacts to wildlife habitats identified within the Facility Site due to Facility construction and operation. Impacts by component type are provided in Table 11-2 above.

Table 11-4. Summary of Impacts to Wildlife Habitat

Habitat	Acres within Facility Site	Temporary Impacts (acres)	Permanent Loss (acres)	Conversion (acres)	Total Impacts (acres)
Row Crops	75.52	5.69	23.69	46.15	75.53
Hay/Pasture	305.87	33.25	90.22	182.40	305.87
Forest	81.97	0.63	20.70	60.63	81.96
Successional Old Field/Grassland	120.85	7.41	39.61	73.83	120.85
Successional Shrubland	38.44	1.90	9.91	26.63	38.44
Developed Pervious	0.36	0.20	0.15	0.00	0.35

Habitat	Acres within Facility Site	Temporary Impacts (acres)	Permanent Loss (acres)	Conversion (acres)	Total Impacts (acres)
Developed Impervious	0.47	0.22	0.21	0.04	0.47
PEM Delineated Wetland	1.90	0.59	0.04	1.27	1.9
PEM Screened Wetland	0.00	0.00	-	-	0
PSS Delineated Wetland	1.67	0.04	0.09	1.54	1.67
PFO Delineated Wetland	0.24	-	-	0.24	0.24

11(f) Avoidance and Minimization of Impacts to Wildlife and Wildlife Habitat

To the maximum extent practicable, the Facility components have been intentionally sited within active agricultural fields, which largely reduces impacts to natural communities and wildlife habitat. Active agricultural areas provide limited wildlife habitat due to recurrent disturbances in the form of clearing, mowing, plowing, and harvesting. Agricultural fields are often monotypic in nature consisting in large expanses of a single crop, offering reduced floristic diversity and structural complexity that supports more diverse wildlife assemblages. Prioritizing construction of the Facility and siting of components within these areas will minimize the species and habitats impacted by the Facility. The revegetation effort following construction is likely to produce higher quality habitat in these areas beneath and between panels, containing a greater diversity of plants and insect prey, providing additional cover for ground-nesting species, and providing novel perching substrate. Further, agricultural land used for Facility components can be restored for agricultural use at the end of a Facility’s active operation life as part of the Facility’s Restoration and Decommissioning Plan (see Exhibit 23). Incidental mortality and injury may increase in association new or improved access roads. Access road widths have been proposed at the minimum width required for maintenance and emergency vehicle access in an effort to reduce the amount of permanent land impacts.

Overall mortality resulting from Facility construction and operation is expected to be negligible, with no significant impact to local populations of any species. No single habitat present within

the Facility Site will be entirely eradicated. No habitats identified in the Facility Site represent significant natural communities and are all abundant in the immediate vicinity of the Facility and throughout New York State.

The Applicant sited the Facility to avoid or minimize impacts to sensitive features, specifically wetlands, streams, and forested areas, as well as siting within previously disturbed parcels, to the maximum extent practicable. Although habitat modification could not be entirely avoided, the Applicant attempted to maximize use of contiguous parcels to reduce the overall footprint of the Facility. Additionally, the Applicant has made a concerted effort to co-locate Facility components, where feasible, to reduce the Facility footprint. Although impacts to agricultural areas, which constitute the majority of habitat available for grassland birds, are unavoidable, as addressed in Exhibit 12 the Applicant has proposed mitigation to address impacts to threatened and endangered grassland bird habitat. As the impacts associated with construction of the Facility are typical, the use of alternative technologies during construction is not likely to reduce impacts and/or benefit the Facility significantly.

Conclusions

Facility components have been sited on contiguous parcels and confined to the smallest area possible, and linear Facility components have been co-located, thereby avoiding fragmentation of vegetative community types to the extent practicable. No single habitat type present within the Facility Site will be eradicated, and none are designated as significant natural communities. Facility components will be located within open fields and previously disturbed agricultural areas (which are monotypic and have been cleared, mowed, plowed, and harvested) to the maximum extent practicable. Once construction has been completed and the Facility is operational, there will be few, if any, impacts to wildlife. The revegetation effort following construction is likely to produce higher quality habitat in these areas beneath and between panels. The Facility has been designed to comply with 19 NYCRR § 900-2.12 and the USCs and impacts related to terrestrial ecology have been avoided and minimized to the maximum extent practicable.

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