



## **FLAT CREEK SOLAR**

**Permit Application No. 23-00054**

**§ 1100-2.12 Exhibit 11**

**Terrestrial Ecology**

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## Acronym List

Applicant	Flat Creek Solar NY LLC
BBA	New York State Breeding Bird Atlas
BBS	Breeding Bird Survey
BCI	Bat Conservation International
BMPs	Best Management Practices
CBC	National Audubon Society Christmas Bird Count
CDL	Cropland Data Layer
CWA	Clean Water Act
DBH	Diameter at Breast Height
ERM	Environmental Resource Mapper
HDD	horizontal directional drilling
IBA	Important Bird Area
IPaC	Information for Planning and Consultation
ISMCP	Invasive Species Management and Control Plan
LOD	Limits of Disturbance
MW	megawatt
NLCD	National Land Cover Database
NYNHP	New York Natural Heritage Program
NYPA	New York Power Authority
NYS DAM	New York State Department of Agriculture and Markets
NYS DEC	New York State Department of Conservation
ORES	Office of Renewable Energy Siting and Electric Transmission
PEM	palustrine emergent
PFO	palustrine forested
POI	Point of Interconnection
PSS	palustrine scrub shrub
PUB	palustrine open bottom
SWAP	State Wildlife Action Plan
SWPPP	Stormwater Pollution Prevention Plan
TNC	The Nature Conservancy
USC	Uniform Standards and Conditions

USDA  
USFWS  
USGS  
WSCR

United States Department of Agriculture  
United States Fish and Wildlife Service  
United States Geological Survey  
Wildlife Site Characterization Report

## **Glossary Terms**

### **Applicant**

Flat Creek Solar NY LLC, a subsidiary of Cordelio Power LP, the entity seeking a siting permit for the Facility from the Office of Renewable Energy Siting and Electric Transmission (ORES) under Article VIII of the New York State Public Service Law.

### **Facility**

Flat Creek Solar, a 300 MW solar generating facility located in the Towns of Root and Canajoharie, NY. The proposed Facility components to be constructed for the generation, collection, and distribution of energy for Flat Creek Solar include solar panel modules, electrical collection system, collection substation, point of interconnection (POI) switchyard, access roads, laydown/staging areas, and other ancillary facilities.

### **Facility Site**

The participating parcels encompassing Facility components, which totals approximately 3,794 acres in the Towns of Canajoharie and Root, Montgomery County, New York (Figure 2-1).

### **Study Area**

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 approximately 108,667 acres, inclusive of the approximately 3,794-acre Facility Site.

### **Limit of Disturbance (LOD)**

The area to which temporary construction impacts will occur, totaling approximately 1,637 acres.

## **Exhibit 11: Terrestrial Ecology**

This Exhibit provides information required in accordance with the requirements of §1100-2.12 of the Article VIII Regulations. Provided below are identifications and descriptions of the types of plant communities present at the Facility Site and adjacent properties within one hundred feet of areas to be disturbed by construction, including the interconnections, based upon field observations and data collection, descriptions of any unique or protected vegetation, and methods to be used by the Applicant to minimize impacts to vegetative communities.

### **11(a) Existing Conditions**

The Facility Site is located within the Mohawk Valley ecoregion comprising a portion of the Eastern Great Lakes Lowlands ecoregion, as defined by Bryce et al., (2010). This ecoregion lies along the corridor of the Mohawk River, between the Hudson Valley ecoregion to the west, Ontario Lowlands to the east, Glaciated Low Allegheny Plateau to the south, and the Acid Sensitive Adirondacks to the north. This region historically supported forest types dominated by sugar maple (*Acer saccharum*) and American beech (*Fagus grandifolia*), but due to intensive farming, remaining forests primarily exist as fragments and woodlots. Soils in the Facility Site are loamy, moist Alfisols derived from glacial till that support dairy farming, pasture, and field crops (Bryce et al., 2010).

The Facility Site encompasses approximately 3,794 acres and is comprised predominantly of previously disturbed agricultural land. The western edge of the Facility Site approaches the Village of Canajoharie and more developed spaces. Land use to the west is more fragmented, split between cultivated crops, row crops, deciduous forest, low intensity development and scattered wetlands. The eastern portion of the Facility Site exists in a more rural space and primarily consists of larger swaths of row crops, cultivated crops and pastureland. Historic aerial imagery from 2024, 2021, 2020, 2016, 2013, 2011, 2010, 2009, 2008, 2006, 1997, and 1995 and the United States Department of Agriculture (USDA) Cropland Data Layer (CDL) 2023 data show agricultural land use of open areas including corn, soybeans, alfalfa, hayfields, and grass pasture. The Facility Site was classified through review of the most recent National Land Cover Database (National Land Cover Database [NLCD], 2016), New York Heritage Natural Heritage Program (NYNHP) ecological communities (Edinger et al., 2014), New York State Department of Conservation (NYSDEC) Natural Heritage Communities Web Viewer (NYSDEC, 2023c), aerial

photography, coordination with local landowners, and on-site observations during field visits conducted from 2020 through 2024.

**(1) Plant Communities**

The Facility Site is comprised of approximately 56% percent cropland/row crops and cropland/field crops, which includes lands used for corn and soybean production and hay/pasture; approximately 19% forested land; approximately 11% percent delineated or NWI or NYSDEC-mapped wetland, including palustrine emergent (PEM) wetlands identified as shallow emergent swamp, palustrine forested (PFO) wetlands identified as red maple-hardwood swamp and red maple-swamp white oak swamp, palustrine scrub shrub (PSS) wetlands identified as shrub swamp, and palustrine open bottom (PUB) wetlands identified as eutrophic pond; approximately 2% developed low intensity and open space, including urban structure exterior, paved and unpaved roads, and mowed areas; approximately 7% successional shrubland; approximately 4% percent successional old field; and less than 1% open water which includes farm pond/artificial pond and unconfined river ecological communities.

The plant communities identified within the Facility Site are based on available geospatial data and aerial imagery, along with plant species within the Facility Site which were documented during onsite field surveys. Descriptions of plant communities on-site, as described by Edinger et al., are summarized in Table 11-1 and described in detail below.

**Table 11-1. Land Cover within the Facility Site**

Land Use/Vegetation Cover Type <sup>1</sup>	Acres within LOD	Percent of the LOD	Acres within Facility Site <sup>3</sup>	Percent of the Facility Site
Cropland/row crops	688.68	42.06	983.39	25.93
Cropland/field crops	579.73	35.40	1,141.27	30.09
Delineated PEM Wetland	39.70	2.42	177.98	4.69
Delineated PFO Wetland	15.94	0.97	124.29	3.28
Delineated PSS Wetland	14.80	0.90	102.56	2.70
Delineated PUB Wetland	1.22	0.07	17.87	0.47
Delineated Surface Water	1.35	0.08	18.90	0.50

**Table 11-1. Land Cover within the Facility Site**

Land Use/Vegetation Cover Type <sup>1</sup>	Acres within LOD	Percent of the LOD	Acres within Facility Site <sup>3</sup>	Percent of the Facility Site
Developed, Low Intensity	6.94	0.42	43.32	1.14
Developed, Open Space	6.24	0.38	23.96	0.63
NWI PEM Wetland	0.00	0.00	4.06	0.11
NWI PFO/PSS Wetland	0.00	0.00	1.27	0.03
NWI Freshwater Pond	0.00	0.00	3.27	0.09
NWI Riverine	0.00	0.00	7.93	0.21
NYSDEC Wetland	0.00	0.00	7.67	0.20
Open Water	0.00	0.00	0.01	< 0.01
Successional northern hardwoods	160.24	9.79	709.72	18.71
Successional old field	32.49	1.98	144.23	3.80
Successional Shrubland	90.16	5.51	280.77	7.40
<b>Total</b>	<b>1,637.49</b>	<b>-</b>	<b>3,792.47</b>	<b>-</b>
<sup>1</sup> Land cover data were obtained from onsite observations and GIS digitization.				
<sup>2</sup> Rounding may result in minor, discountable acreage inconsistencies.				

In addition to natural communities, *Ecological Communities of New York State* includes descriptions of “cultural” communities, defined as communities “created, or maintained, by human activities, or are modified by human influence to such a degree, that the physical conformation of the land, or the biological composition of the resident community, is significantly different from the character of land or community prior to modern human influence.” The following sections describe the major natural and cultural communities observed in the Facility Site, all of which are common to NYS. Detailed descriptions of the water resources encountered onsite are provided in Exhibit 13 (*Water Resources and Aquatic Ecology*). Detailed descriptions of wetland community types encountered during on-site wetland delineations are provided in Exhibit 14 (*Wetlands*).

Each community type within Edinger et al. (2014) is given a ranking based on its rarity and vulnerability, both on a global (G) scale and on a state (S) scale. The lower the numeral value of the ranking, the greater the commonality of the community type. For example, a ranking of G1 or S1 would signify a rarer community type, while a G4/5 would signify a more common community



type. Cultural communities are not tracked by the NYNHP and are therefore considered “unranked” (Edinger et al. 2014).

## **Agricultural Land**

Active agricultural land that includes field and/or 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 (i.e., “natural”) state (Edinger et al., 2014). Both cropland/field crops and cropland/row crops are found throughout New York State and have a ranking status of “terrestrial cultural” by the NYNHP. Based on the CDL, observations made during field surveys, and data collected during surveys, the dominant crop types established within the Facility Site are corn (*Zea mays*), soybeans (*Glycine max*), alfalfa (*Medicago sativa*), and oats (*Avena sativa*). The most prevalent crop is Hay/Non-Alfalfa grasses. The dominant vegetation in hayfields within the Facility Site is reed canary grass (*Phalaris arundinacea*) and Timothy grass (*Phleum pratense*). Overall, active agricultural land can be found throughout the Facility area. Further information regarding agricultural resources within the Facility Site can be found in Exhibit 15 of the Application. There are 2,124.66 acres of agricultural land within the Facility Site.

## **Forested Land**

Forested communities within the Facility Site are predominantly comprised of deciduous species. The forested land within the Facility Site are dominated by sugar maple, American beech (*Fagus grandifolia*), red maple, and swamp white oak. The largest forest patches are in the western and eastern portions of the Facility Site and are not connected to one another outside of the Facility Site but do extend off-site. There are 709.72 acres of forested land within the Facility Site.

As discussed in the Wetland and Stream Delineation Report (Appendix 14-1), the wetland Survey Area includes trees with similar characteristics and qualities of several significant natural forest communities, including beech-maple mesic forest, red maple-hardwood swamp, red maple-swamp white oak swamp, and successional northern hardwoods, as described by Edinger et al. (2014) and below. These forest communities were identified in the field, as the natural characteristics of the forests and the tree species present were consistent with the ecological community descriptions provided by Edinger et al. (2014). However, after further review of the

NYSDEC Natural Heritage Communities web viewer, none of these significant natural communities are located within the Facility Site. The forest community types within the Facility Site and those discussed in the Wetland and Stream delineation report as described by Edinger et al. (2014) are detailed herein:

### **Successional Northern Hardwoods**

Successional northern hardwood communities occur on sites that have been cleared or previously disturbed. They are located throughout upstate New York. Characteristic trees include trembling aspen (*Populus tremuloides*), big-toothed aspen (*Populus grandidentata*), white birch (*Betula lenta*), red maple, black cherry (*Prunus serotina*), sugar maple, and white ash (*Fraxinus americana*) (Edinger et al. 2014).

### **Beech-maple mesic forest (Heritage Rank: G4 S3 [Apparently secure globally, vulnerable in New York State])**

Beech-maple mesic forest communities occur on moist, well-drained, acidic soils throughout Upstate New York. The dominant trees include sugar maple and American beech. Common associates in the community that may occur in lower densities include red maple (*Acer rubrum*), yellow birch (*Betula alleghaniensis*) and Eastern hemlock (*Tsuga canadensis*). The shrub layer typically includes witch hazel (*Hamamelis virginiana*) and hobblebush (*Viburnum lantanoides*). A diverse array of spring ephemerals and other herbaceous plants occur in the understory including common white snakeroot (*Ageratina altissima*), hay-scented fern (*Dennstaedtia punctilobula*), yellow trout-lily (*Erythronium americanum*), false Solomon's seal (*Maianthemum racemosum*), and purple trillium (*Trillium erectum*).

Although widespread, beech-maple mesic forest communities are considered vulnerable in New York State due to forest fragmentation, beech bark disease, and beech leaf disease.

### **Red maple-hardwood swamp (Heritage Rank G5 S3S4 [Secure globally, vulnerable or apparently secure-vulnerable in New York State])**

Red maple-hardwood swamps occur in poorly drained depressions, usually on inorganic soil, but occasionally on peat less than 20 centimeters deep. It is a broadly defined community with several

regional variants. Generally, red maple 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 (*Cornus amomum*). The herbaceous layer may be quite diverse and is often dominated by ferns, including sensitive fern (*Onoclea sensibilis*).

Regional conservation threats to red-maple hardwood swamps include conversion to agriculture and development, invasive species, and emerald ash borer.

**Red maple-swamp white oak swamp (Heritage Rank G3G4 S2 [Vulnerable or apparently secure globally, imperiled in New York State])**

A deciduous, seasonally-flooding swamp found in sandy soils with an underlying clay layer. These swamps typically have a leaf litter substrate and an overstory co-dominated by red maple and oaks (*Quercus* spp.) including swamp white oak (*Quercus bicolor*). The shrub layer includes common winterberry (*Ilex verticillata*), buttonbush (*Cephalanthus occidentalis*), and highbush blueberry (*Vaccinium corymbosum*). Although herb cover is characteristically sparse, species include ferns, such as cinnamon fern (*Osmunda cinnamomea*) and sensitive fern (*Onoclea sensibilis*), and various sedges (*Carex* spp.).

Development, especially when the natural hydrological regime is impacted, is a particular threat to red maple-swamp white oak swamp communities. Invasive species, over-browsing by deer, and agricultural conversion also contribute to the vulnerability of this ecosystem.

**Successional Old Field**

Successional old field communities occur on sites that have been cleared or plowed due to agriculture or development and subsequently abandoned, forming a meadow dominated by forbs and grasses. 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. There are 144.23 acres of successional old field within the Facility Site.

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

### **Successional Shrubland**

Successional shrublands are a transitory community between old field and successional forest and establish 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). Characteristic shrubs found within shrubland at the Facility Site are red osier dogwood (*Cornus alba*), gray dogwood (*Cornus racemosa*), white meadowsweet (*Spiraea alba*), and Morrow's honeysuckle (*Lonicera morrowii*). There are two large portions of shrubland in the central portions of the Facility Site which are not connected to one another on-site or outside of the Facility Site. There are 280.77 acres of successional shrubland within the Facility Site.

### **Disturbed/Developed Land**

Developed communities in the Facility Site include mowed lawn (Heritage Rank: unranked cultural), paved and unpaved road/path (Heritage Rank: unranked cultural), urban structure exterior and rural structure exterior (Heritage Rank: unranked cultural). 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 that have been significantly altered by human activities (Edinger et al., 2014).

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 and were observed on-site. More impermeable developed environments such as urban structures or paved roads, may only be sparsely vegetated by various lichens, mosses, and terrestrial algae (Edinger et al., 2014). There are 67.28 acres of disturbed/developed land within the Facility Site.

### **Perennial Streams**

The dominant stream feature in the western and central portion of the Facility Site is the Flat Creek River and its minor tributaries. Yatesville Creek and its minor tributaries, which flow north to the Mohawk River, are present on the eastern portion of the Facility Site. The major systems of Flat Creek River and Yatesville Creek are considered perennial, having a continuous flow of surface water throughout the year. There are 10 perennial streams, including Flat Creek River and Yatesville Creek, are present in the Facility Site. Aquatic vegetation in these communities can overlap with intermittent and ephemeral streams. The specific species present can vary depending on factors such as water depth, flow rate, substrate type, and sunlight availability. Additional information regarding these streams and other waterbodies on-site can be found in Exhibit 13 (*Waterbodies*) of this Application. Specific impacts to waterbodies are presented in Sections 13(b)(5) and 13(b)(6) of Exhibit 13 and on the Design Drawings in Appendix 5-1 of Exhibit 5 (Design Drawings). There are 3.27 acres of NWI Freshwater Pond within the Facility Site.

### **Riverine Communities**

Intermittent streams include “the community of a small, intermittent, or ephemeral streambed in the uppermost segments of stream 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.

Aquatic vegetation in these communities can include submerged and emergent bryophyte mosses, along with vascular plants such as water-carpet (*Chrysosplenium americanum*) and pennywort (*Hydrocotyle americana*). Riverine communities delineated within the Facility Site include 62 intermittent and 51 ephemeral streams (Heritage rank: G4 S4). Delineated streams contained typical substrate of boulders, cobble/gravel, silt/clay, bedrock, and organic matter, with a depth primarily between 0-6 inches. Some aquatic vegetation was observed in streams on-site; however, along the periphery of the delineated streams, typical emergent wetland species observed included purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), and spotted touch-me-not (*Impatiens capensis*).

Additional information regarding delineated streams, including the best management practices (BMPs) to be implemented by the Applicant to avoid impacts both on-site and off-site, are discussed further in Exhibit 13. There are 7.93 acres of NWI Riverine land and 18.90 acres of delineated surface water within the Facility Site.

### **Eutrophic Pond**

Eutrophic ponds are an aquatic community of shallow, small, nutrient-rich ponds. The water is typically green due to algae with a mucky bottom. These ponds typically freeze in the winter with the coldest water at the surface. Characteristic vegetation includes common duckweed (*Lemna minor*), Canada waterweed (*Elodea canadensis*), green algae (*Cladophra* spp.), northernpipewort (*Eriocaulon aquaticum*), water-shield (*Brasenia schreberi*), and common coontail (*Ceratophyllum demersum*). Phytoplankton (*Certium* spp.) are typically characteristic and dominant plankton (Edinger et al. 2014). There are 0.01 acres of open water within the Facility Site.

### **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), shrub swamps (Heritage Rank: G5 S5), red maple-hardwood swamps (Heritage Rank G5 S4S5), and red maple-

swamp white oak swamp (Heritage Rank G3G4 S2). Shallow emergent marshes occur on mineral or muck soils and can be distinguished from deep emergent marshes by their better drainage and occurrence in lake basins and along streams, although the two communities may occur together. They feature diverse assemblages of emergent herbaceous plants including grasses, sedges, cattails, wetland ferns, and forbs. Shrub swamps are inland wetlands that occur on lake or river edges and are dominated by alder (*Alnus* spp.) or tall shrubs such as red osier dogwood (*Cornus sericea*), silky dogwood (*Cornus amomum*), water-willows (*Decodon verticillatus*), and buttonbrush (*Cephalanthus occidentalis*).

Wetland habitat types are further described in Exhibit 14 (Wetlands), including a description of BMPs and anticipated impacts to wetlands with detailed information regarding avoidance, minimization, and mitigation. Descriptions, data forms, and representative photographs are presented in Appendix 14-1 (Wetland and Waterbody Delineation Report). The Applicant has further evaluated and described specific functions and values related to on-site wetlands in Appendix 14-2 (Functions & Values Report).

Shallow emergent marshes within the Facility Site are dominated by reed canary grass, narrowleaf cattail, white meadowsweet, sensitive fern (*Onoclea sensibilis*), dark green bulrush (*Scirpus atrovirens*), soft rush (*Juncus effusus*), gray dogwood, and spotted touch-me-not. 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, red maple and yellow birch in the tree stratum, and gray dogwood and Morrow's honeysuckle within the shrub stratum. There are 5.33 acres of NWI Palustrine wetlands and 422.70 acres of delineated Palustrine wetlands within the Facility Site.

## **Invasive Species**

Invasive vegetative species are of special concern as their spread is likely to cause some degree of environmental, human health, and/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 in accordance with 6 NYCRR Part 575 (Appendix 11-1). The intent of the ISMCP is to outline a clear plan to minimize the spread of invasive species that are present within the Facility Site. As part of the Facility field efforts, ecological resource surveys were performed periodically in 2020–2024. During ecological resource surveys and wetland and stream delineations, TRC biologists documented observed occurrences of invasive species within the Facility Site to be utilized as a baseline survey for future monitoring efforts. The following invasive plant species were identified in low densities within the Facility Area:

- Canada thistle (*Cirsium arvense*),
- Japanese honeysuckle (*Lonicera japonica*),
- Common reed grass (*Phragmites australis*), and
- Japanese knotweed (*Reynoutria japonica*).

### **11(b) Temporary and Permanent Impacts to Plant Communities**

The Applicant has sited Facility components to limit impacts to undisturbed and high-quality plant communities to the extent practicable. The Facility has been largely sited on agricultural land which is subject to ongoing disturbances from active farming practices in the area. Additionally, these areas typically require less ground disturbance (i.e., grading) as they have been maintained with the ability for large equipment to access the Facility Site. The Facility uses several existing farm lanes and access points to the extent practicable which reduces impacts to vegetation and plant communities caused by construction of new access roads. Additionally, the collection line between the northeastern panels and the north central panels is co-located with an existing transmission line, reducing habitat fragmentation and impacts to vegetation and plant communities. Additionally, there will be approximately 12 acres of HDD segments proposed as part of the Facility design, to avoid impacts to vegetative communities, and other resources to the maximum extent possible.

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 (Figure 11-1). Temporary disturbance to plant communities during construction would occur from grading and Facility component installation (e.g., horizontal directional drilling (HDD) bore pits and collection trench installation). Areas within the LOD that are temporarily impacted during construction will be restored to their original condition following the completion of construction or planted with a low-growing, native grass seed mix to be maintained during the life



of the Facility. The seed mix proposed for use on the Facility Site is presented on Sheet C-100-03 of Appendix 5-1 (Design Drawings). Installation of access roads, fence lines, substation, point of interconnection (POI) switchyard, culverts, infiltration trenches, and inverters will result in permanent loss of approximately 353 acres of vegetation (grassland/herbaceous, scrub/shrub, delineated PEM/PFO/PSS wetlands, and forested land). These areas will remain impacted until site restoration occurs following decommissioning.

Locations of Facility components and corresponding vegetative community types that would be impacted from 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.

### ***Impacts to Agricultural Land***

Of the 1,637-acre LOD, 1,268.4 acres of agricultural land will be impacted (33% of the total Facility Site). Of the 1,268.4 acres of impact to agricultural land, 905.2 acres will be temporarily impacted, 46.78 acres will be converted to build facilities that will remain throughout the life of the Facility and 316.41 acres will result in permanent conversion (from agricultural to early successional native vegetation or installed landscaping around the Facility perimeter). See Exhibit 15 for further description of agricultural resources within the Facility Site. Temporary impacts are associated with the LOD, collection trench installation, limited vegetative clearing, MV feeder, fenced area, grading limits, HDD bore pits, and proposed laydown yards. Permanent impacts are associated with the installation of the collection substation, access roads, fence line, infiltration trenches, inverter and pads, culverts, and the POI switchyard. Conversion impacts are associated with impacts related to installation of solar panels, clearing and grubbing, and landscaping. Permanent and conversion impacts will only last for the life of the Facility. Access roads, solar arrays, and inverter pads; will be removed when the Facility is decommissioned. The POI switchyard will remain following decommissioning and ownership will be transferred to New York Power Authority (NYPA).

Table 11-2. Impacts to Plant Communities by Facility Construction

Plant Community Type	FACILITY COMPONENTS														Landscape Buffer	Clearing (no grubbing) <sup>2</sup>	Clearing and Grubbing <sup>2</sup>	Grading	Total
	Solar Array	Access Road	Collection Line Installation	HDD Bore Pit	Inverter and Pad	Fence Line	Sub-station	POI Switchyard	Fenced Area	Infiltration Trench	Storm Pipe and Structure	MV Feeder	Laydown Yard	LOD					
Cropland/ Row Crop	178.27	16.97	5.95	0.06	0.14	2.20	-	0.87	400.59	0.40	0.86	0.01	13.56	41.00	5.95	0.37	0.66	18.14	686.00
Hay/Pasture	56.18	8.03	12.87	0.04	0.04	0.69	1.90	1.97	133.43	0.19	0.39	< 0.01	7.56	32.78	3.13	0.35	0.52	24.54	284.61
Cropland/ Field Crops	68.72	10.44	1.37	0.01	0.10	0.99	-	0.28	167.20	0.22	0.08	< 0.01	3.86	18.04	1.78	0.20	0.28	21.53	295.10
Forested Land	16.37	2.54	4.78	0.03	0.01	0.52	-	0.51	19.39	0.04	0.19	-	0.22	20.49	0.10	56.30	36.97	1.78	160.24
Grassland/ Old Field	4.85	0.78	1.54	< 0.01	-	0.11	-	-	20.50	0.03	< 0.01	-	0.06	4.08	0.23	0.02	0.08	0.21	32.49
Successional Shrubland	16.16	2.89	1.95	0.01	0.01	0.33	-	0.01	47.99	0.08	0.10	< 0.01	1.20	5.92	0.87	3.82	7.71	1.10	90.15
Delineated PEM Wetland	5.40	0.31	1.29	-	-	0.14	-	-	26.50	0.01	0.01	-	-	3.62	0.78	1.17	0.42	0.10	39.75
Delineated PSS Wetland	1.12	0.03	1.81	-	-	0.02	-	-	5.30	-	< 0.01	-	-	3.81	0.03	1.31	1.36	0.01	14.80
Delineated PFO Wetland	0.90	0.03	5.23	0.01	-	< 0.01	-	-	1.10	< 0.01	< 0.01	-	-	7.03	-	0.01	1.61	0.01	15.93
Delineated PUB Wetland	-	-	0.21	-	-	-	-	-	0.41	-	-	-	-	0.60	-	< 0.01	-	-	1.22
Delineated Surface Water	-	< 0.01	0.15	-	-	< 0.01	-	-	0.81	-	0.02	-	-	0.26	-	0.10	0.01	0.01	1.36
Developed – Open Space	0.35	0.30	0.16	< 0.01	-	0.04	-	-	1.17	0.01	< 0.01	-	-	2.93	0.75	0.02	0.01	0.51	6.25
Developed – Low Intensity	0.06	1.30	1.73	0.01	-	0.04	-	-	1.00	0.02	0.02	-	-	1.96	0.05	0.01	< 0.01	0.74	6.94
<b>TOTAL<sup>1</sup></b>	<b>348.38</b>	<b>43.62</b>	<b>39.04</b>	<b>0.17</b>	<b>0.30</b>	<b>5.08</b>	<b>1.90</b>	<b>3.64</b>	<b>825.39</b>	<b>1.00</b>	<b>1.67</b>	<b>0.01</b>	<b>26.46</b>	<b>142.52</b>	<b>13.67</b>	<b>63.68</b>	<b>49.63</b>	<b>68.68</b>	<b>1,634.84</b>

<sup>1</sup> Totals are for each component and may not add to the overall acreage due to rounding. Each component was calculated individually to avoid double counting (e.g., if a component is in the fence line, it is only counted under the component not both the component and fence line).

<sup>2</sup> Tree clearing acreage for this table totals less than the 135.74 acres of tree clearing for the Facility. To avoid double counting impacts, in areas that will have tree clearing where another component will be installed (i.e., access roads, solar arrays, inverters, etc.) the impact has been attributed to the component in this table.

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 (NYSDAM) Guidelines for Solar Energy Projects - Construction Mitigation for Agricultural Lands* (NYSDAM, 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. Existing 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 isolated patches and larger forested areas that extend off-site but do not have further connections to larger forest tracts. Impacts to forested land have been avoided and minimized to the extent practicable. To minimize the amount of tree clearing required for the Facility temporary laydown yards or work areas are proposed outside of forested areas to the maximum extent practicable. There are 2.13 acres of tree clearing within laydown yards or work areas. The Applicant plans to remove stumps only in areas necessary for the construction of certain Facility components, such as access roads, PV panels or facilities with foundations. A total of 135.74 acres of trees will be cleared for construction of the Facility. Forestland within the Facility will incur the following types of impacts: temporary disturbance, permanent conversion, and permanent loss. Temporary disturbance includes clearing for grading and collection line installation during construction that will be restored post-construction, allowing the forestland to naturally re-vegetate during Facility operation. Permanent conversion of forestland includes tree clearing to reduce shading on the panels and for component installation such as solar panels, as it will convert existing forestland to a new vegetation cover type, such as successional vegetative communities. Permanent loss of forestland includes clearing forests that will be replaced with Facility components such as access roads and substation equipment and the vegetation will not be allowed to grow back or convert to a different cover type.

Most solar arrays in the Facility Site have been sited outside of forested areas to decrease 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 area.

Clearing for the Facility will result in the creation 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 can negatively 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 or by providing more conducive habitats for invasive species to grow. Increasing the amount of peripheral forest in this landscape is not likely to result in additional edge effects as most of the Project is agricultural land with fragmented forests. Physical barriers resulting from this action are minor and unlikely to alter existing avian communities or significantly change their behaviors.

Vegetative screening containing native trees and shrubs will be planted. A Landscape Plan, included on Sheets L-101-01 through L-101-60 of Appendix 5-1, depicts the vegetative screening that will screen the Facility components to reduce visibility and 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. The Facility will result in a loss of 3.24 acres of successional shrubland that will occur from the siting of certain Facility components as outlined in Table 11-2, above. Additionally, the Facility will permanently impact 1.71 acres of land classified as developed/disturbed land.

The impacts to the representative communities within the Facility Site are not expected to result in the significant loss or extirpation of any representative plant community. Additionally, developed/disturbed land has minimal value as a habitat type and the loss is considered negligible.

### **11(c) Avoidance, Minimization, and Restoration Measures for Plant Community Impacts**

As described in the preceding sections of this Exhibit 11, Facility siting efforts to reduce impacts to plant communities 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 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. Additionally, the collection line connecting the panels in the northeast of the Facility is co-located with an existing transmission line to minimize fragmentation of larger forested areas. HDD will occur at multiple locations throughout the Facility to avoid impacts to sensitive features such as streams, wetlands, forests, and roads. For specific information on how HDD will avoid impacts to these resources, see Exhibit 13 and Exhibit 14 of this Application. 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, including vulnerable or rare forest ecological 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 1100-6 of the Article VIII 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 standard for solar installation, the use of alternative technologies during construction is not likely to reduce impacts and/or benefit the Facility significantly.

#### **11(d) Characterization of Wildlife, and Wildlife Habitats**

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 (WSCR). This WSCR was prepared as an early step in identification and coordination with the NYSDEC and ORES regarding both potential and known occurrences of species in the vicinity of the Facility Site. In addition, specific information and mapping regarding bird and bat migration routes, as applicable is provided below and on Figure 11-2.

#### ***Wildlife Studies***

Field biologists documented observed wildlife and wildlife habitat during ecological surveys conducted on-site, including wetland and stream delineations, grassland breeding bird surveys, and wintering grassland raptor surveys. Additionally, the following resources were reviewed and supplemented field-based data:

- NYNHP database;
- New York State Amphibian and Reptile Atlas Project (Herp Atlas);
- New York State Breeding Bird Atlas (BBA) and range maps;

- US Geological Survey (USGS) Breeding Bird Survey data;
- National Audubon Society Christmas Bird Count (CBC) data;
- Hawk Migration Association of North America hawk watch count data;
- The Cornell Lab of Ornithology eBird; and
- The Nature Conservancy (TNC) data.

## **Public Data Sources**

### *New York State Breeding Bird Atlas (BBA), 2020-2024*

The most recent New York State BBA (2020-2024) statewide survey resource was used to identify bird species with the potential to breed within the Facility Site. This survey includes point counts that are conducted by volunteers in a 3 square mile survey block across NYS. There are three blocks that overlap the Facility Site, Carlisle NW, Canajoharie SE, and Sharon Springs NE. These blocks, which were queried for bird species occurrence data, include a range of habitat types wherein both migratory and year-round inhabitant bird species have the potential to occur. A total of 117 species were observed to occur within these blocks. Observations of listed species were reviewed for proximity to the Facility Site and included in this list based on potential presence in the Facility Site. Three state-listed species have the potential to occur in 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 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).

The Facility Site does not overlap with any USGS BBS Routes and thus this database was not evaluated.

### *Audubon Christmas Bird Count*

Data from the Audubon 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 and all bird species and individuals observed within this search radius are recorded on the day of the count.

The Facility Site overlaps with the Fort Plain CBC circle (Audubon Count Code: NYFP). The center of this search area is approximately 6 miles northwest from the Facility, and a portion of the Facility Site is within the 15-mile search radius. A total of 80 avian species have been reported during the Fort Plain CBC between 2015 and 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 either as part of long-term monitoring, or short-term, research-focused efforts. The closest Hawkwatch station to the Facility Site is Fish Road Hawkwatch in Middlefield, New York. This station is 20 miles southwest of the Facility Site. Given the proximity of the Hawkwatch station to the Facility, data collected there has little relevancy and is therefore not summarized here.

### *The Cornell Lab of Ornithology eBird*

eBird is an online database managed by the Cornell University Lab of Ornithology that compiles bird observations collected by citizen scientists around the world. Vetted by regional experts to ensure accuracy, eBird data is a tool for documenting bird distribution, abundance, and habitat use while also providing practical applications like population mapping, predictions of migration patterns, and historical trends for researchers and conservationists. There are no eBird hotspots located within the Facility Site. Within the 5-mile Study Area, using eBird hotspot data, 263 species



were documented by eBird users from 2014 to 2024. Observations of listed species within the Study Area were reviewed for proximity to the Facility Site.

#### NYSDEC Hunting and Trapping Records

NYSDEC keeps records of all white-tailed deer and black bear harvested during each season. In 2023, 974 adult buck white-tailed deer (over 1.5 years old) and a total of 1617 white-tailed deer were harvested in Montgomery County (NYSDEC 2024). In 2022, there were eight black bears harvested in Montgomery County (NYSDEC 2022). Records are also kept for fisher, North American river otter (*Lontra canadensis*), bobcat (*Lynx rufus*), and American marten (*Martes americana*) that are trapped for their pelts. During the 2021-2022 season, one bobcat was trapped in Montgomery County (NYSDEC 2022). Thirty-one fishers were taken in Montgomery County (NYSDEC 2022). No North American river otter or American marten were trapped (NYSDEC 2022). Of these species, only white-tailed deer have been observed during field visits within the Facility Site.

#### **Site-specific Surveys**

##### Grassland Breeding Bird Surveys

Grassland breeding bird surveys were performed from May 3, 2022, through July 15, 2022. The objective of the breeding bird surveys is to determine the presence and Facility Site use by State-threatened, endangered, or special concern grassland bird species during the breeding season. A total of 1,176 bird observations of 35 species were recorded during regular surveys within the Facility Site during the study period. An additional 4,987 observations of 64 species were recorded incidentally to regular surveys (flyovers, outside 100-m point count radius, or outside of grassland habitat). The full breeding bird survey report can be found in Appendix 12-2 of Exhibit 12.

##### Wintering Grassland Raptor Surveys

Wintering grassland raptor surveys were conducted in the winter of 2020-2021 and again in the winter of 2021-2022. During the 2020-2021 survey season, TRC biologists recorded 91 observations of 11 raptor species during stationary surveys for a total of 892 use minutes. Twenty-one observations of seven species were observed during driving route surveys. During the 2021-2022 survey season, 282 observations of 13 raptor species were recorded, comprising a total of 1,536 use minutes. Driving surveys documented 116 observations of seven species. The full wintering grassland raptor survey report can be found in Appendices 12-3 and 12-4 of Exhibit 12.

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.

### ***Terrestrial Invertebrates***

As common inhabitants of the community types on-site 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.

Table 11-3 identifies the terrestrial species likely to occur in the vegetative community types described at the Facility Site along with confirmation if that species was observed during field surveys or site visits. In the "Occurrence" column of Table 11-3, species that were observed during wintering grassland raptor surveys are denoted as "WGRS," species that were observed during grassland breeding bird surveys are denoted as "BBS", and those observed during both surveys are denoted as "WGRS/BBS."

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

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
<b>Agricultural</b>	Woodchuck	<i>Marmota monax</i>	Likely to occur
	White-tailed deer	<i>Odocoileus virginianus</i>	WGRS/BBS
	Barn swallow	<i>Hirundo rustica</i>	BBS
	Bobolink	<i>Dolichonyx oryzivorus</i>	BBS
	European starling	<i>Sturnus vulgaris</i>	WGRS/BBS
	Killdeer	<i>Charadrius vociferous</i>	BBS
	Ring-necked pheasant	<i>Phasianus colchicus</i>	WGRS/BBS
	Wild turkey	<i>Meleagris gallopavo</i>	WGRS/BBS
	Canada goose	<i>Branta canadensis</i>	WGRS/BBS
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	BBS
	Short-eared owl	<i>Asio flammeus</i>	WGRS
	Horned lark	<i>Eremophila alpestris</i>	WGRS
	Mourning dove	<i>Zenaida macroura</i>	WGRS/BBS
	Vesper sparrow	<i>Pooecetes gramineus</i>	Likely to occur
	Northern harrier	<i>Circus cyaneus</i>	WGRS/BBS
	American kestrel	<i>Falco sparverius</i>	WGRS/BBS
	Black vulture	<i>Coragyps atratus</i>	WGRS
	Turkey vulture	<i>Cathartes aura</i>	WGRS/BBS
Red-tailed hawk	<i>Buteo jamaicensis</i>	WGRS/BBS	
<b>Forested Land</b>	Coyote	<i>Canis latrans</i>	Likely to occur
	Eastern chipmunk	<i>Tamias striatus</i>	Likely to occur
	Eastern raccoon	<i>Procyon lotor</i>	Likely to occur
	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>	BBS
	Red fox	<i>Vulpes vulpes</i>	Likely to occur
	Red squirrel	<i>Tamiasciurus hudsonicus</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	
	Striped skunk	<i>Mephitis mephitis</i>	BBS
	Various mice	<i>Mus spp.</i>	Likely to occur
	Various moles	<i>Condylura spp., Scalopus spp., Sorex spp.,</i>	WGRS
	Various shrews	<i>Blarnia spp., Cryptotis spp., Sorex spp.</i>	Likely to occur
	Various bats	<i>Myotis spp., Eptesicus spp., Lasiurus spp., Perimyotis spp.</i>	Likely to occur
	Virginia opossum	<i>Didelphis virginiana</i>	Likely to occur
	White-tailed deer	<i>Odocoileus virginianus</i>	WGRS/BBS
	Wood frogs	<i>Rana sylvatica</i>	BBS
	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>	WGRS/BBS
	Black-throated green warbler	<i>Setophaga virens</i>	BBS
	Eastern wood-pewee	<i>Contopus virens</i>	BBS
	Hermit thrush	<i>Catharus guttatus</i>	Likely to occur
	Red-bellied woodpecker	<i>Melanerpes carolinus</i>	WGRS/BBS
	Downy woodpecker	<i>Dryobates pubescens</i>	WGRS/BBS
	Hairy woodpecker	<i>Dryobates villosus</i>	WGRS/BBS
	Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	WGRS/BBS
	Pileated woodpecker	<i>Dryocopus pileatus</i>	WGRS/BBS
	Scarlet tanager	<i>Piranga olivacea</i>	BBS
	Sharp-shinned hawk	<i>Accipiter striatus</i>	Likely to occur
	Cooper's hawk	<i>Accipiter cooperii</i>	WGRS/BBS
	Bald eagle	<i>Haliaeetus leucocephalus</i>	WGRS/BBS

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

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
	Barred owl	<i>Strix varia</i>	WGRS/BBS
	Great-horned owl	<i>Bubo virginianus</i>	WGRS
Successional Shrubland	Coyote	<i>Canis latrans</i>	Likely to occur
	Eastern chipmunk	<i>Tamias striatus</i>	Likely to occur
	Eastern cottontail	<i>Sylvilagus floridanus</i>	BBS
	Eastern gray squirrel	<i>Sciurus carolinensis</i>	WGRS/BBS
	Gray fox	<i>Urocyon cinereoargenteus</i>	Likely to occur
	Red fox	<i>Vulpes vulpes</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>Blarina spp., Cryptotis spp., Sorex spp.</i>	Likely to occur
	Various moles	<i>Condylura spp., Scalopus spp., Parascalops spp.</i>	WGRS
	Virginia opossum	<i>Didelphis virginiana</i>	Likely to occur
	White- tailed deer	<i>Odocoileus virginianus</i>	WGRS/BBS
	Woodchuck	<i>Marmota monax</i>	Likely to occur
	Common garter snake	<i>Thamnophis sirtalis</i>	Likely to occur
	Eastern American Toad	<i>Anaxyrus americanaus</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>	WGRS/BBS
	American woodcock	<i>Scolopax minor</i>	WGRS/BBS
	Brown thrasher	<i>Toxostoma rufum</i>	BBS
	Cedar waxwing	<i>Bombycilla cedrorum</i>	WGRS/BBS
	Common yellowthroat	<i>Geothlypis trichas</i>	BBS
	Eastern towhee	<i>Pipilo erythrophthalmus</i>	BBS
Field sparrow	<i>Spizella pusilla</i>	BBS	
Gray catbird	<i>Dumetella carolinensis</i>	BBS	
Song sparrow	<i>Melospiza melodia</i>	BBS	

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

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
	White-throated sparrow	<i>Zonotrichia albicollis</i>	WGRS/BBS
Successional Old Field	Coyote	<i>Canis latrans</i>	Likely to occur
	Eastern cottontail	<i>Sylcilagus floridanus</i>	Likely to occur
	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>	WGRS
	White-tailed deer	<i>Odocoileus virginianus</i>	WGRS/BBS
	Woodchuck	<i>Marmota monax</i>	Likely to occur
	Common garter snake	<i>Thamnophis sirtalis</i>	Likely to occur
	Eastern American Toad	<i>Anaxyrus americanaus</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>	WGRS/BBS
	American woodcock	<i>Scolopax mino</i>	WGRS/BBS
	Bobolink	<i>Dolichonyx oryzivorus</i>	BBS
	Horned lark	<i>Eremophila alpestris</i>	WGRS
	Eastern kingbird	<i>Tyrannus tyrannus</i>	BBS
	Field sparrow	<i>Spizella pusilla</i>	BBS
	House wren	<i>Troglodytes aedon</i>	BBS
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	BBS
	Rough-legged hawk	<i>Buteo lagopus</i>	WGRS
	Savannah sparrow	<i>Passerculus sandwichen</i>	BBS
	Short-eared owl	<i>Asio flammeus</i>	WGRS
	Grasshopper sparrow	<i>Ammodramus savannarum</i>	BBS

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

Vegetative Community Type	Species		Occurrence
	Common Name	Scientific Name	
Developed/Disturbed Land	Eastern gray squirrel	<i>Sciurus carolinensis</i>	WGRS/BBS
	Virginia opossum	<i>Didelphis virginiana</i>	Likely to occur
	American robin	<i>Turdus migratorius</i>	WGRS/BBS
	European starling	<i>Sturna vulgaris</i>	WGRS/BBS
	House sparrow	<i>Passer domesticus</i>	WGRS/BBS
	Rock pigeon	<i>Columba livia</i>	WGRS/BBS
	American crow	<i>Corvus brachyrhynchos</i>	WGRS/BBS
Notes: 1) Wintering Grassland Raptor Surveys 2020-2021 and 2021-2022 2) Grassland Breeding Bird Surveys 2022			

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

An analysis of the impact of the construction and operation of the facility and interconnections on wildlife, wildlife habitats, and wildlife travel corridors, other than a NYS threatened or endangered species or species of special concern (which will be addressed pursuant to section 1100-2.13 of this Part).

**(1) Impacts to Wildlife and Wildlife Habitat**

A direct and permanent loss of 57.21 acres of wildlife habitat will result from the Facility. Habitat loss represents 1.51 percent of the total 3,794 acres included in the Facility Site. Of this percentage, 0.10 percent of the loss is to forested land, 0.09 percent to successional shrublands, while the majority, 1.2 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 41,275 acres of forest, 451 acres of shrubland, and 47,826 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.

## **Habitat Disturbance and Loss**

Approximately 1,637 acres of wildlife habitat will be impacted during construction of the Facility. However, 1,268.42 acres of the 1,637 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 58.17 acres of successional shrubland, 46.69 acres of forested land, and 905.23 acres of active agricultural lands will be temporarily disturbed during construction. Temporary disturbance to forested land will be 46.69 acres. Concurrently, 3.81 acres of forested land, 3.42 acres of successional shrubland, and 46.78 acres of active agricultural lands (row crops, cultivated crop, and pasture/hay) 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 on-site wetland and waterbody delineations conducted within the Facility component impact areas.

## **Grassland Birds**

The Facility Site does not overlap any Grassland Focus Areas. The nearest Grassland Focus Area is the Mohawk River Grassland Focus Area 4 which is within 5 miles of the Facility Site. In 2005, Audubon New York conducted surveys during the breeding season to determine the species composition within each focus area, identify priority species for each focus area and to guide conservation activities within. Priority species within the Mohawk River Grassland Focus Area included Henslow's sparrow, short-eared owl, and loggerhead shrike. These species were not detected during the 2005 Audubon surveys, and several other species had relatively low representation in the survey.

The Facility Site does not overlap any Audubon Important Bird Areas (IBA).

Overall, construction of the Facility will result in 931.62 acres of temporary impacts and 47.70 acres of permanent impacts to open habitat. Conversion of 316.41 acres of open habitat will occur



where agricultural land is converted to another cover type (e.g., conversion from agricultural land to vegetative landscape screening). Open habitat is an important habitat type for several bird species and is defined as “all fields, including those in pasture, hay, alfalfa, or other field crop, grasslands, fallow fields, early successional fields or shrubland with sparse woody growth, and wet meadows or marsh land” in the Grassland Breeding Bird protocol, utilized during Grassland Breeding Bird surveys (see Appendix 12-2 of Exhibit 12. NYS Threatened or Endangered Species). While some of the permanently impacted acreage will be employed for Facility component placement, 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. For reference, direct impact refers to any kind of direct mortality or disturbance to birds, such as a nest being destroyed by farm equipment or trampled by grazing cattle. Indirect impacts occur when birds aren't being directly killed or disturbed, but individuals or their habitat might be impacted by the activity. For example, conversion of occupied breeding habitat to development, or intensive row-crop agriculture, would be considered indirect impacts.

## **Bats**

Consultation with the 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 (February 20, 2024). The Official Species List indicated the potential northern long-eared bats (*Myotis septentrionalis*) to be present within the vicinity of the Facility Site.

Based upon a review of the NYSDEC Environmental Resource Mapper (ERM) and consultation with the NYNHP, there are two known northern long-eared bat (*Myotis septentrionalis*) hibernacula 1.3 miles north and northwest of the Facility Site. Consultation with NYSDEC has been requested to confirm the presence/absence of listed bat species within the Facility Area.

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 three-inches observed included red maple, sugar maple, American basswood, swamp white oak, green ash, white ash, red spruce, yellow birch, American elm, eastern hemlock American beech, white pine, cottonwood (*Populus deltoides*), and quaking aspen. 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 160.24 acres of impact to 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*); 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 Facility (Herp Atlas) database and other sources are listed in above in Table 11-3. Based on the distribution information provided by the NYSDEC Herp Atlas (1990-2007), 21 species have the potential to occur within the Facility Site. 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 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.

## **Game Species**

Immediate disturbances during the construction phase of the Facility will cause temporary disruption of local game species (e.g., white-tailed deer (*Odocoileus virginianus*), ruffed grouse (*Bonasa umbellus*), and wild turkey (*Meleagris gallopavo*)). 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 are 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. The Facility will utilize woven wire fencing is proposed as part of the Facility design to permit small wildlife passage.

### ***(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/ megawatt (MW)/year in the southwestern United States (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 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**

<b>Habitat</b>	<b>Acres within Facility Site</b>	<b>Temporary Impacts (acres)<sup>1</sup></b>	<b>Permanent Loss (acres)<sup>2</sup></b>	<b>Conversion (acres)<sup>3</sup></b>	<b>Total Impacts (acres)</b>
Cropland/Row Crops	983.39	481.98	21.44	185.26	688.68
Cultivated Field Crops	457.48	212.02	12.12	70.98	295.12
Hay/Pasture	683.79	211.23	13.22	60.17	284.62
Forested Land	709.72	46.69	3.81	109.74	160.24
Grassland/Herbaceous	144.23	26.39	0.92	5.18	32.49
Successional Shrubland	280.77	58.17	3.42	28.57	90.16
Developed, Open Space	23.96	4.77	0.34	1.12	6.23
Developed, Low Intensity	43.32	5.44	1.37	0.13	6.94
PEM Delineated Wetland	177.98	31.51	0.46	7.74	39.71
PFO Delineated Wetland	124.29	13.38	0.03	2.52	15.93
PSS Delineated Wetland	102.56	10.93	0.06	3.81	14.8
PUB Delineated Wetland	17.87	1.21	-	0.00	
Delineated Surface Water	18.90	1.23	0.02	0.11	1.36
NWI PEM Wetland	4.06	-	-	-	-
NWI PFO/PSS Wetland	1.27	-	-	-	-
NWI Freshwater Pond	3.27	-	-	-	-
NWI Riverine	7.93	-	-	-	-
NYSDEC Wetland	7.67	-	-	-	-
Open Water	0.01	-	-	-	-

**Table 11-4. Summary of Impacts to Wildlife Habitat**

<b>Habitat</b>	<b>Acres within Facility Site</b>	<b>Temporary Impacts (acres)<sup>1</sup></b>	<b>Permanent Loss (acres)<sup>2</sup></b>	<b>Conversion (acres)<sup>3</sup></b>	<b>Total Impacts (acres)</b>
<b>Total</b>	<b>3,792.45</b>	<b>1,104.95</b>	<b>57.21</b>	<b>475.33</b>	<b>1,637.49</b>
<sup>1</sup> Temporary Impacts include impacts related to fenced area, LOD, laydown yard, grading limits, MV feeder, collection trench installation, and HDD bore pits. <sup>2</sup> Permanent Loss includes impacts related to access roads, fence line, substation, POI switchyard, culverts, infiltration trenches, and inverter and pad. <sup>3</sup> Conversion includes impacts related to solar panels, clearing and grubbing, and landscaping.					

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

An identification and evaluation of avoidance measures or, where impacts are unavoidable, minimization measures, including the use of alternative technologies, regarding 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 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.



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