



# **NYSERDA BR Benson Mines Solar Landscape Development Plan**

Prepared for:  
Adirondack Park Agency  
Solar Generation Facility Permit

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## Introduction

This Landscape Development Plan (LDP) was developed on behalf of BR Project 1, LLC's proposed BR Benson Mines Solar Project, a 20-megawatt (MW) solar photovoltaic (PV) generation site, and associated electrical infrastructure (Project), located within the Town of Clifton, St. Lawrence County, New York. The Project is located on portions of a former tailings pile within the Adirondack Park. As currently proposed, the Project will be constructed, operated and maintained by a qualified developer (Facility Owner/Lessee) selected by NYSERDA.

This LDP will:

- Identify areas of existing site character, proposed vegetation, and vegetation clearing;
- Describe appropriate methodologies and procedures for clearing;
- Describe appropriate revegetation strategies to be implemented; and,
- Describe future management.

This LDP will describe appropriate procedures for tree management, application of the proposed seed mixes for stabilization, and provide strategies for maintenance, monitoring and control of invasive plants and noxious weeds in the seeded areas over the lifetime of the Project. This plan is intended only for the maintenance and control of the project facility and related components only; the Facility Owner/ Lessee is not responsible for maintenance and control (e.g., weed management) of the native areas found on the project parcels surrounding the facility.

The LDP is intended to be a document of reference for site conditions and vegetation management methods over the Project life.

## Existing Site Character and Proposed Changes

### Existing Site Character

The Project Site consists of the re-vegetated and re-claimed area of the former Benson Mine tailings pile, which will predominantly be the location for the PV array. The former tailings pile is surrounded by existing woodland types, including spruce-, pine-, and hemlock- northern hardwood forests, and maple-basswood rich mesic forest. The tailings pile itself is characterized by barren lands and early-to-mid successional vegetation comprised of mosses, lichens, grasses, shrubs and small trees. The southern end of the tailings pile is bounded by a large wetland with smaller wetlands located to the east and west.

The proposed PV array area is generally covered with a surficial layer of topsoil approximately 3 to 7 inches thick. Below the surficial topsoil, the subsurface is comprised of well-drained soils consisting of fill, primarily containing sandy soils with varying amounts of silt. The fill layer ranged in depth from 20 to 27 feet below the topsoil. The relative density of these fill soils ranges from "very loose" to "medium dense" and the natural moisture contents range from approximately 5% to 23%. Refer to the Project's geotechnical report for a detailed analysis of the surface, subsurface, and geological conditions found at the site (Appendix E of the BR Benson Mines Solar Project SWPPP).

The proposed access road is sited on an existing dirt and gravel road connecting the PV array area to NYS Route 3. The proposed underground collection line to the point of interconnection (POI) is also sited predominantly in an existing dirt and gravel road. Limited tree clearing will be required to reach the POI (discussed below) as well as widen the access road.

## Proposed Changes

Within the proposed PV array area, the limited successional woody vegetation and trees will need to be removed in order to avoid any shading impacts to the PV panels. Clearing and grubbing is anticipated for vegetation removal within the limits of disturbance (LOD), but hand tools may be used in order to reduce ground disturbing activities, if desired. Clearing of some of the more mature stands of existing trees will be necessary for the installation of the underground electrical collection lines, the widening of an existing access road, and select areas to avoid production impacts by shading. In some areas, clearing to prevent shading will be necessary outside of the LOD and within the 100-foot APA wetland protection buffer; in which case clearing must be done by use of hand tools only. The total area of tree clearing for the underground collection lines, to widen the access road, and to avoid shading is estimated to be approximately 5.36 acres. Of the 5.36 acres, 1.73 acres within the 100-foot APA buffer areas is limited to hand clearing, or “selective clearing”. Refer to the BR Benson Mines Solar Project Site Plan for areas of selective clearing. No clearing, pruning, or felling will be proposed due to the relocation of the snowmobile route to an existing cleared corridor. Further, as reflected in the BR Benson Mines Solar Project Site Plan, limited grading will be conducted within the LOD. The importation or exportation of additional fill during construction is not anticipated.

As discussed further below, only seed mixes in areas requiring soil stabilization per the site’s SWPPP requirements are anticipated; no other plantings are proposed for the Project. The seed mixes were chosen based on the existing site soils and should not require extensive soil amendments or importation of large quantities of additional topsoil in order to establish.

## Vegetation Planting and Revegetation Implementation

To the extent possible, the Project will implement vegetation management and erosion control measures including:

- seeding of temporary vegetation for stabilization;
- seeding of solar array groundcover and pollinator-specific groundcover, as compatible with site soil conditions, for long-term stabilization;
- invasive weed control in the seeded/stabilized areas;
- proper tree clearing; and,
- vegetation monitoring, maintenance, and management.

Refer to the Landscaping Plan sheet of the BR Benson Mines Solar Project Site Plan (Sheet L-100), which identifies the existing vegetation, proposed areas of tree clearing, selective tree clearing, identification of the pollinator-friendly seed mix to be used if required for soil stabilization per the site’s SWPPP requirements, and the species composition and ratios of the two proposed seed mixes.

## Temporary Vegetation

During construction and/or extensive maintenance activities, temporary stabilization practices may be implemented to reduce soil erosion during stormwater events and minimize damage to soils during intensive equipment traffic. Best management practices to address these concerns, including use of temporary (annual) seed mixes and winter cover crops tailored to the site’s specific soil conditions should be utilized. Reference and implement the Project’s Stormwater Pollution Prevention Plan (SWPPP) to ensure all land and water resources are protected during construction and operations, and for when these temporary measures may be required.

## Site Stabilization and Landscaping Plan

The Landscaping Plan sheet of the BR Benson Mines Solar Project Site Plan (Sheet L-100) provides the proposed seed mixes and the respective areas where each is to be used for stabilization. Seeding is only necessary where disturbance activities have occurred and require stabilization per the SWPPP. As areas of the Project may achieve final stabilization ahead of the entire Project, the Facility Owner/Lessee will act in accordance with the Project's SWPPP until completion of construction. Once construction has been completed, and revegetative efforts are in accordance with the approved plans, the Facility Owner/Lessee will submit for a Notice of Termination for the Project's SWPPP associated permit coverage, requesting that the NYSDEC concur that final stabilization has been achieved.

The following seed mixes are proposed to be used stabilization within their respective areas of the Project as shown on L-100. The seed mix ratios are also shown on L-100 and provided below. The Facility Owner/Lessee may consult with the APA on other seed mixes should there be interest or need to evaluate other options. The seed mixes below contain species known to germinate and establish in sandy and well-drained soils, such as those found in the project area. If soil testing for amendments is to be performed, it should be conducted post-disturbance, prior to seeding and should follow the criteria set forth in the *New York State Standards and Specifications For Erosion and Sediment Control* guide book.

### Solar Array Ground Cover (Seed Mix 1)

Within the solar array, low-growing seed mixes specifically created for the use under the arrays should be used as the long-term ground cover for stabilization. This mix may be comprised of warm and cool season grasses that do not typically exceed heights of two (2) feet thus, eliminating any concerns for panel shading.

NATIVE/NATURALIZED SOLAR FARM SEED MIX				
BOTANICAL NAME	COMMON NAME	MIX CONCENTRATION	RATE (LBS/ACRE)	RATE (LBS/1000 FT <sup>2</sup> )
FESTUCA RUBRA	CREEPING RED FESCUE	34%	262	6
FESTUCA OVINA	SHEEP FESCUE	33%		
FESTUCA BREVIPILA 'BEACON'	HARD FESCUE 'BEACON'	10%		
FESTUCA OVINA VAR. DURIOUSCULA 'RHINO'	HARD FESCUE 'RHINO'	5%		
FESTUCA OVINA VAR. GLAUCA (F. ARVERNENSIS) (F. GLAUCA), 'BLUE RAY'	BLUE FESCUE 'BLUE RAY'	5%		
POA PRATENSIS 'ARGYLE'	KENTUCKY BLUEGRASS 'ARGYLE'	5%		
POA PRATENSIS 'SHAMROCK'	KENTUCKY BLUEGRASS 'SHAMROCK'	5%		
AGROSTIS PERENNANS, ALBANY PINE BUSH-NY ECOTYPE	AUTUMN BENTGRASS, ALBANY PINE BUSH-NY ECOTYPE	3%		

SEED PICK TABLE

Scientific Name	Species	Variety
<i>Andropogon gerardii</i>	Big bluestem	Niagara
<i>Andropogon hallii</i>	Sand bluestem	Goldstrike
<i>Elymus canadensis</i>	Canada wildrye	
<i>Eragrostis spectabilis</i>	Purple Lovegrass	
<i>Eragrostis trichodes</i>	Sand lovegrass	Nebraska 27 or Bend
<i>Festuca arundinacea</i>	Tall Fescue	Firecracker SLS
<i>Lolium perenne</i>	Perennial ryegrass	Amazing A+
<i>Panicum amarum</i>	Coastal panicgrass	Atlantic
<i>Panicum virgatum</i>	Switchgrass	Blackwell, Shelter Pathfinder, or Trailblazer
<i>Poa compressa</i>	Canada bluegrass	Rubens, Compressa
<i>Schizachyrium scoparium</i>	Little bluestem	Aldous or Camper
<i>Sporobolus asper</i>	Rough dropseed	
<i>Sporobolus cryptandrus</i>	Sand dropseed	

Additionally, other seed choices suitable for the site are included in the seed pick table L-100. This is proposed to allow flexibility for the stabilization based on the site conditions.

***Pollinator-Specific Ground Cover (Seed Mix 2)***

A pollinator-specific seed mix will be used in disturbed areas to provide additional ecological benefit and enhance visual aesthetics of the Project as well as stabilization. These selected areas may include along the fence line perimeters, access roads, and other places where pockets of space are created due to odd angles in the fence line perimeter, solar array configurations, or buffer areas. Since this seed mix is intended for areas away from solar arrays, mowing should not be a concern and the species selected can be allowed to grow taller than the ground cover maintained within the solar array; thereby allowing the pollinator-friendly species to grow to their naturally occurring heights resulting in optimum flower production. Proper raking, tilling, and finish grading techniques shall be performed prior to sowing the pollinator-specific seed mix.

NORTHEAST NATIVE WILDFLOWER & GRASS MIX				
BOTANICAL NAME	COMMON NAME	MIX CONCENTRATION	RATE (LBS/ACRE)	RATE (LBS/1000 FT <sup>2</sup> )
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	40%		
BOUTELOUA CURTIPENDULA	SIDEOATS GRAMA	23.40%		
COSMOS BIPINNATUS	COSMOS	7.30%		
COREOPSIS LANCEOLATA	LANCELEAF COREOPSIS	3.50%		
ECHINACEA PURPUREA	PURPLE CONEFLOWER	3.50%		
ELYMUS VIRGINICUS	VIRGINIA WILDRYE	3%		
SORGHASTRUM NUTANS	INDIANGRASS	2.50%		
LUPINUS POLYPHYLLUS	BIGLEAF LUPINE	2.20%		
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	2%		
DELPHINIUM AJACIS	ROCKET LARKSPUR	2%		

RUDBECKIA HIRTA	BLACKEYED SUSAN	2%	20	0.46
GAILLARDIA ARISTATA	BLANKET FLOWER	1.50%		
SENNA HEBECARPA	WILD SENNA	1%		
PENSTEMON DIGITALIS	TALL WHITE BEARDTONGUE	1%		
PAPAVR RHOEAS	SHIRLEY MIX (CORN POPPY, SHIRLEY MIX)	0.60%		
ANDROPOGON GERARDII	BIG BLUESTEM	0.50%		
ELYMUS CANADENSIS	CANADA WILDRYE	0.50%		
COREOPSIS TINCTORIA	PLAINS COREOPSIS	0.50%		
LIATRIS SPICATA	BLAZING STAR	0.40%		
ASCLEPIAS SYRIACA	COMMON MILKWEED	0.40%		
ASCLEPIAS TUBEROSA	BUTTERFLY MILKWEED	0.40%		
ZIZIA AUREA	GOLDEN ALEXANDERS	0.30%		
ASCLEPIAS INCARNATA	SWAMP MILKWEED	0.30%		
MONARDA FISTULOSA	WILD BERGAMONT	0.20%		
PENSTEMON LAEVIGATUS	APPALACHIAN BEARDTONGUE	0.20%		
SENNA MARILANDICA	MARYLAND SENNA	0.20%		
SOLIDAGO NEMORALIS	GRAY GOLDENROD	0.10%		
TRADESCANTIA OHIENSIS	OHIO SPIDERWORT	0.10%		
ASTER LAEVIS	SMOOTH BLUE ASTER	0.10%		
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	0.10%		
ASTER PRENANTHOIDES	ZIGZAG ASTER	0.10%		
HELIOPSIS HELIANTHOIDES	OXEYE SUNFLOWER	0.10%		

## Visual Screening and Aesthetics Plantings

Due to the positioning of the site, utilization of the existing access road, the proposed point-of-interconnection located adjacent to existing utility infrastructure, and the surrounding topography, the visual impact analysis for this Project proposes that there is little-to-no impactful Project visibility; therefore, planting trees, shrubs, or other vegetation as visual buffers or screening is not proposed.

## Vegetation Maintenance and Monitoring During Facility Operation

The implementation of a vegetation monitoring program and schedule combined with appropriate vegetation management practices can provide numerous benefits to the solar area, as well as minimize overall maintenance costs over the Project life. Proper monitoring and maintenance techniques will help enhance the overall vitality of the existing or planted native vegetation located within the solar area and limit the spread of unwanted, invasive, or noxious plant species.

Some maintenance activities, like tree clearing, may occur during both construction and operations phases of the Project, while others, like monitoring for invasive weeds, begin as the long-term ground cover is being planted. Monitoring of the solar area for invasive weeds and areas requiring vegetation maintenance (such as pruning of dead limbs that are creating a safety hazard) shall occur at a minimum in the spring and in the fall in the first two (2) growing seasons following initial installation of the long-term ground cover. After the first two (2) years, the vegetation within the solar area will be monitored on an as-needed basis.

### **Invasive Weed Control, Monitoring, and Management**

The monitoring regime will include identifying the presence of invasive or unwanted species and the extent of their occurrence by Project operations and maintenance (O&M) personnel. During the first two (2) growing seasons following planting of the long-term ground cover, the Project is most vulnerable to invasive and/or noxious weed species infestation due to the recent soil disturbance from construction activities. Should any invasive species be identified within the stabilized areas, the invasive species shall be removed according to methods most likely to be effective in controlling the given species. Methods of control may include biological, chemical or integrated pest management (IPM), cultural control (such as cleaning of shoes to remove weed seeds), and/or mechanical (pulling/digging, suffocating, cutting, and mowing). Consultation with the Adirondack Park Agency (APA), New York State Department of Environmental Resources (NYSDEC), Cornell Cooperative Extension, or other credentialed environmental resource is recommended to identify and confirm most appropriate effective method(s) of control to implement. Where necessary, use the approved seed mix(es) identified above, or an APA approved alternative option, to supplement the area where invasive species have been removed. A NYSDEC list of Prohibited and Regulated Invasives species and the “Inter-Agency Guidelines for Implementing Best Management Practices to Control Invasive Species on DEC administered lands of the Adirondack Park” are appended to this plan as Appendix A and B, respectively.

### **Tree Clearing, Felling and Pruning**

Tree clearing will be limited to the areas shown on the Site Plan. Any trees outside of the LOD during construction, or outside of the Project fence line during operation of the Facility that are close and large enough to shade the arrays, will be removed, pruned, or felled depending on their location. Any necessary tree clearing activity shall be done in conformance with ANSI A300 (Part 1) – 2017 Pruning Standards, Maintenance of Vegetation, and shall only be done in accordance with any other local, state or federal permits that may be required. Any necessary activity shall be done utilizing best management practices, including the following particular to this Site:

- Any tree felling or pruning efforts necessary within the 100-foot APA wetland buffer areas shall be done using hand tools and slash left in place to benefit wildlife habitats;
- No machines shall be used for tree felling purposes within the 100-foot APA wetland buffer areas; and,
- Any tree clearing or pruning done outside of the 100-foot wetland buffer areas can be done using machinery and the slash may be removed.

### **Maintenance of Vegetation**

Maintenance responsibilities include cultivating, mowing, spraying of herbicides and pesticides (when necessary), weeding, watering (if necessary), pruning, fertilizing, mulching, and any other operations necessary to maintain plant viability. Maintenance responsibilities shall be implemented over the lifetime of the Project from the onset of construction through decommissioning. Maintenance services and practices will vary in need, type, and intensity during the lifecycle of the Project. Mowing regimens will vary as well depending on the time of year and rainfall intensity, though mowing will occur as infrequently as vegetation growth will allow. Additionally, pruning efforts should lessen over time if proper pruning practices and standards are implemented.

## ***Mowing***

Seed Mix 1 was selected to eliminate the need for frequent mowing. The primary objective of mowing is to keep the vegetation below two (2) feet in height to avoid panel shading. It is recommended that a minimum of one (1) to two (2) mowings occur each year to maintain a healthy viable groundcover stand throughout the Project Area. Mowing will be needed to control annual weeds that are typical after ground disturbance has occurred. Per the request of the Adirondack Park Agency, the mowing regime will be limited to mowing between November 1 and May 1 of any year.

The first mowing should be at no less than three (3) inches in early spring around the time new growth begins and the second mowing should occur once maximum heights are reached. Mowing heights can vary between five (5) and ten (10) inches during the second mowing to achieve the goals of preferred height limitations and maximizing benefits to wildlife. A 10-inch mowing height will be used whenever possible for the second mow to align with typical O&M guidelines pertaining to native/indigenous seed mixes however, shorter mowing heights of five (5) to six (6) inches may be needed if panel shading issues are encountered.

## ***Invasive Weed Control***

Selective herbicide used to control weeds and unwanted vegetation growth in the seeded and stabilized areas may be necessary but will be avoided whenever possible. All other options and/or methods to control vegetation will be considered prior to herbicide use. Should herbicide use be necessary, herbicide application strategy will be determined and applied by personnel qualified in its use to ensure proper selection and application, as treatment approach can vary greatly depending on target species, time of year, extent of area, or other factors. Within the cleared corridor for the underground medium-voltage collection lines, herbicides may be used via squirt bottle as a cut stump application on woody vegetation in compliance with the herbicide label, state, and federal law, in order to ensure the corridor remains clear of woody vegetation.

## ***Pruning***

All pruning shall conform to the Tree Care Industry Association (TCIA) ANSI a300 (Part 1) - 2017 pruning standards and will occur only when necessary to prevent panel shading or to remove hazardous trees or limbs. Pruning standards performed on trees and shrubs within the Project Area shall manage risk, manage health, develop structure, provide clearance, manage size or shape, improve aesthetics, manage production of fruit, flowers to benefit the existing pollinator habitat, and/or manage wildlife habitat. Developing structure through proper pruning practices will improve branch and trunk architecture, promote or subordinate certain leaders, stems, or branches. It will also promote desirable branch spacing, promote or discourage growth in a particular direction (directional pruning), minimize future interference with vehicular traffic, lines of sight, infrastructure, or other plants. Within the corridor for the underground collection lines vegetation can be maintained by routinely removing fallen woody material when found and keeping floor in an herbaceous state by routine mowing (see Maintenance of Vegetation above) to keep woody vegetation excluded. Additionally, the wooded sides of the corridor will not be actively managed aside from miscellaneous pruning or removal of hazardous trees or limbs in conformance with ANSI A300 (PART 1) - 2017 pruning standards.

## **Summary**

The Project will require vegetation management approaches that differ during construction and long-term operation of the Project. The following Facility Owner/Lessee Recommendations have been prepared below. Major deviations to this plan or any permits or approvals related shall not be done without approval of local, state or federal law.

### **Facility Owner/Lessee Recommendations**

- The average frost-free growing season for the Project is mid-May through mid-September and all monitoring and maintenance activities listed below shall take this growing season into consideration.
- Keep this Landscape Development Plan available for reference throughout construction and operations.
- Implement appropriate erosion control and/or site construction BMPs as outlined in the SWPPP.
- For best results, plant long-term ground cover during the dormant window, between end of September and late April.
- Identify all areas of concern as it relates to vegetation management (soil erosion, lack of vegetation growth, etc.) and maintenance control needs (weed growth, re-seeding), and promptly address each concern to reduce negative impacts.
- Identify areas within the Project that will require monitoring and maintenance needs per the direction of this Plan and the Project SWPPP;
- Monitoring of the solar area for invasive weeds and areas requiring vegetation maintenance shall occur at a minimum in the spring and in the fall in the first two (2) growing seasons following initial installation of the long-term ground cover. After the first two (2) years, the vegetation within the solar area will be monitored on an as-needed basis.
- Have protocols in place for emergency situations (such as fallen vegetation on structures or utility lines, wind or storm damage, spillage of material, etc.), additional vegetation efforts, monitoring activities, and/or unexpected maintenance needs identified within the Project Area.

## Appendix A

## Appendix B