

Prairie Establishment & Maintenance Technical Guidance for Solar Projects

Minnesota Department of Natural Resources

Revised July 2020



Habitat-friendly solar array planted with native wildflowers and grasses at the MN Department of Natural Resources' regional headquarters in New Ulm, MN

Introduction

This is a technical guidance document for prairie establishment and management of habitat-friendly or pollinator-friendly native seed plantings at solar sites. The document provides technical guidance that supports the Minnesota Department of Natural Resources (DNR) [Commercial Solar Siting Guidance](#) and the Board of Water and Soil Resources' (BWSR) [Habitat Friendly Solar Program](#). The DNR's guidance addresses the regulatory aspect of solar site establishment and siting. By using these with BWSR's guidance, it provides a framework that solar developers can use to develop Agriculture Impact and Vegetation Management Plans that may be required as part of the Public Utilities Commission Site Permit. The goal of this document is to provide an overview of the benefits, establishment, and maintenance guidelines for creating a pollinator-friendly prairie planting at solar sites. Additional references that contain more specific planting and maintenance details are included at the end of the document.

The DNR is available to assist solar developers throughout project planning, construction, and post-planting maintenance. This guidance should be used with the DNR's Commercial Solar Siting Guidance to help a developer plan, design, and install their project. [BWSR's Sample Habitat Friendly Solar Planting Plan Specifications](#) can also assist a developer in this phase of their project.

BWSR's [Project Planning Assessment Form](#) and [Established Project Assessment Form](#) have been developed to evaluate project design and establishment for projects that are required to meet the state standard as a condition of local ordinances or conditional use permits, or for solar developers who plan to claim that a solar site provides benefits to pollinators, songbirds, and game birds (consistent with Minnesota Statute 216B.1642). Solar developers should work with a native seed company to develop the native seed mix(es) (reporting rates in ounces/acre and seeds per sq. ft.), and provide the mix, planting layout, and maintenance specifications to local and state agencies that are assisting with the review of projects. This includes the DNR for projects over 50 megawatts that require a Public Utilities Commission site permit.

Why Establish Pollinator-Friendly Plantings?

Prairie communities occur in open landscapes with plants that are dominated by a diversity of grass and forb (wildflower) species. Prairie communities vary from site to site due to differences in slope (hills vs. lowlands) and soil types. Prairie seed mixes include a diversity of flowering plants that are both pleasing to the eye, and provide excellent wildlife food and habitat for a variety of species.

Creating a pollinator-friendly prairie planting at solar sites can:

- Provide food and habitat for butterflies, bees, and insects that pollinate flowering forbs and some commercial agricultural crops.

- Provide food, cover, and nesting habitat for some species of mammals, birds, reptiles, and amphibians.
- Significantly reduce wind and surface water erosion.
- Significantly reduce fertilizer, herbicide, and pesticide applications, resulting in improved water quality.
- Increase organic matter and water holding capacity of soils. The result is higher quality soils for farming after the site is decommissioned.
- Improve the aesthetic look of the solar facility.

State Statute

Minnesota Statute 216B.1642 addresses solar site management. Subdivision 1 of the statute encourages site management practices that provide native pollinator habitat and reduce stormwater runoff and erosion at solar generation sites. The statute states: *To the extent practicable, when establishing perennial vegetation and beneficial foraging habitat, a solar site owner shall use native plant species and seed mixes under Department of Natural Resources "Prairie Establishment & Maintenance Technical Guidance for Solar Projects."*

Subdivision 2 of the statute sets forth the requirements a project must follow to claim that a solar site provides benefits to pollinators, songbirds, and game birds. An owner making a beneficial habitat claim must

1. make the site's vegetation management plan available to the public;
2. provide a copy of the plan to a Minnesota nonprofit solar industry trade association; and
3. report on its site management practices to the Board of Water and Soil Resources, on a standard reporting form¹ developed by the board for solar site management practices. An owner must report to the board on the progress made toward establishing beneficial habitat on or before June 1 of the year after operations commence and every third year thereafter.

If a solar site does not meet these requirements, the project may not claim that it is beneficial to pollinators, songbirds, or game birds. The DNR encourages all solar developers to establish pollinator friendly plantings at all suitable sites regardless of whether or not they want to claim the site as beneficial to pollinators, songbirds, or game birds.

¹ The *Solar Site Pollinator Habitat Assessment Form* is available on the Minnesota Board of Water and Soil Resources website.

Seed Mix Development

There are many options when developing a native seed mix. The DNR has laid out a framework that solar companies should consider when working with a native seed company to design a native seed mix.

Prairie seed mixes can be adapted to include only low-growing species that will not shade the solar panels or cause undue harm to their primary purpose of creating clean, renewable energy. Prairie plantings have both an establishment and a long-term maintenance phase. The establishment phase takes approximately 1-3 years. Long-term maintenance will begin in years 4-5 and continue for the life of the planting. The first year of growth is primarily for root development. In the second and third year of establishment, the above ground growth and flowers are more prevalent as the stand matures.

Seed Mix Cost

Native seed mixes in general cost more than non-native seed mixes. However, the higher seed cost can be offset by the following:

- No fertilizer applications are needed prior to planting.
- Limited use of mulch is necessary, or using erosion control blankets only on the steepest banks and highly erodible areas. Temporary cover of 20 lbs. /acre of oats or other suitable nurse crop is recommended to stabilize the soil.
- Only a limited amount of fertilizer is used post-planting for sites with very poor soils or limited amounts of soil.
- Watering recently established native seed plantings is not necessary except in years of extreme drought.
- Participating in trading prairie acres as carbon credits may be possible.

Seed Source

There are two strategies to seed sourcing that involve either matching seed (using seed that is the most geographically close to the planting) or mixing seed (seed is taken from multiple populations within an established seed zone and are mixed together prior to distribution and planting). The DNR recommends planting a high diversity of species using seeds or plugs that are regionally native and follow the recommended seed sourcing sequence from the DNR's Seed Collection and Deployment Zones document, depicted in Appendix A. This guidance document should be provided to the native seed company that is developing the project seed mix. Seeds should first be sourced from areas with similar site conditions that are regionally native—meaning they are native to the county or adjacent county where the project is being constructed. Plants brought from different areas with significantly different climatic conditions may not produce viable seed or may flower in the wrong time—meaning they may bloom earlier or later than when their native pollinators or other beneficial insects are flying on the landscape.

Seed Specification/Diversity

Diversity, meaning a variety of plant species in one place, is key to a planting's success. The more diverse a planting is, the better chance it has at long-term health and self-sustainability, which translates to lower management costs. Over the years, there will be variations in invasive species pressure, soil conditions, and climate, such as extreme drought or extreme moisture. Having a diversity of plants ensures that more species are able to adapt to these extremes and can therefore respond to changing environmental conditions. In order to meet the habitat-friendly solar standard, pollinator seed mixes should be used on at least 30% of the site.

Pollinator seed mixes:

- A minimum seeding rate of 40 seeds/sq. ft.²
- At least 40% of the total seeding rate should be composed of perennial forbs.
- 7 or more native grass/sedge species with at least 2 species of bunchgrass.
- 20 or more native forbs with at least 3 species in each bloom period: Early (April-May), Mid (June-August), and Late (August-October).
- Fulfill the guilds: cool season grasses; warm-season grasses; sedges/rushes; legume; and non-legume forbs
- Include species from different plant families to support the widest diversity of pollinator species
- Plant species under panel arrays should have a maximum height of 3 feet and should include shade-tolerant species for fixed panel sites.³

Grass-only seed mixes:

- Seed mixes should have a minimum seeding rate of 40 seeds/sq. ft.¹
- 7 or more native grass/sedge species with at least 2 species of bunchgrass.
- Plant species under panel arrays should have a maximum height of 3 feet and should include shade-tolerant species for fixed panel sites.²

Wetland/ Farmed wetland seed mixes to be used outside of panel areas:

- Work with a native seed company to select the appropriate [State Seed Mix](#) or develop a custom seed mix using the State Seed Mix Guidance as a template.

² Site conditions (wet vs. dry), soil types, species selected, time of planting, weather, and other factors can affect seeding rates and seed mix design. Please work with a native seed company to ensure proper seeding rate and seed mixes are used.

³ Fixed panel sites have more shade under the panels than rotating panel sites. For these sites it is recommended to use at least two different seed mixes: shade-tolerant for under the panel and sun-tolerant for in between the rows and edge areas.

We generally recommend not including tall warm-season grasses (big bluestem-*Andropogon gerardii*, Indian grass-*Sorghastrum nutans*, switchgrass-*Panicum virgatum*) in the panel array area at solar sites. The tall warm-season grass height and density may interfere with operations or dominate the stand and outcompete the shorter stature species. If tall warm-season grasses are used, they should comprise less than 5% of the total seed mix. Tall warm-season grasses can be used for perimeter plantings as a visual barrier.

Please note that state-listed species (endangered, threatened, or special concern) seed should not be included in any of the mixes.

Visual Screening

If visual screening is being considered for the project site, native flowering shrubs can be planted around the perimeter to both fulfill this consideration and supplement early-blooming species requirements. Suitable shrubs may include: red-osier dogwood (*Cornus sericea*), gray dogwood (*Cornus racemosa*), pagoda dogwood (*Cornus alternifolia*), American wild plum (*Prunus americana*), chokecherry (*Prunus virginiana*), and New Jersey tea (*Ceanothus americanus*). Shrub selection should be based on site conditions and species native to the county or adjacent county where the project is being constructed.

Visual screening using tree species should follow the shrub selection criteria above. Use of tree species in the open landscapes of Minnesota should be used only when required by a permit, to address adjoining landowner concerns, or to provide non-flowering pesticide drift avoidance zones. Companies should not plant invasive tree species. Some native trees such as Eastern red cedar (*Juniperus virginiana*), also have limited application for solar sites because they compete with prairie vegetation and can spread aggressively when disturbance is absent. To maintain sensitivity to adjacent conservation easements and public lands that place a high priority on recreation of the prairie landscape, trees and shrubs should be used when they have a limited risk of spreading into the prairie portion of the site and prairies in the surrounding landscape.

Pesticide Drift

Pesticide drift is a concern when plantings occur in agricultural, urban, or other working landscapes. Using visual screening of non-flowering shrubs, trees, or grasses can be a way to provide a buffer for planted areas to help minimize the impacts of drift. The following are buffer widths recommended by BWSR and the Xerces Society to help avoid drift:

- 40 ft. wide for site adjacent or near ground-based spray applications
- 60 ft. wide for site adjacent or near the use of air-blast sprayers
- 125 ft. wide for sites adjacent or near aerial spraying or crops treated with neonicotinoids (including application as a seed treatment)

To learn more about pesticide drift, see this fact sheet on [Protecting Conservation Plantings from Pesticides](#).

Planting Layout Sample

Appendices B, C, and D include a schematic of planting options and sample seed mixes. The sample seed mixes are short in stature and have some shade tolerance for species planted under the panels. The seed mixes may need to be modified to include species that are regionally appropriate in the geographic area of the project and are suitable for the soil and site conditions.

There are three basic layout options that should work for the majority of solar sites:

- Option 1. Whole site planted with pollinator seed mix (grasses and forbs).
- Option 2. Grass only mix planted underneath solar panels. In between rows and perimeter planted with pollinator mix.
- Option 3. Grass only mix planted underneath and between solar panels. Perimeter planted to a pollinator mix.

Plant species chosen for areas under the panels should have a maximum height of 3 feet so that they do not interfere with solar operations. Taller species can be used in perimeter pollinator plantings or in between panel rows. Shading of the panels should not be an issue when using some taller species because most of the mass of prairie plants is in the lower portion of the plant, with the majority of the height being in the flower stalk.

Planting Specifications

Planting Method: Drilling, Broadcasting

The DNR recommends that planting occur post-construction of the panels. Attempting to plant after grading and before post and panel installation will result in poor soil to seed contact due to equipment maneuvering. A temporary cover of 20 lbs./acre of oats can be used as erosion control and site stabilization until construction is complete and the prairie seed mixes are planted.

Grasses/sedges should be broadcast seeded in the grass only areas and the pollinator mix (forbs and grasses) drilled into the remaining areas. The key to stand success is to maximize seed to soil contact during planting. If drilling is the planting method, seed drills designed specifically to plant prairie grasses and flowers should be used. If broadcasting is the planting method, native-seed broadcasters (e.g., Vicon seeder) should be used as they are adapted to spread mixes with different sized seeds. For more information about planting methods, please refer to [A Prairie Restoration Handbook for Minnesota Landowners](#) under the “Planting your Prairie” section.

Timing

Growing season plantings should occur from May 1 - July 1 when the soil temperature is at least 60 degrees Fahrenheit or higher. Frost seeding should occur after October 15 in the northern half of the state and after November 1 in the southern half of the state, or after soil temperatures fall below 50 degrees Fahrenheit for a consistent period of time, but before soils freeze. Seeding rates may need to be increased by 25 percent for frost seeding due to lower germination rates and loss of seed that is consumed by wildlife over the winter months.

Planting dates will vary depending on the weather in a particular year and where the planting site is located (e.g., northern Minnesota versus southern Minnesota). Consult with native seed suppliers to determine the best planting dates for that year.

Temporary Cover

A temporary cover should be used with the planting to help suppress weeds and stabilize the soil until the prairie planting becomes established. A temporary cover of 20 lbs./acre of oats is used in the example seed mixes provided in Appendix B.

Establishment and Maintenance Specifications

Prairie establishment in the first 2-3 years involves spot-spraying or mowing of invasive weeds. Removal of the invasive weeds will allow for the prairie plantings to become established and help prevent future weed growth.

Periodic Mowing

Periodic mowing involves mowing the entire planting throughout the first growing season to help prevent a weed canopy from forming and to allow slower germinating plants a chance to grow and be productive. Ideally, periodic mowing is meant to keep the vegetation at around knee-height. Mowing should take place once a month or after vegetation reaches 18" in height. Mowing should be done at a raised height between 4-6 inches. Care should be taken to avoid mowing the planting too frequently or too aggressively, such as weekly or shorter than the recommended height as this can damage the native vegetation and cause the planting to fail.

Spot-Mowing

Spot-mowing involves mowing only in the areas with invasive or noxious plants. Spot-mowing can slow some of the aggressive and fast growing invasive plants while allowing the native species to become established. Spot-mowing should be done at a raised height between 4-6 inches in order to target the invasive plants and to not damage the native species. Spot-mowing for control of invasive or noxious weeds can be done every year to ensure planting health, even during

establishment years. Care should be taken to avoid mowing the planting too frequently or too aggressively, such as weekly or shorter than the recommended height as this can damage the native vegetation and cause the planting to fail. A list of noxious/invasive weed species that should be eradicated can be viewed at the [Minnesota Department of Agriculture's website](#).

Spot-Spraying

Spot-spraying should target only noxious/invasive weed species. A licensed applicator should be hired to apply the appropriate selective herbicide. Plantings that include both grasses and forbs should never be broadcast-sprayed. [The Midwest Invasive Plant Control Database](#) provides a compilation of control methods for many common invasive plants. Some noxious or invasive weeds do not respond well to spraying so managers are encouraged to consider the control method that will do the least amount of harm to overall planting health.

To prevent inadvertent spraying of the prairie, it may be advantageous to be placed on the do not spray list at the local farm co-op. This will help prevent damage to your prairie planting.

For more information about establishment maintenance, please refer to the Tallgrass Prairie Center's [Initial Post-Seeding and Early Reconstruction Management guide](#).

Long-Term Maintenance

Long-term prairie maintenance usually begins in years 4-5 by introducing disturbance into the planting. Prairie habitats thrive on disturbance. Disturbance allows prairies to renew themselves while also slowing natural succession (keeping the prairie from becoming a forest). Plan on haying/mowing, burning, or spraying to remove any unwanted trees/shrubs that may be present. It is not necessary to use all of these options, just one or two, depending upon the planting's progression and operational concerns. Since burning is most likely not an option at solar sites, introducing a rotation of haying/mowing would be an excellent option. After completing the selected maintenance activity in year 4-5, you will need to repeat this type of maintenance approximately every 2-3 years, depending on tree/shrub encroachment, ratios of grasses to forbs, presence of noxious weeds, and overall planting health.

Haying/mowing should be done at a raised height of 4-6 inches once a season. Haying or mowing below the recommended height can damage the long-term health of the planting. Hayed/mowed vegetation should be bagged and removed off site to prevent smothering new growth. Haying/mowing equipment should be cleaned prior to use on site to prevent the spread of non-native and invasive species into the planting.

With any management activity, it is very important to establish refugia (undisturbed areas). These areas play an important role in pollinator conservation and allow for the completion of pollinator life cycles. No more than 1/3 of the site should be hayed/mowed each year. The same 1/3 should not be hayed/mowed in consecutive years. If possible, 10% of the site should be set

aside as semi-permanent refugia that receives limited haying/mowing on a longer return interval of 15 years. For more information about refugia, consult the [DNR's Pollinator Best Management Practices and Habitat Restoration Guidelines](#).

Prairie Seed Suppliers and Restoration Companies:

The DNR recommends you work with a company(s) that specialize in native seed and installing/maintaining prairie restoration projects. Select companies that are experienced and have a history of successful prairie restoration projects. There are several commercial companies that can be easily found through an internet search. A list of native seed suppliers can be found by visiting the [DNR's Landscaping with Native Plants webpage](#).

The DNR appreciates the efforts of all solar companies that install native seed plantings that are favorable to pollinators and other wildlife.

Additional Information:

[A Prairie Restoration Handbook for Minnesota Landowners](#)

[BWSR Native Vegetation Establishment and Enhancement Guidelines](#)

[Board of Water and Soil Resources \(BWSR\) State Seed Mixes](#)

[BWSR Habitat-Friendly Solar Program](#)

[Native Plant Suppliers and Landscapers in MN](#)

[Minnesota Wildflowers](#)

[The Midwest Invasive Plant Control Database](#)

[Tallgrass Prairie Center Guide for Initial Post Seeding and Early Reconstruction Management](#)

[DNR's Pollinator Best Management Practices and Habitat Restoration Guidelines](#)

Equal Opportunity Statement

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Alternative Format Available Upon Request.

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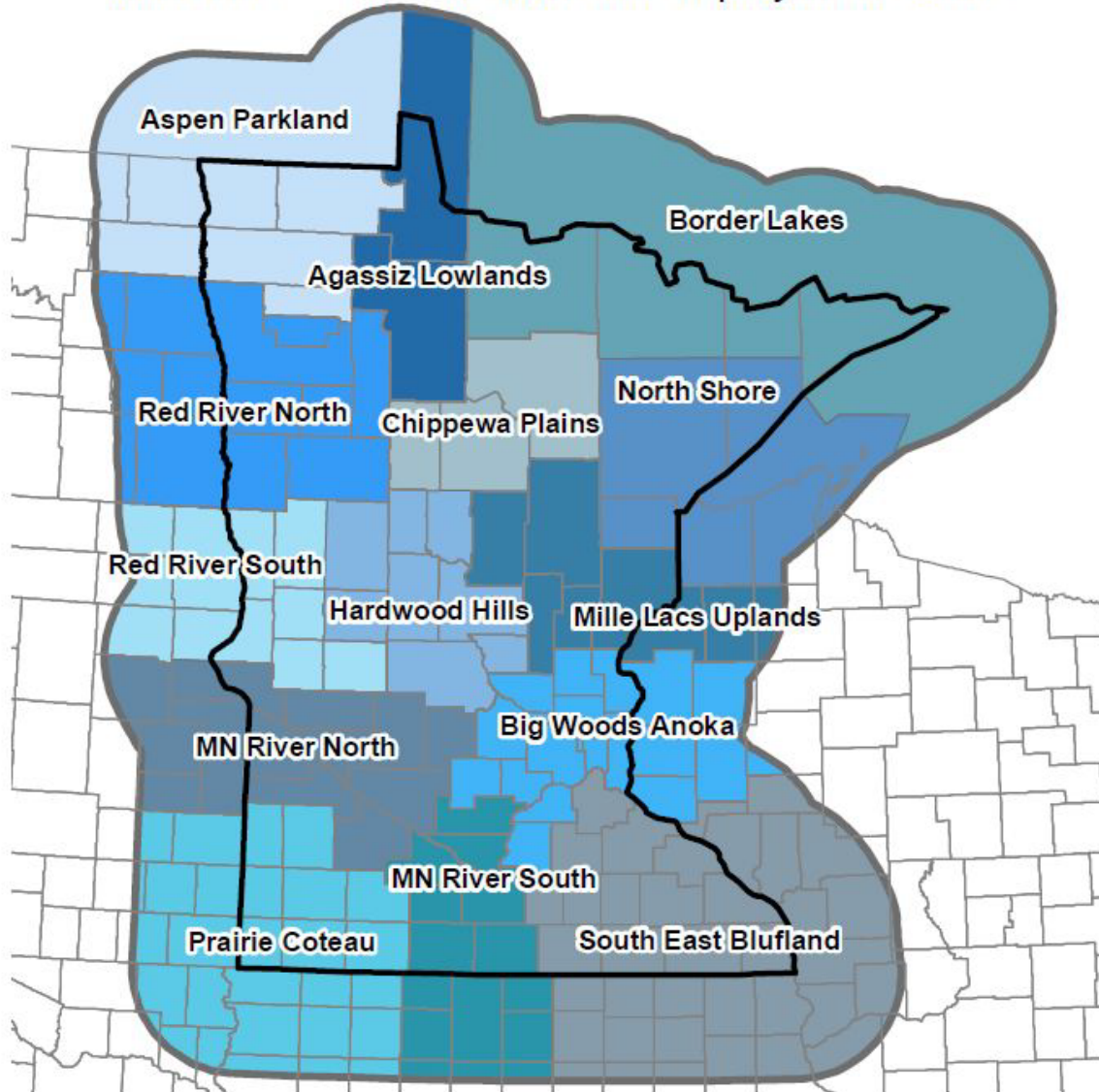
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Appendix A

DNR Seed Collection and Deployment Guidance for Seed Selection

MN DNR Seed Collection and Deployment Zones



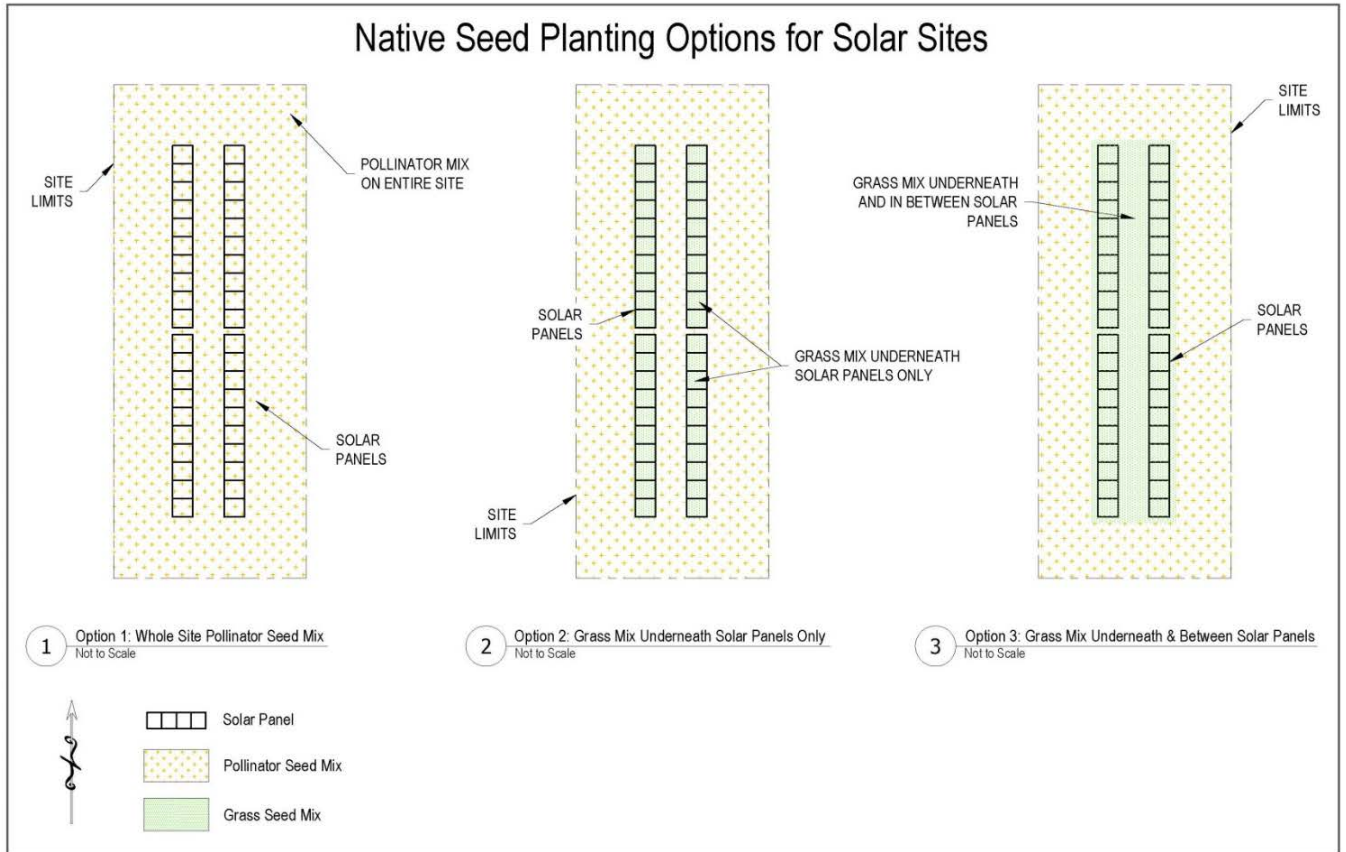
Framework for Selecting Plant Material Sources

1. Collect plant materials from areas with similar site conditions that are within or immediately adjacent to the restoration or reconstruction site or nearby. Nearby is defined by the division and generally is considered to be within the same zone.
2. Obtain plant materials from areas with similar site conditions and within the same Seed Zone.
3. Obtain plant materials from areas with similar site conditions in an adjacent Seed Zone.
4. Obtain plant materials from areas with similar site conditions in a Seed Zone that adjoins one of the adjacent Seed Zones.
5. If suitable seed/plant material can't be found, substitute another species with similar attributes.

Note: It is important to recognize that boundaries of the Seed Collection and Deployment Zones are not walls which cannot be crossed. If a restoration/reconstruction area is near one of these boundaries, an appropriate choice for restoration materials may be just across the boundary in an adjacent seed zone. This source of materials may actually be more desirable than a more distant source of plant materials from within the same seed zone. This framework recognizes that seed zones are not static; they may be adjusted over time to reflect new information based on research results from climate change and other analyses.

Appendix B

Native Seed Planting Layout Options and Seed Mix Examples for Solar Sites



Appendix C

Native Seed Planting Layout Options and Seed Mix Examples for Solar Sites

Native Seed Mix Planting Options for Solar Sites: Sample Pollinator Mix

Project: Solar short-stature prairie reconstruction

Address: Lyon County

Date: 2016

Soils: Loam, Sandy loam (Well-drained)

Seeding Rate: 40 seeds per square foot

Bloom Season Spring Summer Fall

Pollinator Seed Mix (Mesic prairie)	Bloom Season	Height	% of Mix	oz/ acre	Seeds /sq. ft.	Acres to Seed
<i>Forbs</i>						
<i>Achillea millefolium</i> (yarrow)	Summer	1-3'	1.02%	0.10	0.41	1
<i>Allium stellatum</i> (prairie wild onion)	Summer	8-18"	1.25%	2.00	0.51	1
<i>Anemone canadensis</i> (Canada anemone)	Summer	1-2'	0.46%	1.00	0.18	1
<i>Anemone cylindrical</i> (long-headed thimbleweed)	Spring	1-2'	1.48%	1.00	0.60	1
<i>Asclepias syriaca</i> (common milkweed)	Summer	2-5'	1.14%	5.00	0.46	1
<i>Asclepias verticillata</i> (whorled milkweed)	Summer	1-2'	0.78%	1.25	0.32	1
<i>Astragalus canadensis</i> (Canada milk vetch)	Summer	12-40"	1.94%	2.00	0.78	1
<i>Astragalus crassicaarpus</i> (ground plum)	Spring	1-2'	0.89%	3.00	0.36	1
<i>Dalea candida</i> (white prairie clover)	Summer	1-3'	4.33%	4.00	1.74	1
<i>Dalea purpurea</i> (purple prairie clover)	Summer	1-3'	5.13%	6.00	2.07	1
<i>Echinacea angustifolia</i> (narrow-leaved purple coneflower)	Summer	1-2'	1.60%	4.00	0.64	1
<i>Euthamia graminifolia</i> (grass-leaved goldenrod)	Summer	2-4'*	2.00%	0.10	0.80	1
<i>Galium boreale</i> (northern bedstraw)	Fall	1-3'	1.00%	0.25	0.40	1
<i>Liatris aspera</i> (rough blazingstar)	Summer	1-4'*	0.68%	0.75	0.28	1
<i>Lobelia spicata</i> (pale-spike lobelia)	Summer	1-2'	2.57%	0.05	1.03	1
<i>Monarda fistulosa</i> (wild bergamot)	Summer	2-4'*	2.00%	0.50	0.80	1
<i>Penstemon grandifloras</i> (large beardtongue)	Summer	12-40"	1.20%	1.50	0.48	1
<i>Phlox pilosa</i> (prairie phlox)	Spring	6-24"	0.27%	0.25	0.11	1
<i>Potentilla arguta</i> (prairie cinquefoil)	Summer	1-3'	1.31%	0.10	0.53	1

Pollinator Seed Mix (Mesic prairie)	Bloom Season	Height	% of Mix	oz/ acre	Seeds /sq. ft.	Acres to Seed
<i>Pycnanthemum virginianum</i> (mountain mint)	Fall	1-3'	1.88%	0.15	0.76	1
<i>Ratibida columnifera</i> (upright prairie coneflower)	Summer	1-3'	2.39%	1.00	0.96	1
<i>Rudbeckia hirta</i> (black-eyed Susan)	Summer	1-3'	3.93%	0.75	1.58	1
<i>Sisyrinchium campestre</i> (prairie blue-eyed grass)	Spring	4-16"	1.28%	0.50	0.52	1
<i>Solidago rigida</i> (stiff goldenrod)	Fall	1-3'	1.17%	0.50	0.47	1
<i>Solidago speciosa</i> (showy goldenrod)	Fall	1-3'	1.35%	0.25	0.55	1
<i>Symphyotrichum ericoides</i> (heath aster)	Fall	1-3'	1.14%	0.10	0.46	1
<i>Symphyotrichum</i> leave (smooth blue aster)	Fall	1-3'	1.57%	0.50	0.63	1
<i>Zizia aptera</i> (heart-leaved Alexanders)	Spring	1-3'	1.37%	2.00	0.55	1
Total for Forbs					18.57	
Grasses						
<i>Avena sativa</i> (Oats; Temporary Cover)				20lbs/ac		1.00
<i>Bouteloua curtipendula</i> (side oats grama)		1-2'	8.32%	24.0	3.31	1
<i>Bouteloua gracilis</i> (blue grama)		12"	11.56 %	5.0	4.59	1
<i>Carex bicknelli</i> (copper shouldered oval sedge)		1-3'	1.97%	2.0	0.78	1
<i>Carex pensylvanica</i> (Pennsylvania sedge)		8"	1.73%	1.0	0.69	1
<i>Carex brevior</i> (plains oval sedge)		12"	1.68%	1.0	0.67	1
<i>Koeleria macrantha</i> (Junegrass)		2'	11.56 %	1.0	4.59	1
<i>Schizachyrium scoparium</i> (little bluestem PLS)		1-3'	10.41 %	12.0	4.13	1
<i>Sporobolus heterolepis</i> (prairie dropseed PLS)		2-3'	7.40%	8.0	2.94	1
Total for Grasses					21.69	
Total Seeds/Sq. ft.					40.26	

Appendix D

Native Seed Planting Layout Options and Seed Mix Examples for Solar Sites

Native Seed Mix Planting Options for Solar Sites: Sample Grass-only Mix

Project: Solar short-stature prairie

Address: (Lyon County)

Date: 2016

Soils: Loam, Sandy loam (Well-drained)

Seeding Rate: 40 seeds per sq ft

No-Mow "Turf"	Height	% of Mix	oz/acre	Seeds/sq ft	Acres to Seed
<i>Grasses</i>					
<i>Avena sativa</i> (Oats; Temporary Cover)			20lbs/ac		1.00
<i>Bouteloua curtipendula</i> (side oats grama)	1-2'	19.00%	56.0	7.71	1.00
<i>Bouteloua gracilis</i> (blue grama)	12"	18.10%	8.0	7.35	1.00
<i>Carex bicknelli</i> (copper shouldered oval sedge)	1-3'	5.77%	6.0	2.34	1.00
<i>Carex pensylvanica</i> (Pennsylvania sedge)	8"	3.39%	2.0	1.38	1.00
<i>Carex brevior</i> (plains oval sedge)	12"	3.28%	2.0	1.33	1.00
<i>Koeleria macrantha</i> (Junegrass)	2'	22.62%	2.0	9.18	1.00
<i>Schizachyrium scoparium</i> (little bluestem PLS)	1-3'	16.97%	20.0	6.89	1.00
<i>Sporobolus heterolepis</i> (prairie dropseed PLS)	2-3'	10.86%	12.0	4.41	1.00
Total Seeds/Sq. ft.				40.59	