



The PHASE Project: New Research and Tools to Inform Pollinator Habitat on Utility-Scale Solar

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Photo by Dennis Schroeder, NREL 55200



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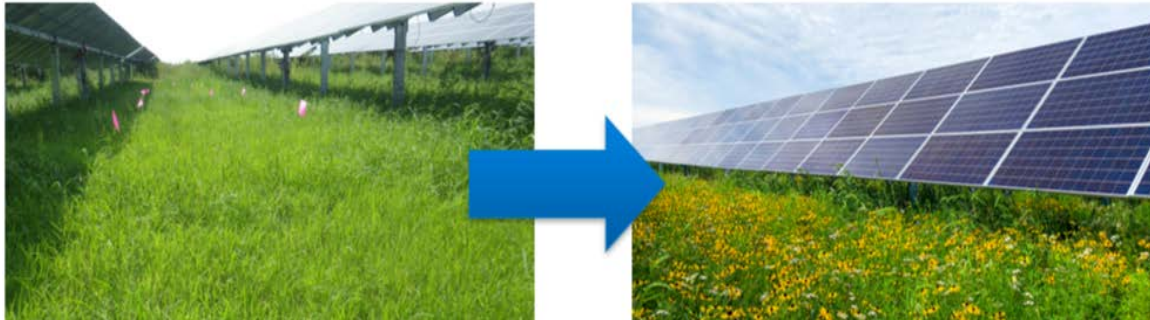
1 Background on the PHASE Project

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PHASE Research Questions

1. How do different **configurations** of pollinator plantings at large-scale solar facilities (>10 MW) affect the potential ecological, economic, and/or performance benefits?
2. How does **scale** of pollinator plantings affect the ecological, economic, and/or performance benefits at large-scale solar facilities?
3. What **seed mixes** are most effective (i.e., establish quickly, provide sufficient pollinator benefit, meet operational needs, etc.)?



Photos: Argonne National Laboratory

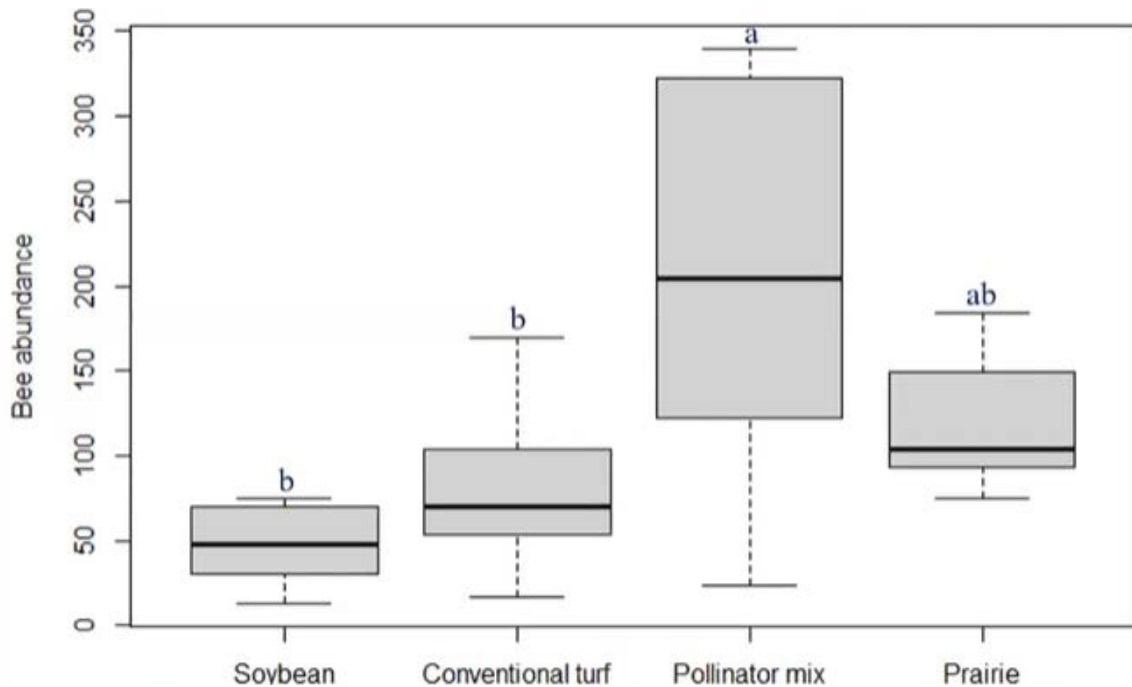
Solar Facility Test Sites



Site Name	Location	Size	Pollinator Planting Establishment Date
Solar Farm 2.0	Urbana, IL	12 MW	Spring 2021
Electric City	Sturgis, MI	19 MW	Spring 2021
Point Beach	Two Creeks, WI	99 MW	Fall 2021
Prairie Wolf	Coles County, IL	200 MW	Fall / Winter 2021
Riverstart Solar Park	Randolph County, IN	200 MW	Spring 2022
Logansport	Logansport, IN	16 MW	Spring 2022
Bellflower Solar Farm	Rush County, IN	170 MW	Spring / Fall 2022

How do Solar Habitats Compare to Restored Prairies and Other Managed Habitat?

Higher Bee Abundance in Solar Habitat



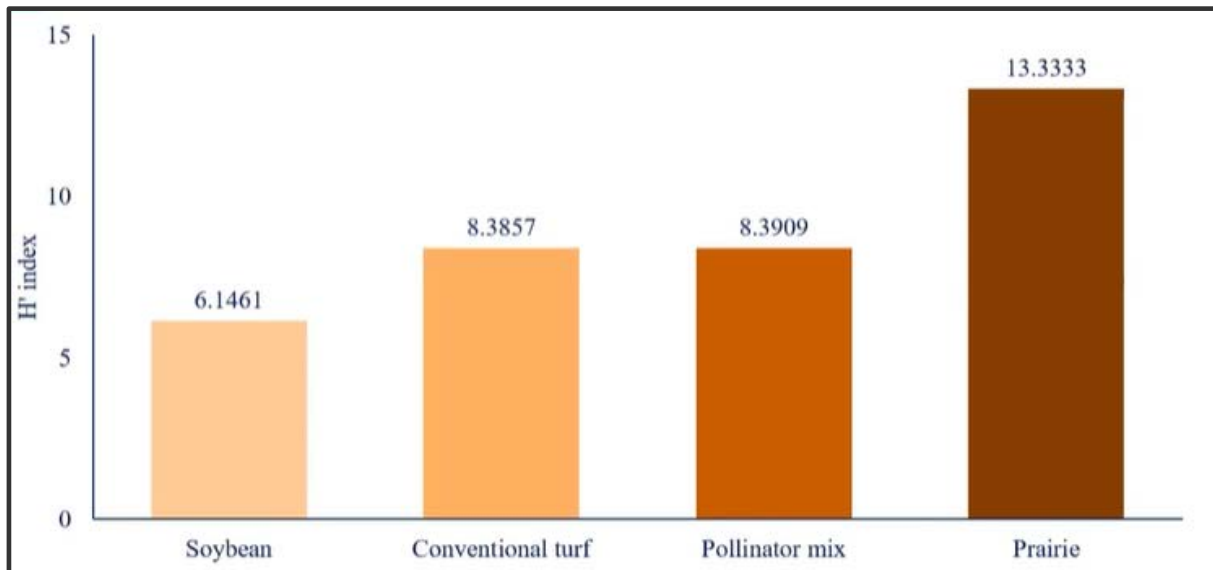
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How do Solar Habitats Compare to Restored Prairies and Other Managed Habitat?

Greater Diversity in Restored Prairies



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PHASE Tools



**Pollinator
Vegetation
Implementation
Manual**

Final Draft Published
March 2024



**Cost
Comparison
Calculator
Tool**

Tool Available
March 2024



**Seed
Selection
Tool**

Tool Available
December 2023



**Habitat
Assessment
Module**

Published
December 2023

Pollinator Vegetation Implementation Manual

Purpose: Align vegetation planning, implementation, and maintenance with pollinator objectives and site constraints.

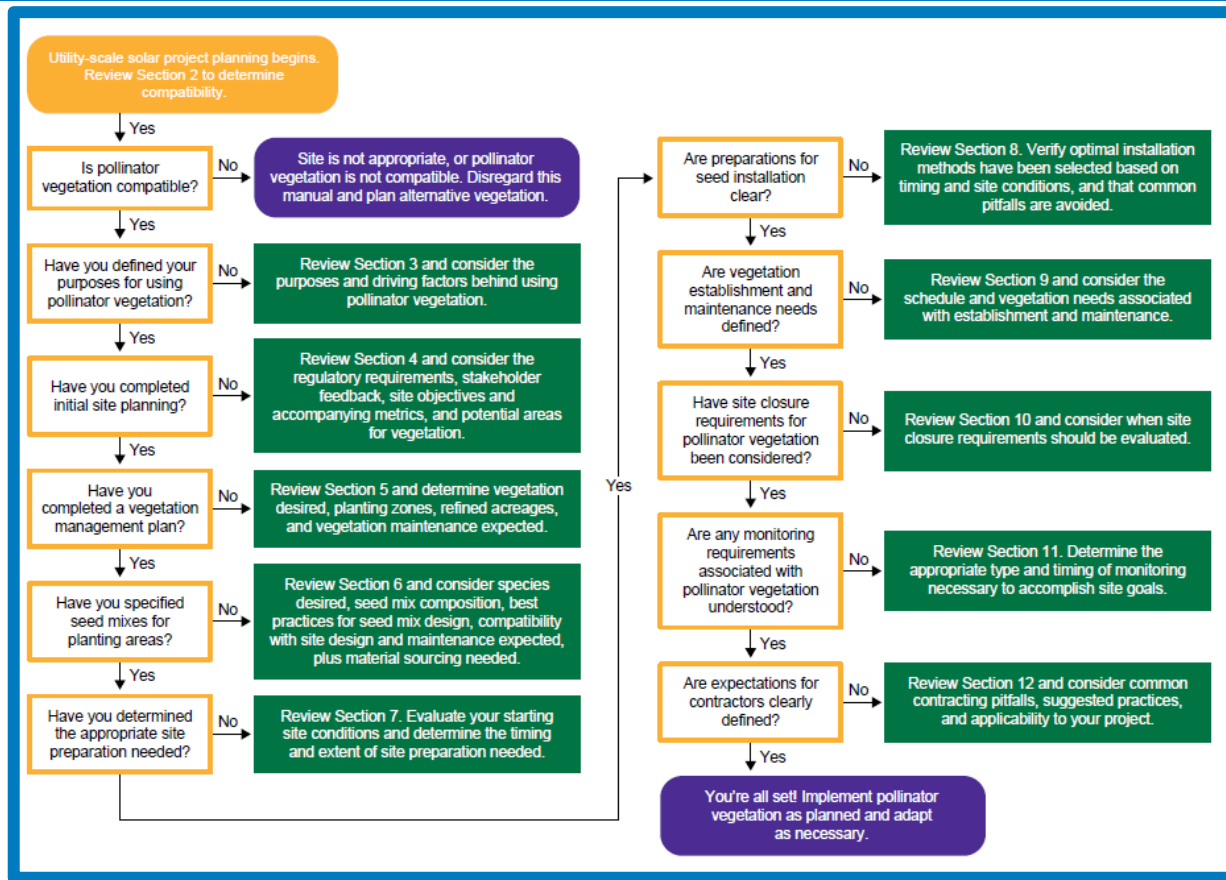
Use: A decision guide helping individuals working with solar pollinator vegetation to:

- Define and communicate pollinator goals and objectives,
- Consider site constraints and operational needs,
- Increase success through establishment and maintenance.



Image: An adaptive management figure from the DRAFT Pollinator Vegetation Implementation Manual.

Pollinator Vegetation Implementation Manual



Cost Comparison Calculator

Purpose: Help vegetation specialists and project planners make informed decisions about the cost implications of vegetation regimes and site plans.

Use: A calculator that allows users to compare vegetation types based on:

- Size of planted area
- Target vegetation regimes
- Planned vegetation management
- Duration of establishment and maintenance
- Comparison of CAPEX and OPEX cost forecasts

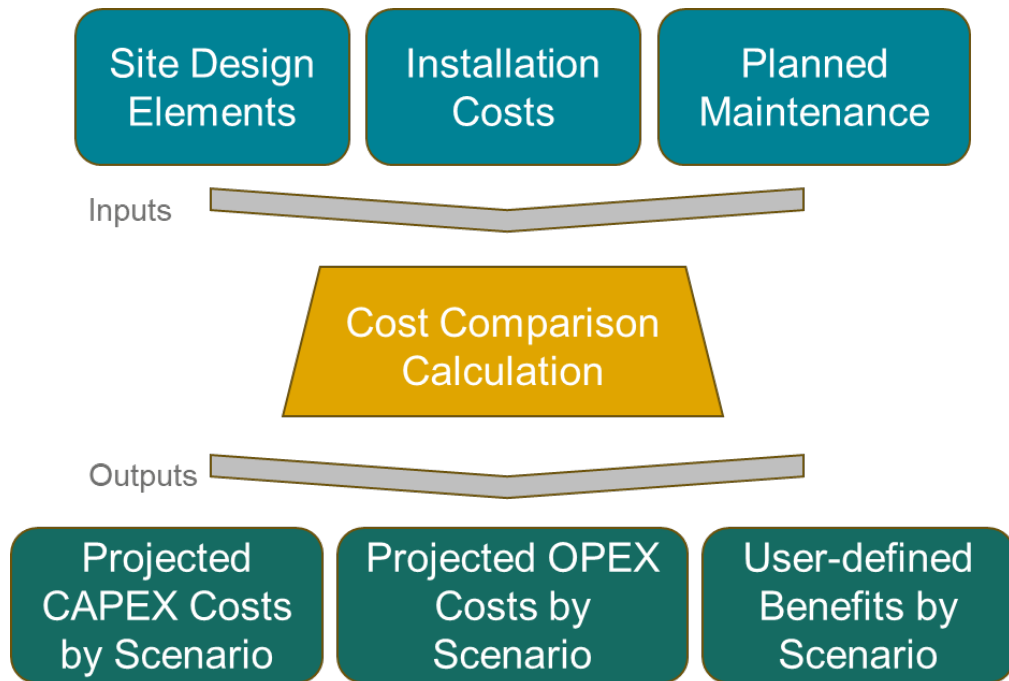


Image: Inputs and resulting outputs from the cost comparison tool.

Seed Selection Tool

Purpose: Support vegetation specialists, seed vendors, and project planners in seed mix development, review of seed mixes, identifying substitutions, and informing vegetation decisions.

Use: An online species selection tool that allows users to query a list of appropriate species based on:

- Location
- Site conditions
- Panel height constraints
- Pollinator preferences
- Other vegetation considerations

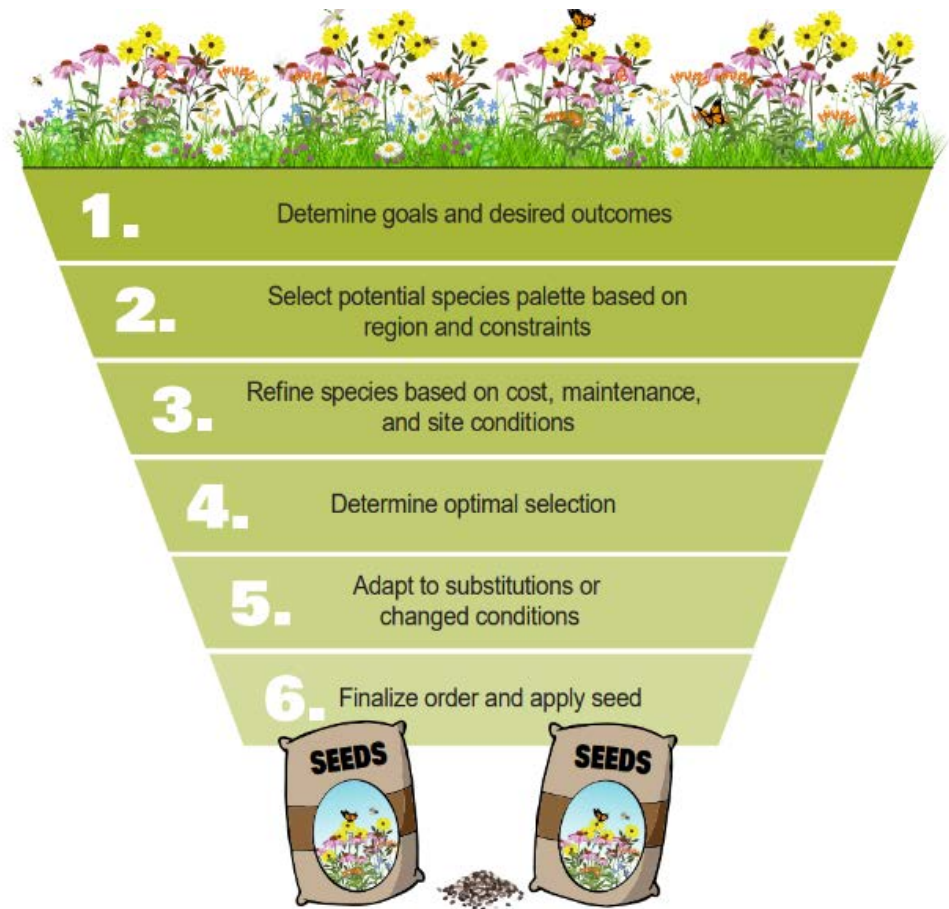


Image: Conceptual filtering used to determine compatible seed mixes for site.

Seed Selection Tool

Includes species data across the contiguous U.S.

Outputs include:

- PDF report of query criteria selected and overall results.
- Excel spreadsheet of individual species and species information.

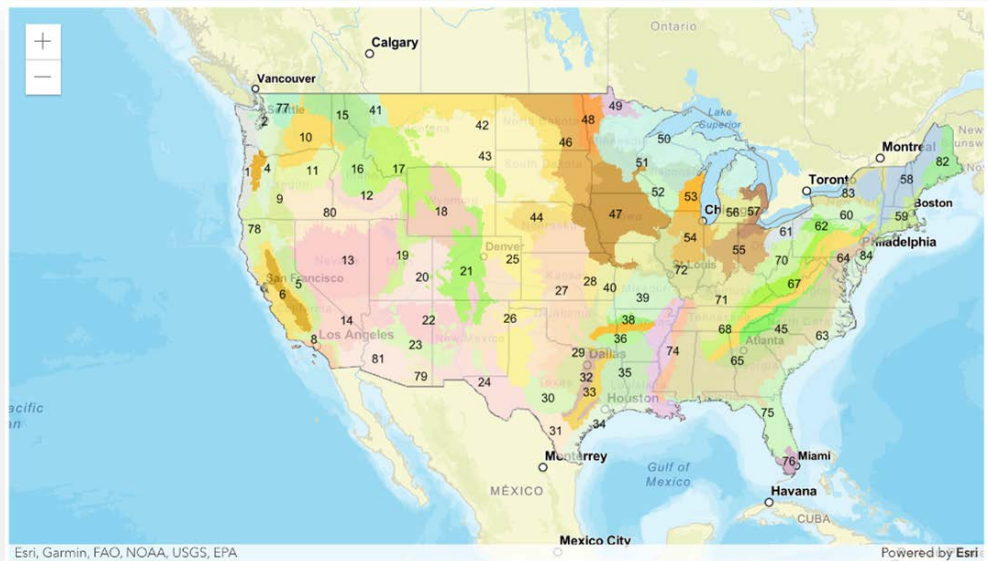


Image: Selectable ecoregion map included in the seed selection tool.

Pollinator Habitat Assessment Tool

Purpose: Supply vegetation managers with tools for evaluating the condition of pollinator plantings, changes over time, and communicating results.

Use: Supplemental guidance to inform use of the Rights-of-Way as Habitat Working Group pollinator habitat assessment tool on solar pollinator plantings:

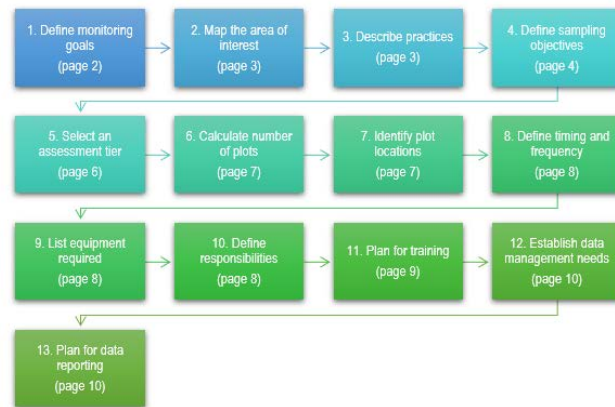
- Planning for monitoring guide
- Strategies to reduce costs
- Distributing monitoring plots
- Calculating numbers of plots
- Example monitoring plans



Step-by-Step Guidance

This step-by-step guidance developed for solar sites walks users through a comprehensive process for planning monitoring efforts that collect useful data that informs management decisions: Figure 1 illustrates the steps discussed within this guidance.

Figure 1. Steps for effective monitoring.





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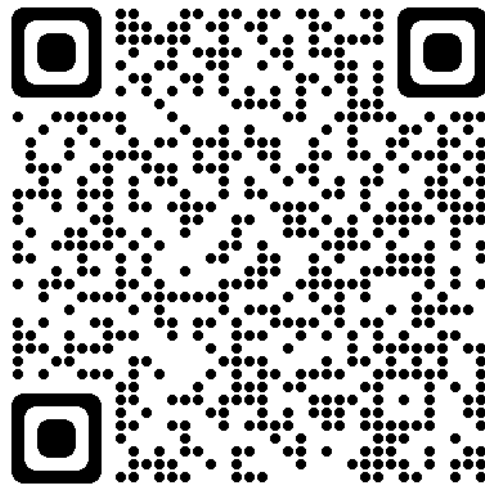
phase
pollinator habitat aligned with solar energy

Learn More About PHASE & Access Tools:

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Thank You

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