



Habitat Friendly Solar

Program Summary and Next Steps

October 10, 2021

Presentation Topics

- I. Agency Involvement
- II. Goals
- III. How it Works
- IV. Trends and What's New
- V. Next Steps



BWSR Mission: Improve and protect Minnesota's water and soil resources by working in **partnership** with local organizations and private landowners





Minnesota Board of Water and Soil Resources



State Agencies

Volunteers

Legislators

Universities

Seed Vendors

Governor

Non-profits

Local Governments

**Conservation
Community**

Consultants

Federal Agencies

Schools

Tribes

Funders

Nurseries

Residents/Landowners

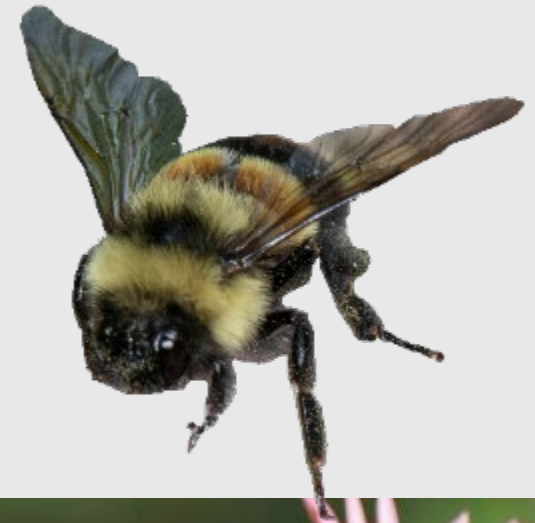
Reporters

Response to Declining Pollinator Populations

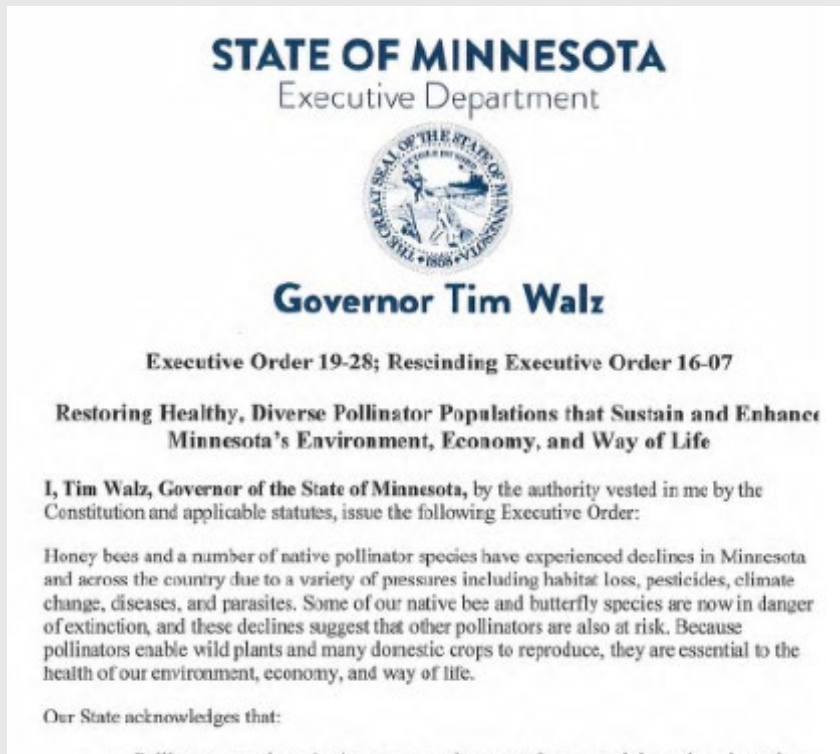


Response to Declining Pollinator Populations

More than 40% of insect species are declining



Agency Involvement



Executive Order led to “Interagency Pollinator Protection Team” and “Governor’s Committee on Pollinator Protection”

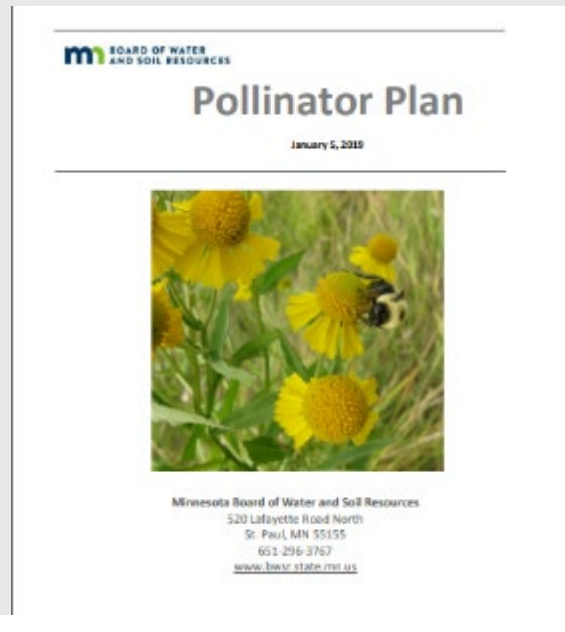


Minnesota Board of Water and Soil Resources

New State Pollinator Report



BWSR Pollinator Toolbox



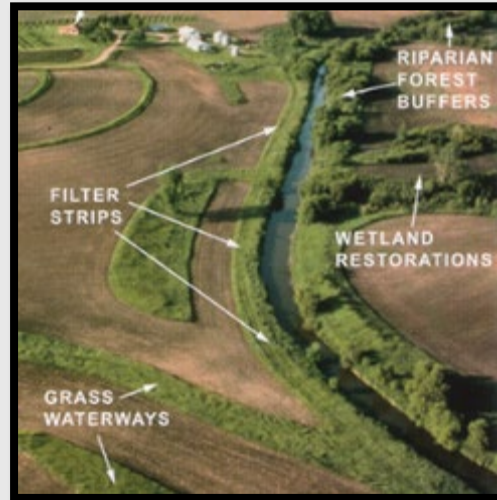
Pollinator Toolbox Updated



Featured Plant Archive



Working to incorporate habitat into as many types of landscapes as possible



Key BWSR/Partner Habitat Efforts

- Conservation Reserve Enhancement Program/Easements
- Wetland Programs
- Cost-share Programs
- Habitat Friendly Solar Program
- Lawns to Legumes Pilot Program
- State Seed Mixes, Guidance, Resiliency Resources
- Pollinator Mapping



Beneficial Insect Program



Lawns to Legumes



Conservation Easements



Habitat Solar

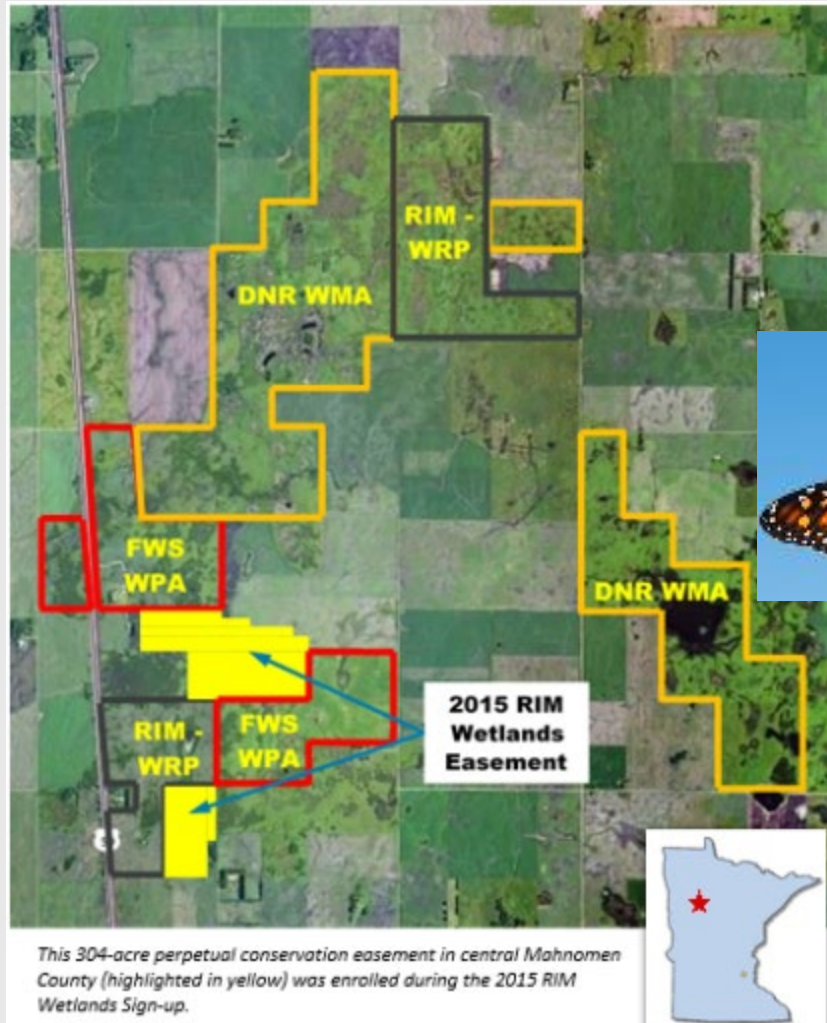


Riparian Plantings



Conservation Prairie and Wetland Restoration

Around 300,000 acres of easements



Lawns to Legumes Pilot Program

Creating Habitat for MN Pollinators



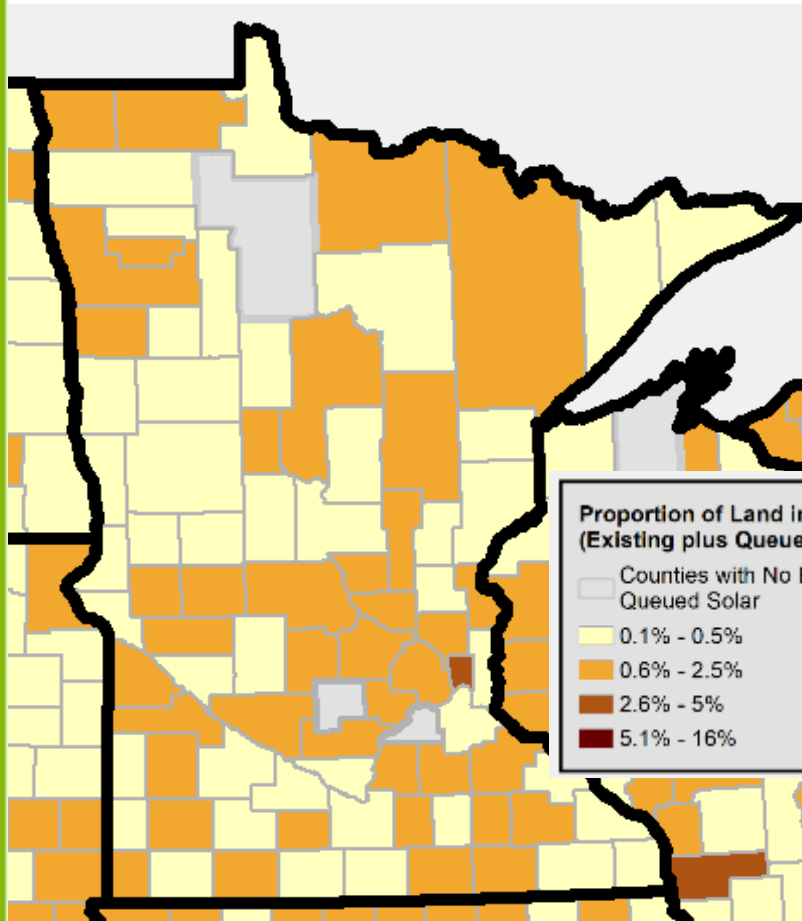
your yard
CAN BEE
the **CHANGE**
#Lawns2Legumes

Lawns to Legumes Pilot Program

Creating Habitat for MN Pollinators



your yard
CAN BEE
the **CHANGE**
#Lawns2Legumes



Current proposed solar projects

- ✓ 18 solar projects in Minnesota ranging in size from 75 MW to 450 MW
- ✓ Total proposed capacity of 2,800 MW
- ✓ Existing (built) capacity of 1,600 MW

Six to ten GW of solar development is likely to occur in MN over the next 10 years (60,000 – 90,000 acres)

Map created by Jessi Wyatt, Great Plains Institute, 2021. List of queued solar projects compiled from individual ISOs (CAISO, ERCOT, SPP, MISO, PJM, NYISO, and NEISO) on July 7th, 2021, by Maggie Kristian. A conservative 10 acres per MW was assumed for solar developments to estimate total site coverage, in line with solar industry averages.



**GREAT PLAINS
INSTITUTE**

Better Energy.
Better World.



Habitat Friendly Solar Program



**Minnesota Habitat
Friendly Solar
Program**



<https://bwsr.state.mn.us/minnesota-habitat-friendly-solar-program>



Agency Involvement

Habitat Friendly Solar Initiated from 2016 Legislation Stating:

“an owner of a solar site implementing solar site management practices may claim that the site provides benefits to gamebirds, songbirds and pollinators only if the site adheres to guidance set forth by the pollinator plan provided by the Board of Water and Soil Resources”.



Habitat Friendly Solar Goals

Goals:

- Meet legislative requirement
- Assist local governments
- Provide flexibility in design (species, layout, etc)
- Maximize the benefits of projects
- Create consistency across the state
- Ensure the success of projects



How it Works

Key Steps:

- 1) Filling out the Project Planning Assessment Form
- 2) Review by local government or BWSR
- 3) Adding to state list of projects
- 4) Inspections to ensure that projects stay on track
- 5) Submitting established Project Form for review

Key Steps:

1) Filling out the Project Planning Assessment Form



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Solar Site Pollinator Habitat Assessment Form for Project Planning

For solar companies and local governments to meet pollinator/wildlife habitat certification

1. PERCENT OF PROPOSED SITE VEGETATION COVER TO BE DOMINATED BY WILDFLOWERS

☐ 31-45 % +5 points
☐ 46-60 % +10 points
☐ 61+ % +15 points

Total points:

Note: Projects may have "array" mixes and diverse border mixes; forb dominance should be averaged across the entire site. The dominance should be calculated from total numbers of forb seeds vs. grass seeds (from all seed mixes) to be planted.

2. PLANNED % OF SITE DOMINATED BY NATIVE SPECIES COVER

☐ 26-50% +5 points
☐ 51-75% +10 points
☐ 76-100% +15 points

Total points:

3. PLANNED COVER DIVERSITY (# of species in seed mixes; numbers from upland and wetland mixes can be combined)

☐ 10-19 species +5 points
☐ 20-25 species +10 points

6. SITE PLANNING AND MANAGEMENT

☐ Detailed establishment and management plan developed (see [example plan](#)) with funding/contract to implement +15 points
☐ Signage legible at forty or more feet stating pollinator friendly solar habitat (at least 1 every 20ac.) +5 points

Total points:

7. SEED MIXES

☐ Mixes are composed of at least 40 seeds per square foot +5 points
☐ All seed genetic origin within 175 miles of site ([pg. 7-8 of Guidance](#)) +5 points
☐ At least 2% milkweed cover to be established from seed/plants +10 points

Total points:

8. INSECTICIDE RISK

☐ Planned on-site insecticide use or pre-planting seed/plant treatment (excluding buildings/electrical house, etc.) -40 points



Agency Involvement

Filling out the Project Planning Assessment Form

- %Dominance of Native Vegetation
- %Dominance of Wildflowers
- Plant Diversity
- 3 Season with Blooming Plants
- Habitat components
- Site Planning
- Seed Mixes
- Insecticide Risk

Agency Involvement

Key Steps:

2) Review by local government or BWSR

-Review includes ensuring that plans will lead to successful establishment and management of vegetation





Agency Involvement

New Sample Specifications

Sample Specifications for the Establishment of Native Vegetation as Part of Habitat Friendly Solar Projects

5-9-19

Developed by the Minnesota Board of Water and Soil Resources and the Minnesota Department of Natural Resources

Note: these specifications are suggestions for projects and should be adapted to meet specific site conditions and project goals.

CONTRACTOR QUALIFICATIONS

1. Seeding contractors must have at least three years of experience installing native seed and installing or maintaining prairie restoration projects or other similar types of projects.

PROPOSED CHANGES TO PROJECT SPECIFICATIONS

1. Once project specifications are approved by the local government unit (LGU) that is reviewing it

Agency Involvement

-DNR Guidance

Prairie Establishment & Maintenance Technical Guidance for Solar Projects

Minnesota Department of Natural Resources

Revised June 2018





Agency Involvement

Key Steps:

- 3) Adding to state list of projects to be posted on BWSR website

Agency Involvement

Key Steps:

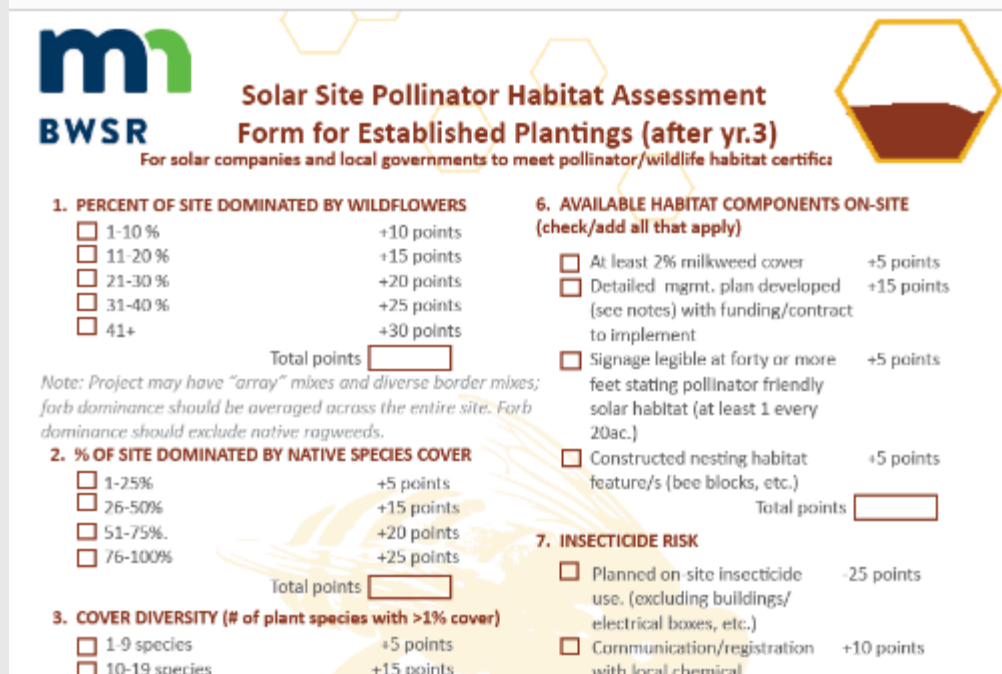
- 4) Inspections each year to ensure that projects stay on track



Agency Involvement

Key Steps:

5) Submitting established Project Form for review at year 3 and every three years



m BWSR

Solar Site Pollinator Habitat Assessment Form for Established Plantings (after yr.3)

For solar companies and local governments to meet pollinator/wildlife habitat certifica

1. PERCENT OF SITE DOMINATED BY WILDFLOWERS

<input type="checkbox"/> 1-10 %	+10 points
<input type="checkbox"/> 11-20 %	+15 points
<input type="checkbox"/> 21-30 %	+20 points
<input type="checkbox"/> 31-40 %	+25 points
<input type="checkbox"/> 41+	+30 points

Total points

Note: Project may have "array" mixes and diverse border mixes; forb dominance should be averaged across the entire site. Forb dominance should exclude native ragweeds.

2. % OF SITE DOMINATED BY NATIVE SPECIES COVER

<input type="checkbox"/> 1-25%	+5 points
<input type="checkbox"/> 26-50%	+15 points
<input type="checkbox"/> 51-75%	+20 points
<input type="checkbox"/> 76-100%	+25 points

Total points

3. COVER DIVERSITY (# of plant species with >1% cover)

<input type="checkbox"/> 1-9 species	+5 points
<input type="checkbox"/> 10-19 species	+15 points

**6. AVAILABLE HABITAT COMPONENTS ON-SITE
(check/add all that apply)**

<input type="checkbox"/> At least 2% milkweed cover	+5 points
<input type="checkbox"/> Detailed mgmt. plan developed (see notes) with funding/contract to implement	+15 points
<input type="checkbox"/> Signage legible at forty or more feet stating pollinator friendly solar habitat (at least 1 every 20ac.)	+5 points
<input type="checkbox"/> Constructed nesting habitat feature/s (bee blocks, etc.)	+5 points

Total points

7. INSECTICIDE RISK

<input type="checkbox"/> Planned on-site insecticide use. (excluding buildings/ electrical boxes, etc.)	-25 points
<input type="checkbox"/> Communication/registration with local chemical	+10 points



Agency Involvement

Filling out the Established Project Form

- % Dominance of Native Vegetation
- % Dominance of Wildflowers
- Plant Diversity
- 3 Season with Blooming Plants
- Habitat components within .25 miles
- Habitat components on-site
- Insecticide Risk

New Vegetation Management Plan Guidance

Guidance for Developing a Vegetation Establishment and Management Plan
for Solar Facilities



Minnesota Department of Commerce
Division of Energy Resources
Energy Environmental Review and Analysis

March 2021

- Interagency collaboration
- Can be used to develop VMPs for community and utility scale solar projects
- Satisfies Habitat Friendly Solar requirement for VMPs and MN PUC permit conditions

Trends and What's New

-Partners are experimenting with site design, seed mixes and management methods



Image by Minnesota Native
Landscapes
Enel Green Power (EGP) Site



Image by Natural Resource Services



Image by Prairie
Restorations Inc.

Research/Collaboration Efforts

- Vegetation Establishment (NREL)(WSB)(Henn. Co.)
- Habitat Benefits (IonE)(Henn.Co.)
- Solar Siting (UofM)(Great Plains Inst.)
- Ag Benefits (Argonne Nat. Lab.)
- Permitting Needs (IonE)(Great Plains Inst.)
- Hydrology (IonE)(UofM)



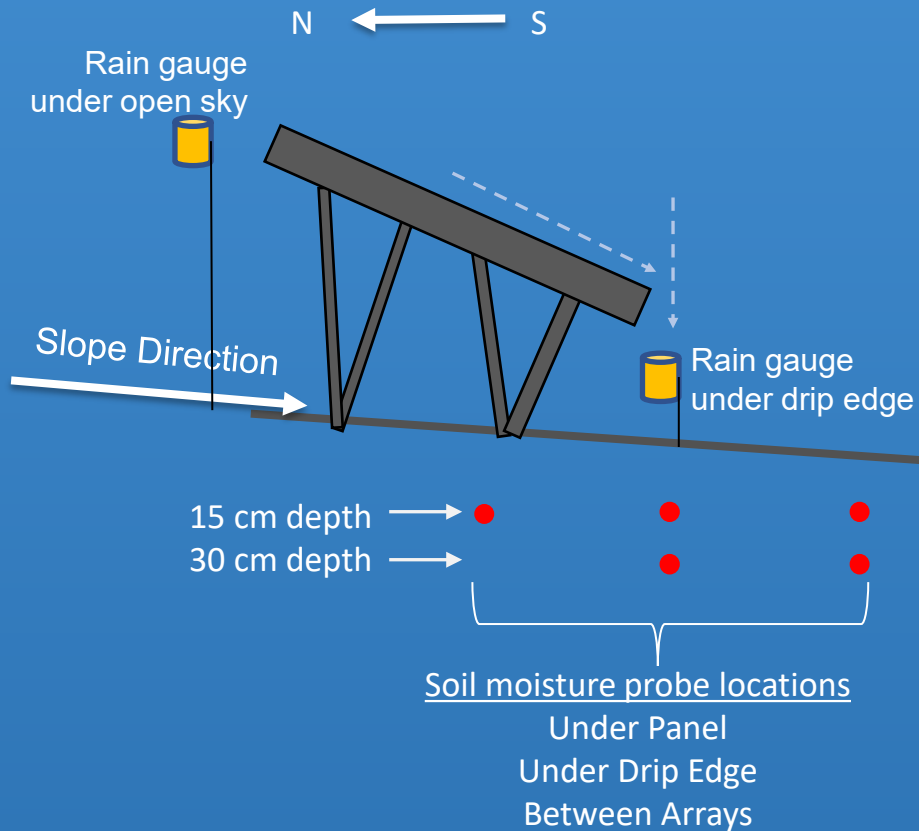
Photovoltaic Stormwater Management Research and Testing (PV-SMaRT) Program



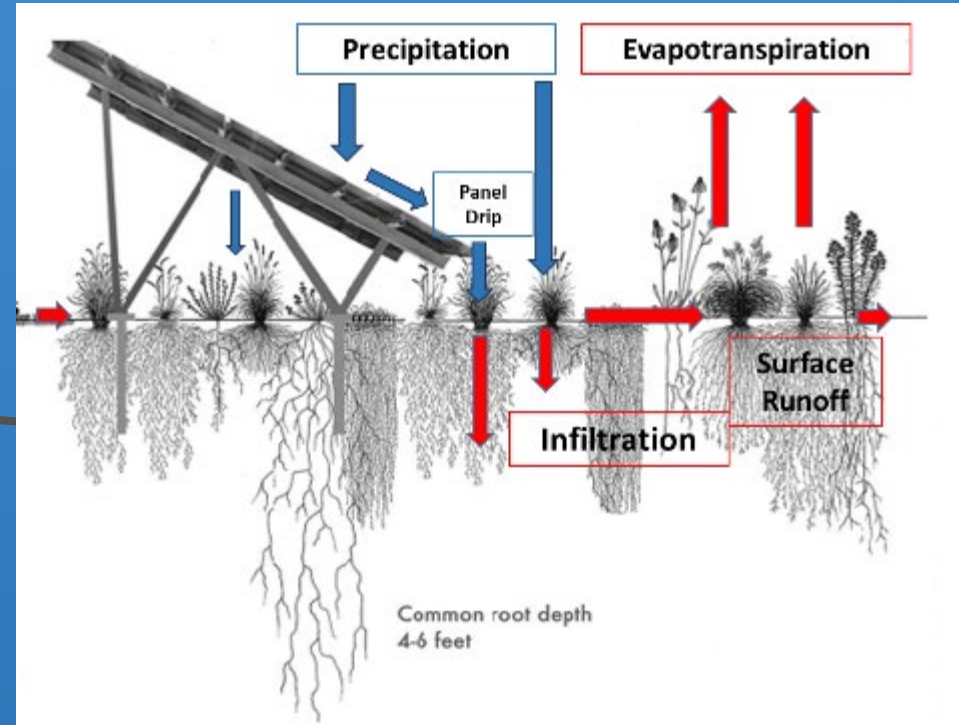
The Objective

- ✓ Reduce balance-of-system soft costs for solar development associated with stormwater infrastructure requirements
- ✓ Improve water quality outcomes at solar projects
- ✓ Develop and disseminate:
 - Research-based, solar-specific resources for estimating stormwater runoff
 - Best practices for stormwater management and water quality at ground-mounted PV facilities.

PV-SMaRT field testing, measurement



PV-SMaRT Modeling process



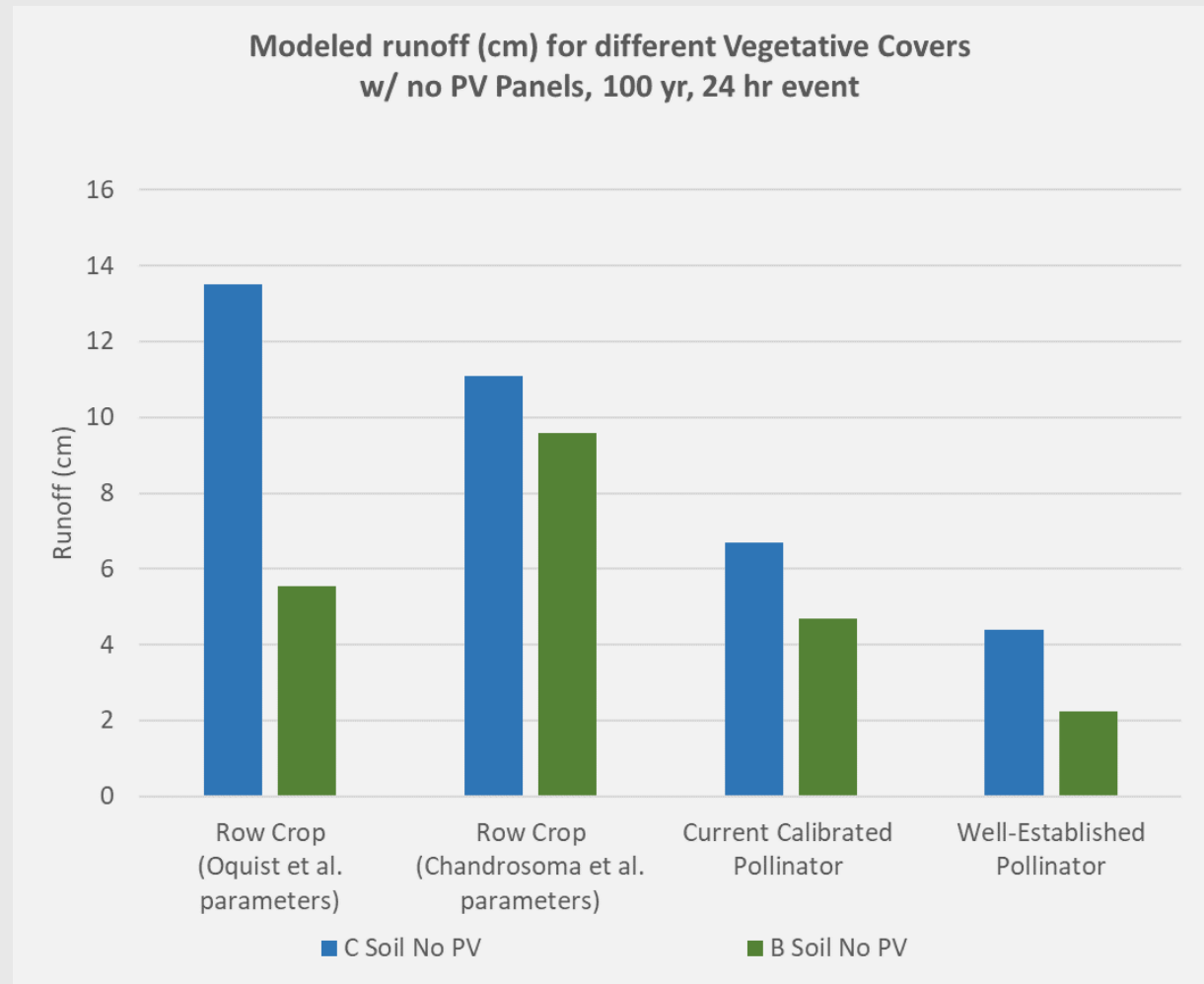
From presentation by Dr. David Mulla, Jake Galzki to PV-SMaRT Water Quality Task Force



Pollinator Habitat Reduces Runoff

UofM PV-SMaRT Modeling

- Row crops produced larger runoff than newly established pollinators
- Well-established pollinator had the smallest runoff

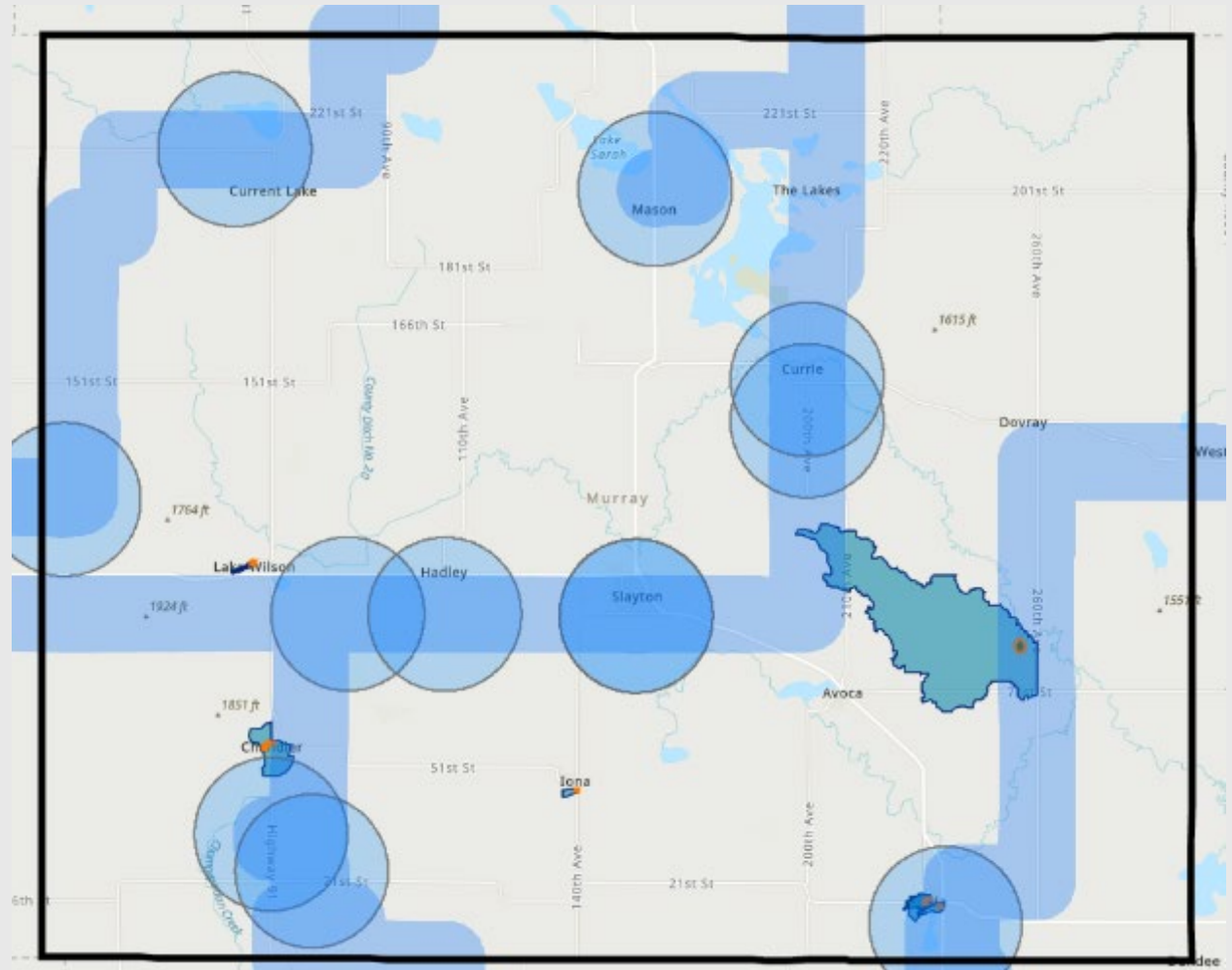




Solar as a Water Protecting Land Use?

Murray County Solar Mapping Tool

- 1-mile HV Transmission Buffer
- 2-mile Substation Buffer
- Drinking Water Supply Management Areas
- Water Emergency Response Areas



Protecting Conservation Plantings from Pesticides

Guiding Principles for Project Planning and Implementation



Minnesota Board
of Water & Soil
Resources

www.bwsr.state.mn.us



Protecting the Life
that Sustains Us

www.xerces.org

There is growing concern about the potential effects of pesticides (including insecticides, fungicides, and herbicides as well as their adjuvants) on pollinators and habitat plantings. The following key principles for project planning and implementation can help address concerns. Solutions that have the greatest impact will depend on the type of project and landscape setting. The Xerces Society publication [*Guidance to Protect Habitat from Pesticide Contamination*](#) provides additional information and resources on this topic.

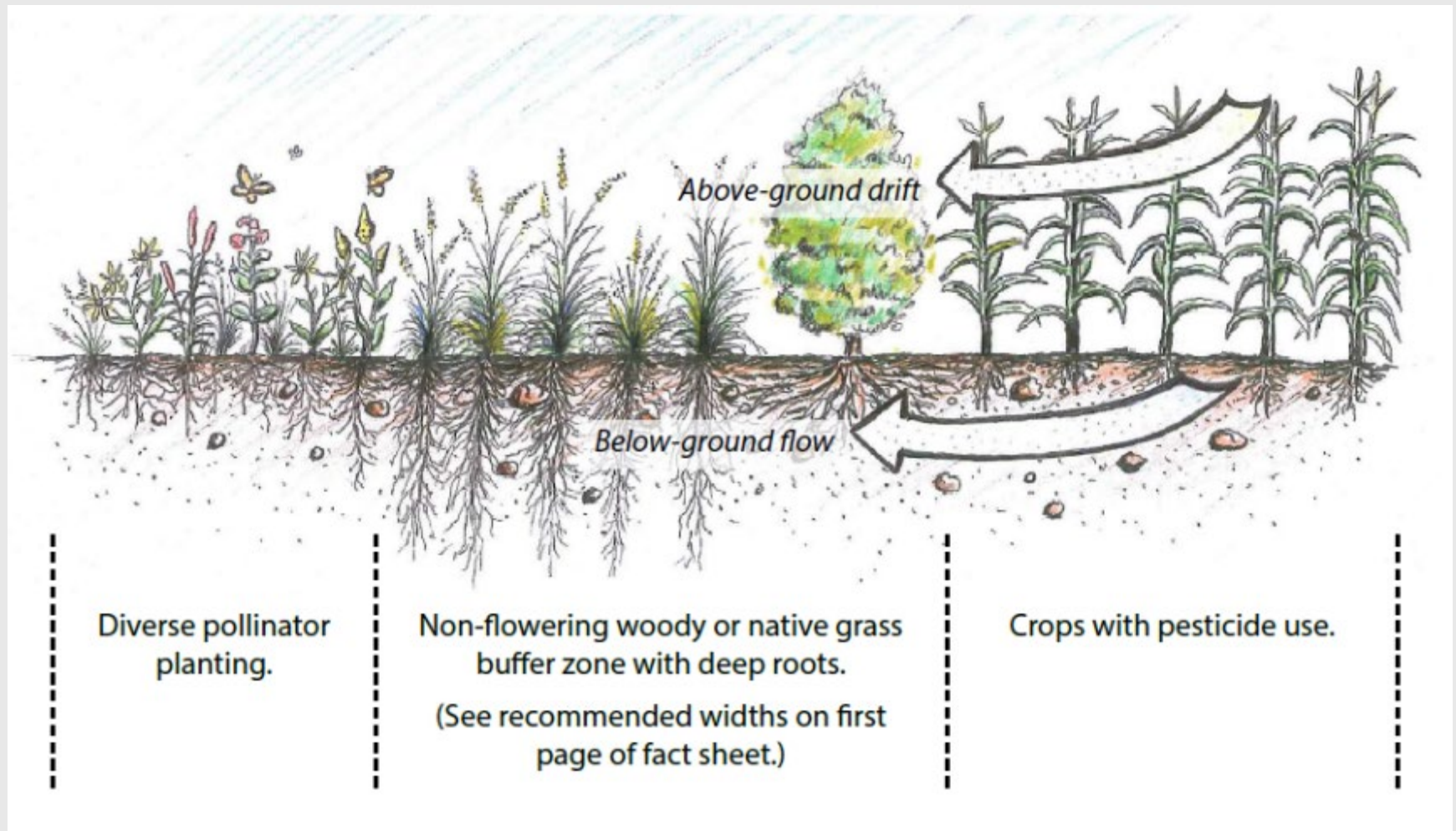
Guiding Principles

1. Place pollinator plantings in areas that have the least risk of pesticide drift. Avoid planting habitat immediately downwind of (or draining from) pesticide-treated landscapes. Connect projects to larger habitat corridors and complexes to the greatest extent possible, to decrease the amount of habitat edges



A variety of strategies can help protect plantings from pesticides, including spatial buffers, changes in cropping systems, and reductions in pesticide

Trends and What's New





Trends and What's New

State Seed Mixes

Working on update of state seed mixes with a focus on pollinators, resiliency, etc.

Reviewing State Solar Mixes

- Low Growing Solar Array South and West
- Low Growing Solar Array Northeast
- Low Growing Solar Array Moist Soils South and West

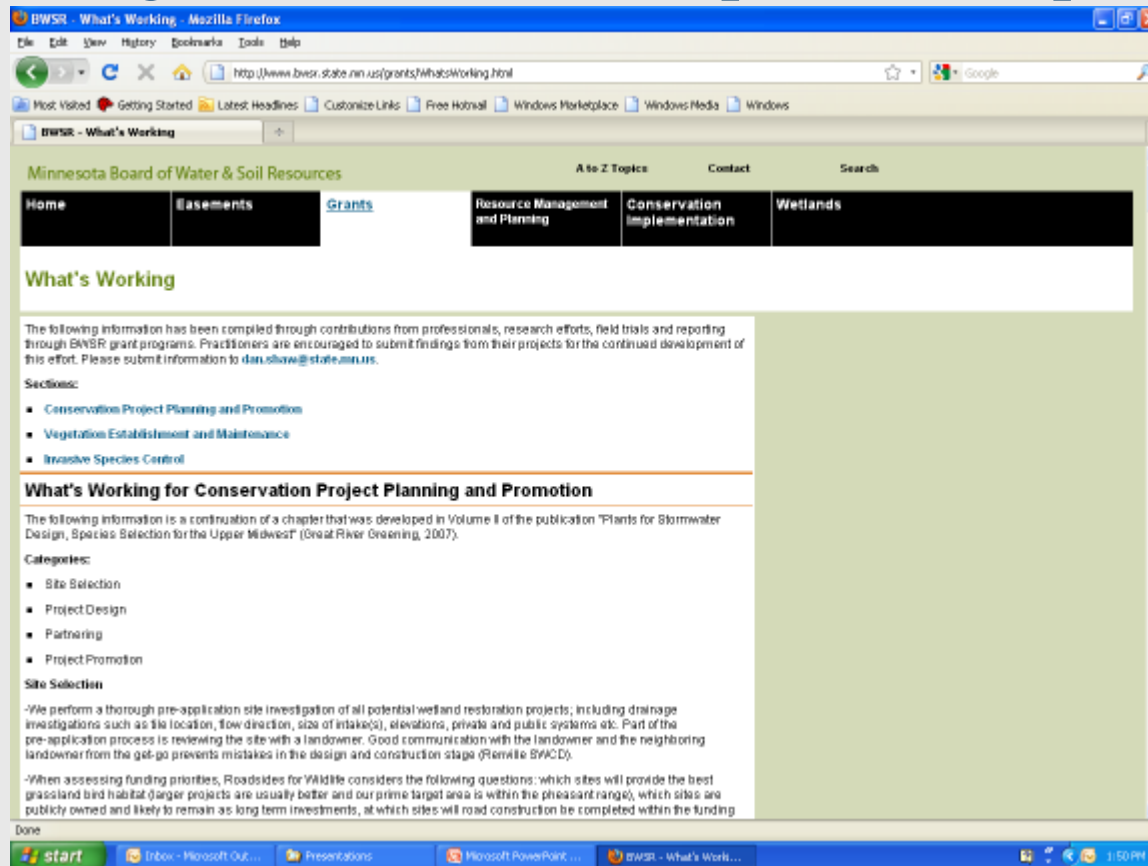


Trends and What's New

Evolving Policies and Partnerships

- Ordinance Requirements
- Long-term Care Requirements
- SWCD staff are providing a key role in supporting county staff through reviewing plans and site inspections

“What’s Working” information compiled from practitioners



Next Steps

Next Steps

- Encourage counties to use the standard to help increase consistency
- Update/review forms
- Further discuss consistency and maintenance needs of projects
- Increase site inspections
- Habitat Friendly Solar Summit – February or March



Thank You!





How it Works



Key Steps:

5) Submitting established Project Form for review at year 3 and every three years