

Solar + Pollinator

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Solar + Pollinators

Cypress Creek is pioneering an innovative Solar + Pollinator initiative to deliver benefits for local farmers and the environment by increasing natural habitats for bees, butterflies, and other vital insects.

What is Pollinator-friendly Solar?

Pollinator-friendly solar farms replace traditional turf with native plant species, wildflowers, and other vegetation beneficial to local pollinators such as bees, butterflies, and beetles. In NY state, common pollinator-dependent crops include apples, cherries, peaches, green beans, tomatoes, cucumbers, alfalfa, and clover.

Why is this Important?

Bees, monarch butterflies, and other critical pollinator populations are decreasing. By locating native plant species on solar farms, we can boost pollinator populations, reduce storm water runoff, and avoid soil erosion.





US Ag Landscape + Pollinator Impact

Just one, 2 megawatt solar farm can support pollinator habitat equivalent to 6,000 homes having a 6'×12' back yard garden.

Pollinators provide an ecological service that is a requirement for more than 85% of the world's flowering plants which is inclusive of most global crop species. Annually, around \$3 billion is generated in the United States due to native pollinators' services for over 100 crops.

Directly	Indirectly					
Pollinated Crops	Pollinated Crops					
Apples	Alfalfa					
Almonds	Sugar beets					
Blueberries	Asparagus					
Cherries	Broccoli					
Oranges	Carrots					
Squash	Onions					
\$16.35 billion	\$12.65 billion					
\$29 billion						

Table 1. Farm income generation in the U.S. in 2010 due to pollinators.



Erosion and Sediment Control Benefits

- Cover crops allow native seeds to germinate quickly and provide erosion control
- Native flowering plants and grasses have a root depth of up to <u>8 feet</u> while traditional turf grass only reaches <u>3-4</u> <u>inches</u>

Pollinator Root Depth





Initiative in Action

Cypress Creek has launched four Solar + Pollinators initiatives. With our most recent announcement in New York, we have committed to build abundant pollinator habitats at <u>all of our solar farms in the state</u>.

Currently, Cypress Creek has 80 mw of pollinator friendly solar under construction or operational. That is equivalent to 320,000 backyard gardens.

CYPRESS CREEK LAUNCHED POLLINATOR PROGRAMS







Initiative in Action

Wildflowers and Beehives



Wildflowers are planted at all of our pollinator-friendly solar farms—this includes 100% of our projects in New York State. We currently have active beehives at one of our sites in MD and are exploring opportunities for hive co-location in NY.

State Scorecard

Our Solar + Pollinators Initiative is in direct alignment with a habitat Scorecard for assessing pollinator habitat on our solar farms. We will be collaborating with vetted pollinator land management companies to assess proper monitoring and evaluation of the habitat, and set a minimum score of 90 points to reach "excellent" habitat.

Communication with Local Communities

Communication with local communities begins during the initial zoning process. In all decisions to include pollinator habitat, landowner interest and support drives our decision. States such as NY, MD, IL, MN, and VT have passed pollinator standards and in TX we worked with the USDA to ensure compliant seed mixes. In NY, we've enjoyed positive working relationships with grassroots organizations and academic leaders such as Cornell University.



FIRST POLLINATOR-FRIENDLY SOLAR SITE

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NEWS | JANUARY 08, 2018

A Family Farm Harvests the Sun, Generating New Family Income Using Their Land For Solar

A Maryland Family Farm Is Now Home to One of Cypress Creek's Newest Solar Arrays, Providing a Stable Source of Family Income and Important Habitat for Pollinators.

"...intended to benefit the environment and local farmers by increasing the wild habitat for pollinators, such as honey bees, needed for the success of numerous crops."

Honey Bees and Pollinator Habitat

Baker Point solar is Maryland's first solar array with a pollinator habitat. This means that different species of native longstemmed and short-growing flowers and warm-season grasses have been planted around the solar farm. Local pollinators, including honeybees located on the site, will forage for nectar and pollen when the flowers begin to bloom this spring.



Baker Point

"Bees play the important part of pollinating the crops that we grow. It doesn't matter if it's our crops or the neighbors' flower or the neighbors' garden. The more bees they put here the happier that we will be."

- Glenn Eaves Jr. is the landowner of Cypress Creek's Baker Point Solar Farm in MD





Cypress Creek Pollinator Habitat Management

- Most contracts with a pollinator land management company are typically 5 years.
- Integrated Pest Management (IPM) involves spot treatment of certain herbicides by a crew on foot or with ATVs. IPM is a common technique deployed during this time frame and on an as needed basis after the third growing season. Other techniques include herbicide wicking, spot mowing, and hand pulling.
- Herbicides are not synonymous with pesticides. EPAapproved herbicides are used to prepare the land for native plant, and other flowering species, establishment to remove noxious weeds.
- Pesticides, such as neonicotinoids, are systemic to pollinators and therefore are harmful to pollinators and the surrounding environment. In addition, neonicotinoids persist within the soil for years despite the method of its application.
- The herbicides used on-site are not systemic and are applied to the site prior to native seed establishment. Continual IPM will be used during the first 5 growing season by herbicide wicking.





Recommendations

Industry trends to align with large-scale pollinator habitat installation and management

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Habitat assessment forms as a tool for developers

- Goal: get as much pollinator-friendly • habitat in the ground as possible
- MN Department of Agriculture, Fresh • Energy, & solar companies' collaboration
- Metric for future land management • practices
- How to Improve •
 - Further detail native species' requirements
 - Monitoring and evaluation ٠
 - Solar site decommissioning ٠

	DRAFT So	lar Site Pollir	nato	r Habitat As	sessme	\frown		
	Fo	orm for Proie	ct Pl	anning		· \		
For solar companies and local governments to meet pollinator/wildlife								
3WSR -		habitat certif	fication					
1. PERCENT OF PROP	OSED SITE VEGET	ATION COVER TO BE	6. SITI	E PLANNING AND N		5		
DOMINATED BY WILD	FLOWERS			Detailed establishe	ment and	+15 noints		
31-45 %		+5 points		management plan	developed	ris points		
46-60 %		+10 points		(see example plan)	with funding/			
61+%		+15 points		contract to implem	ent			
	Total points			Signage legible at fo	orty or more	+5 points		
lata: Braiaete may have	"array" miyos ar	d divarca hardar miya		feet stating pollinat	or friendly			
ore. Projects may nave	e array mixes an be averaged acro	a aiverse boraer mixe is the entire site. The	·s,	solar habitat (at lea	st 1 every 20a	.)		
lominance should be on	loulated from tot	a numbers of forb			Total points			
eeds vs_arass seeds (fr.	om all seed mixes	to be planted	7. SEE	D MIXES				
ceas sa, grass secus (jr	en an acca mines	, promes.		Mixes are compose	ed of at least	+5 points		
2. PLANNED % OF SIT	E DOMINATED BY	NATIVE SPECIES		40 seeds per squar	e foot			
COVER				All seed genetic ori	gin within 175	+5 points		
26-50%		+5 points		miles of site (pg.7-	8 of Guidance)			
51-75%.		+10 points		At least 2% milkwe	ed cover to	+10 points		
76-100%		+15 points		be established from	n seed/plants			
	Total points				Total points			
3. PLANNED COVER D	IVERSITY (# of pla	ant species with >1%)	8. INS	ECTICIDE RISK				
	in choire (in or pri	LE pointe		Planned on-site in	secticide	-40 points		
20-25 species		+10 points		use or pre-planting	g seed/plant			
26 or more sne	ries	+15 points		treatment (excludi	ing buildings/			
20 01 more spec	cics	115 points	7 -	electrical boxes, et	ic.)			
	Total points			Communication/re	gistration	+10 points		
Exclude invasives fro	om species totals.			with local chemica	I applicators			
4. PLANNED SEASON	S WITH AT LEAST	3 BLOOMING		about need to pre	vent drift from			
FORB SPECIES PRESE	NT (check/add all	that apply)		adjacent areas.	lotal points			
Spring (April Ma	ad	45 points						
Summer (June-/	497 August)	+5 points			Grand lotal			
Eall (Sentember	-October)	+5 points						
	Tatal a sinta	15 points	Pro	vides Exceptional H	labitat	>85		
	iotal points		Me	ets Pollinator Stand	lards	70-84		
See BWSR Pollinator	Toolbox about blo	om seasons	Р	roject Name:				
5. AVAILABLE HABITAT	COMPONENTS V	WITHIN	v	egetation Consulta	nt:			
.25 MILES (check/add	all that apply)		Р	roject County:				
Native bunch gr	asses for nesting	+2 points	Р	roject Size:				
Native trees/shr	ubs for nesting	+2 points	Р	rojected Seeding D	ate:			
Clean, perennia	I water sources	+2 points	Send completed forms, project plans, seed mixes and					
Created habitat	nesting feature/s	+2 points	any co	mmunication with p	pesticide applia	ators to		
	Total points		dan.sh	naw@state.mn.us				
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Measurements of percent "cover" should be based on "absolute cover" defined as the percent of the aroun surface that is covered by a vertical projection of foliage as viewed from above. To measure cover diversity it is recommended to use plots, and/or transects in addition to meander searches for accurate measurements. Wildflowers in question 1 refer to "forbs" which are flowering plants that are not woody, and are not graminoids (grasses, sedges, etc) and can include introduced clovers and other non-native species beneficial to pollinators



What's Next?

How to support developers in pollinator habitat implementation tools



- Challenges
 - Will solar energy companies be able to afford the cost of native seeds?
 - Is there even a large enough supply chain of seed mixes?
 - Will the maintenance workers get stung if we invite hives on site? Whose liability would that be?
 - What are the operational impacts of pollinators on our solar farms (shading will reduce our energy output, etc.)?
- Safety documentation
- Third party certified educational materials
- Webinars and other educational opportunities highlighting current and future conservation efforts for pollinators
 - Monarch conservation + solar development topics (i.e. decommissioning)

