Pollinator Habitat looks like this

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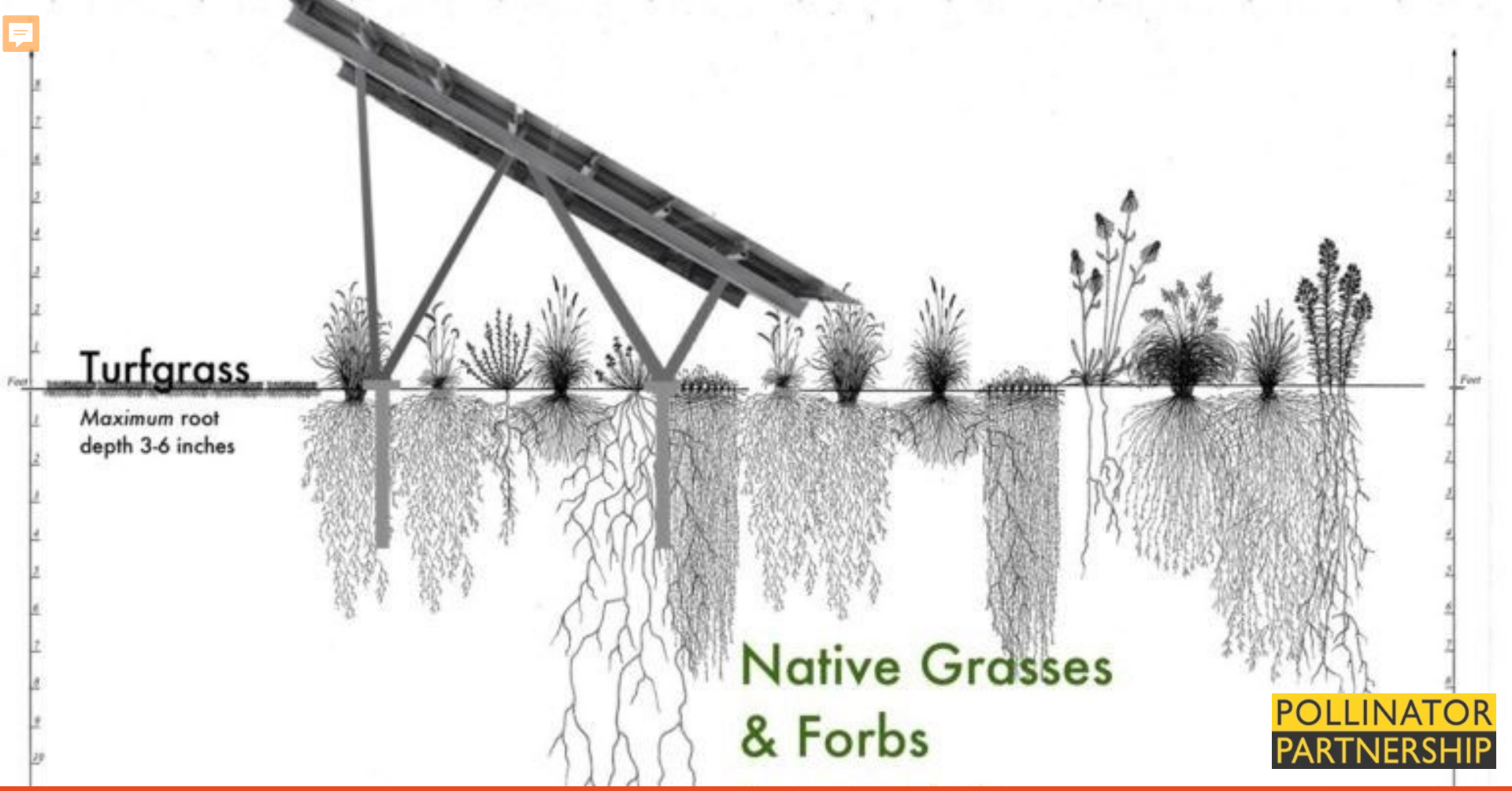
Turfgrass
Maximum root depth 3-6 inches
Native Grasses & Forbs
POLLINATOR PARTNERSHIP

The Benefits of Pollinator Habitat in Solar Arrays

Environmental and Agricultural

- Ecosystem stability
- Land revitalization
- Increased biodiversity of all types
- Crop pollination
- Pest control services
- Reduced storm water runoff and erosion
- Carbon sequestration
- Soil fertility

Enhanced Community Relations

- Corporate Social Responsibility (CSR)
- Environmental conservation
- Local partnerships
- Supporting local business, farmers, environmental & Ag groups

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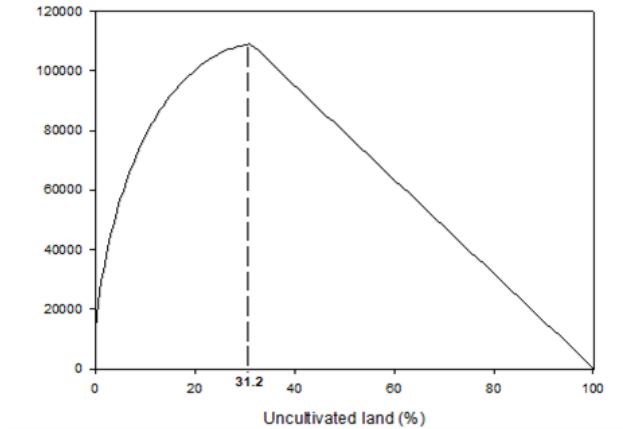
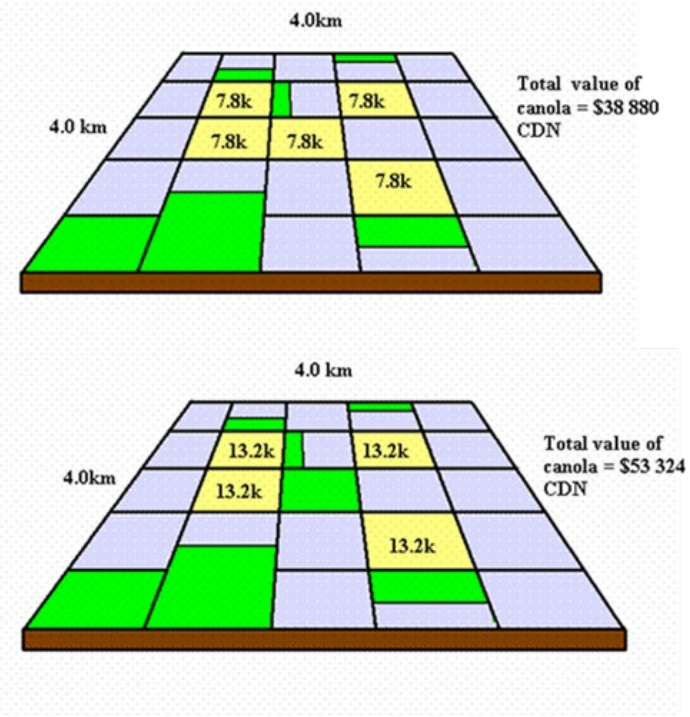
Crop pollination

- Solar habitat provides pollination services to local farms
- Make more money with less land in production, *before* factoring in revenue from solar.





Profit per field is greater ($13.K) and landscape profit is greater when ***less*** land is in production (Morandin and Winston 2006)

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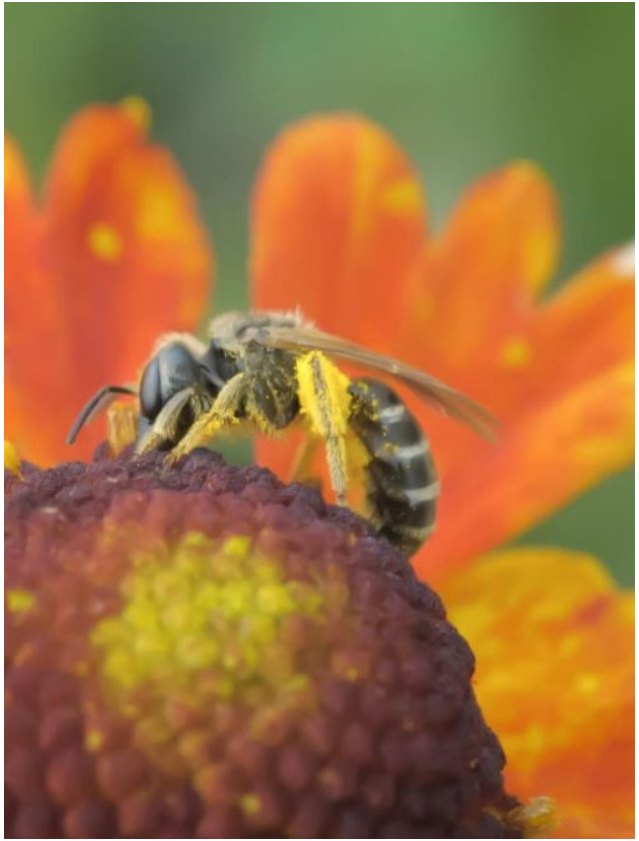

Benefits to Pollinators: Scientific Evidence

Walston et al 2021 found

- Compared to pre-solar agricultural land uses, solar-native grassland habitat produced a 3-fold increase in pollinator supply

Montag et al 2016 Found

- A significantly higher abundance of invertebrates (butterflies and bumble bees) on solar plots compared to control plots

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Ecosystem Benefits: Scientific Evidence

Walston et al 2021 also found

- A 65% increase in carbon storage potential.
- 95% increase in sediment retention
- 19% increase in water retention

What is Low-Impact Site Preparation?

It can mean a lot of things in different areas, bus some general concepts are:

Conventional Site Preparation	Low-Impact Site Preparation
Clearing and grubbing of soil and roots	Existing vegetation is left intact or is replaced with low-growing native vegetation species or crops
Topsoil stripping and stockpiling	Existing topsoil is left in place to allow for the successful growth of native vegetation and to promote soil health post-decommissioning of the solar project
Land grading and leveling utilizing heavy machinery	Natural contours of land are worked into the design and configuration of the solar project, with minimal if any land grading required
Soil compaction utilizing heavy machinery	Soil and vegetation are left intact to facilitate the growth of native vegetation, improved stormwater management through less runoff and erosion, and soil health
Land footprint for the foundations of vertical support structures, often including concrete	Lower land footprint for foundations of vertical support structures, often driven piles
Vegetation that supports habitat is discouraged and removed	Vegetation that supports habitat (e.g., pollinator species, other native fauna) is encouraged
O&M activities include herbicide spraying, mowing of weeds and other vegetation	Minimal O&M activities due to low-growing native vegetation species, could involve livestock grazing

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The Benefits for Industry

Project Development

- Decreased permitting time
- Increased stakeholder buy-in
- Reduction in environmental mitigation investments
- Reductions in O&M budgets
- Impact Benefit Agreements
- Demonstrates innovation and leadership

Operations & Maintenance

- Cost savings from reduced mowing
- Increased water infiltration/decreased storm water run-off
- Reduced frost heave damage
- Increased solar production from cooler air zone
- Decreased risk of damage from mowing machinery
- Increased efficiency of PV panels

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Increased PV Efficiency

Pollinator habitat can cool air beneath panels, retain soil moisture, and increase biomass.

Kazem and Chaichan 2016 found that:

- High air temperature caused a 1.85 to 20.22% reduction in the PV panel output power

Adeh et al 2018 found that:

- Areas under PV solar panels observed an increase in late season biomass (90% more biomass), and areas under PV panels were significantly more water efficient (328% more efficient).

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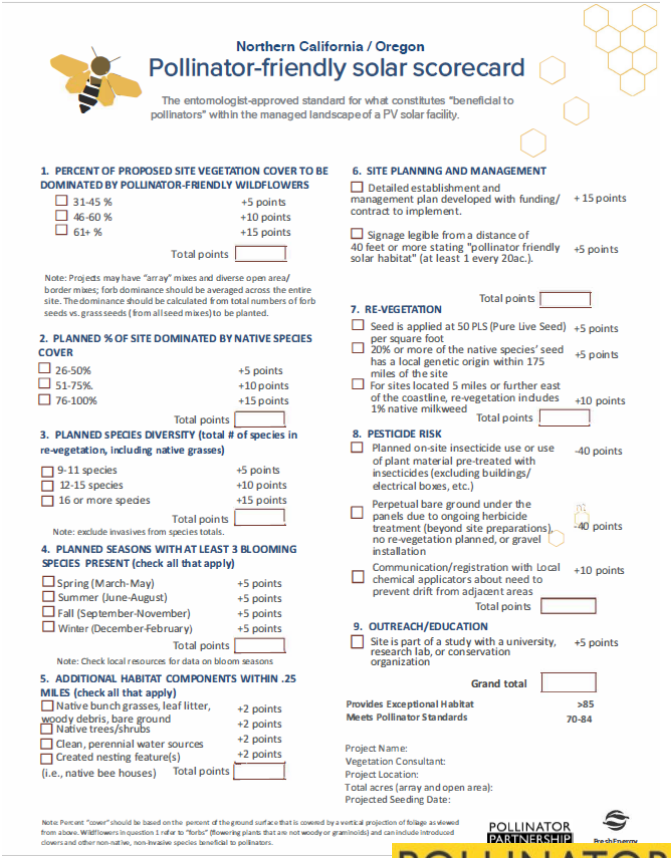
How do we get there?

- Site survey
- Rehabilitation plan
  - Tailored to specific environmental variables
  - Design appropriate seed mix
  - Realistic timeline
- Site preparation
- Short and Long-Term Maintenance
  - Post implementation monitoring and evaluation
- **PATIENCE**
  - 3 to 5 years to fully develop deep root systems and establish “self-sustaining” community



Northern California / Oregon

Pollinator-friendly solar scorecard

The entomologist-approved standard for what constitutes "beneficial to pollinators" within the managed landscape of a PV solar facility.

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

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

Total points ☐

Note: Projects may have "array" mixes and diverse open area/ 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 SPECIES DIVERSITY (total # of species in re-vegetation, including native grasses)

- ☐ 9-11 species +5 points
- ☐ 12-15 species +10 points
- ☐ 16 or more species +15 points

Total points ☐

Note: exclude invasives from species totals.

4. PLANNED SEASONS WITH AT LEAST 3 BLOOMING SPECIES PRESENT (check all that apply)

- ☐ Spring (March-May) +5 points
- ☐ Summer (June-August) +5 points
- ☐ Fall (September-November) +5 points
- ☐ Winter (December-February) +5 points

Total points ☐

Note: Check local resources for data on bloom seasons

5. ADDITIONAL HABITAT COMPONENTS WITHIN .25 MILES (check all that apply)

- ☐ Native bunch grasses, leaf litter, woody debris, bare ground +2 points
- ☐ Native trees/shrubs +2 points
- ☐ Clean, perennial water sources +2 points
- ☐ Created nesting feature(s) (i.e., native bee houses) +2 points

Total points ☐

Note: Percent "cover" should be based on the percent of the ground surface that is covered by a vertical projection of foliage as viewed from above. Wildflowers in question 1 refer to "forbs" (flowering plants that are not woody or graminoids) and can include introduced clovers and other non-native, non-invasive species beneficial to pollinators.

6. SITE PLANNING AND MANAGEMENT

- ☐ Detailed establishment and management plan developed with funding/ contract to implement. +15 points
- ☐ Signage legible from a distance of 40 feet or more stating "pollinator friendly solar habitat" (at least 1 every 20ac.). +5 points

Total points ☐

7. RE-VEGETATION

- ☐ Seed is applied at 50 PLS (Pure Live Seed) per square foot +5 points
- ☐ 20% or more of the native species' seed has a local genetic origin within 175 miles of the site +5 points
- ☐ For sites located 5 miles or further east of the coastline, re-vegetation indudes 1% native milkweed +10 points

Total points ☐

8. PESTICIDE RISK

- ☐ Planned on-site insecticide use or use of plant material pre-treated with insecticides (excluding buildings/ electrical boxes, etc.) -40 points
- ☐ Perpetual bare ground under the panels due to ongoing herbicide treatment (beyond site preparations), no re-vegetation planned, or gravel installation -40 points
- ☐ Communication/registration with Local chemical applicators about need to prevent drift from adjacent areas +10 points

Total points ☐

9. OUTREACH/EDUCATION

- ☐ Site is part of a study with a university, research lab, or conservation organization +5 points

Grand total ☐

Provides Exceptional Habitat >85

Meets Pollinator Standards 70-84

Project Name:
Vegetation Consultant:
Project Location:
Total acres (array and open area):
Projected Seeding Date:

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Win-Win-Win with pollinator habitat

Economic

Long-term savings in O&M costs, decreased permitting time, increased solar energy production from cooler air zones created under arrays, reduction in environmental mitigation investments

Social

Develop positive interaction with stakeholder groups that improves long-term viability of solar, increase agricultural yields and profits and beautify local communities

Environmental

Contribute to protecting pollinators, including those at risk of extirpation, integrate energy generation into a sustainable ecosystem, and enhance biodiversity

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