



# **Farm-Friendly Solar Site Management**

Solar Energy Seminar  
Illinois Association of County Board Members

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Environmental Law & Policy Center

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# Environmental Law and Policy Center (ELPC)



Leading Midwest  
public interest  
environmental  
organization.

Working to  
advance  
environmental  
progress hand-in-  
hand with  
economic  
development



***Andy Olsen***



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**Senior Policy Advocate, ELPC**

- Lead efforts on Farm Bill Clean Energy, Rural Solar

**Former County Board Supervisor / Alder**

- Zoning Committee
- Lakes and Watershed Commission
- Phosphorus Phaseout Ordinance

**Several Wisconsin Energy Initiatives**

- Renewable energy projects in private sector, public sector and partnerships.
- Wisconsin Renewable energy advocacy groups
- Biomass energy



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## ***ELPC's Rural Solar Program***



### **Policy solutions**

- Strategy / advice

### **Education**

- [RuralSolarStories.org](http://RuralSolarStories.org)
- Webinars and workshops

### **Policy & Legal Advocacy**

***Can –do!***



**Publications and Resources**  
Water, Energy, and Agriculture: Another  
Reason to Support Renewable Energy  
Renewable energy helps America reduce our  
reliance on fossil fuels, create jobs, and reduce



**Farm Energy Success**  
Good for Farm Income, Good for Rural  
Development and Good for Our Enviro



### **SOLAR POWER for Electric Cooperatives**



SOLAR POWER IS GROWING RAPIDLY ACROSS THE NATION  
AS PANEL PRICES PLUMMET AND THE DEMAND FOR LOCAL  
RENEWABLE ENERGY GROWS.

RURAL ELECTRIC CO-OPS ARE LEADING THE WAY WITH  
INNOVATIVE APPROACHES DEMANDED BY THEIR MEMBERS.  
BENEFITS, STRUCTURES AND RESOURCES ARE AVAILABLE  
FOR RURAL ELECTRIC CO-OPS TO SUCCEED WITH SOLAR.



## Farm Friendly Solar



- Blend solar into the agricultural landscape and rural economies.
- Greater value to the local community and agriculture.
- Includes pollinator-friendly solar



## Benefits for landowners

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- New income stream
- Compatible with grazing
- Reduce soil erosion
- Improve soil health
- Increase habitat for pollinators, other

## Benefits for solar developers

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- Reduces site development costs
- Less need for dust suppression
- Improves permitting prospects
- Improved stormwater management
- Cooler panels produce more



## Farm scale solar

- Farmers harvesting sun to power farm
- REAP – Rural Energy for America Program
- Good for sustainability (and marketing)





## Farm Friendly Solar



### Pollinator-Friendly Solar

- a.k.a. Prairie Solar



### Solar Pastures



***Other innovations likely!***

## Solar Pastures

- Integrate solar power with (grass fed) livestock grazing.
- Grazing land for local farmers
- Sheep common, some cattle.
- Avoid goats!



## Vernon Electric Cooperative



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## Maple Ridge Meats

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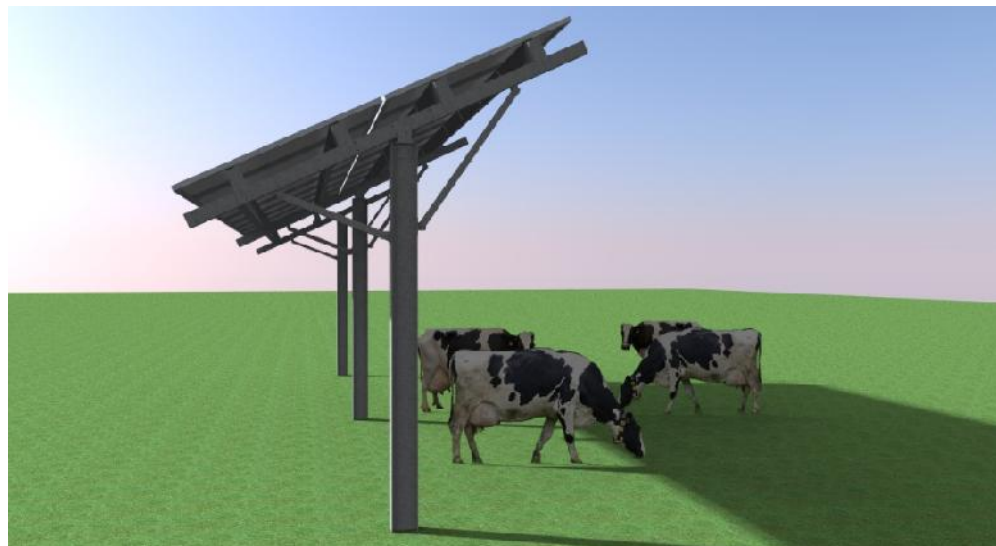


- Vermont solar farm at organic beef slaughterhouse
- Built solar to lower their power costs and increase sustainability
- Posts are about 30% longer to raise panels 8 feet off ground
- Works well with grass fed beef



## Pasture solar for cattle

- Height is similar to solar carports
- Cattle like the shade



## Maple Ridge Meats





## Farmers Electric Cooperative



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## Challenges of Pasture Solar

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- Chewed wires
- Gate left open, sheep escapes
- Sheep rubbing on equipment
  - Triggered shutdown buttons
- Sheep manure
- Aggressive sheep
  
- Plan ahead!



## We can solve problems!



## Prairie Solar





## A Midwest Development

- Methods from arid West don't work here



## Pollinator Friendly Solar

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- Combines prairie restoration with solar
- Use native prairie plants for ground cover
- Low growing, shade tolerant
- Plants should be selected by prairie restoration professionals to avoid invasives
- a.k.a. “Prairie Solar”



## The Pollinator Crisis

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- Alarming declines
  - 1 in 4 species imperiled and risk extinction
- Colony Collapse Disorder
  - 40% annual loss of honeybee colonies for the past 7 years, 60% in Wisconsin, Illinois, and Iowa
- Economic role
  - \$24 billion to economy, \$15 billion from honey bees

## Causes of Colony Collapse

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- Invasive mites (a pest of honey bees).
- New or emerging diseases.
- Pesticide poisoning.
- Changes / loss of habitat.
- Inadequate forage/poor nutrition.
- Potential immune-suppressing stress on bees caused by one or a combination of factors identified above.

## Importance to Agriculture



- Pollinate more than 90 commercially grown crops in North America
  - 87 of the 115 most popular commercially grown crops globally rely on pollination
- Provides habitat while earning revenue
- Healthier soils
- Soil conservation



## Vital to food supply



## Compare to other approaches



### Gravel



### Prairie Solar



## Establishing Prairie Solar

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- Remove existing vegetation
  - Crop fields work well
- Planting perennial plant seeds
  - Also plant annual cover crop
- Root systems grow in first 2-3 years, higher maintenance.
- Spot treatment after

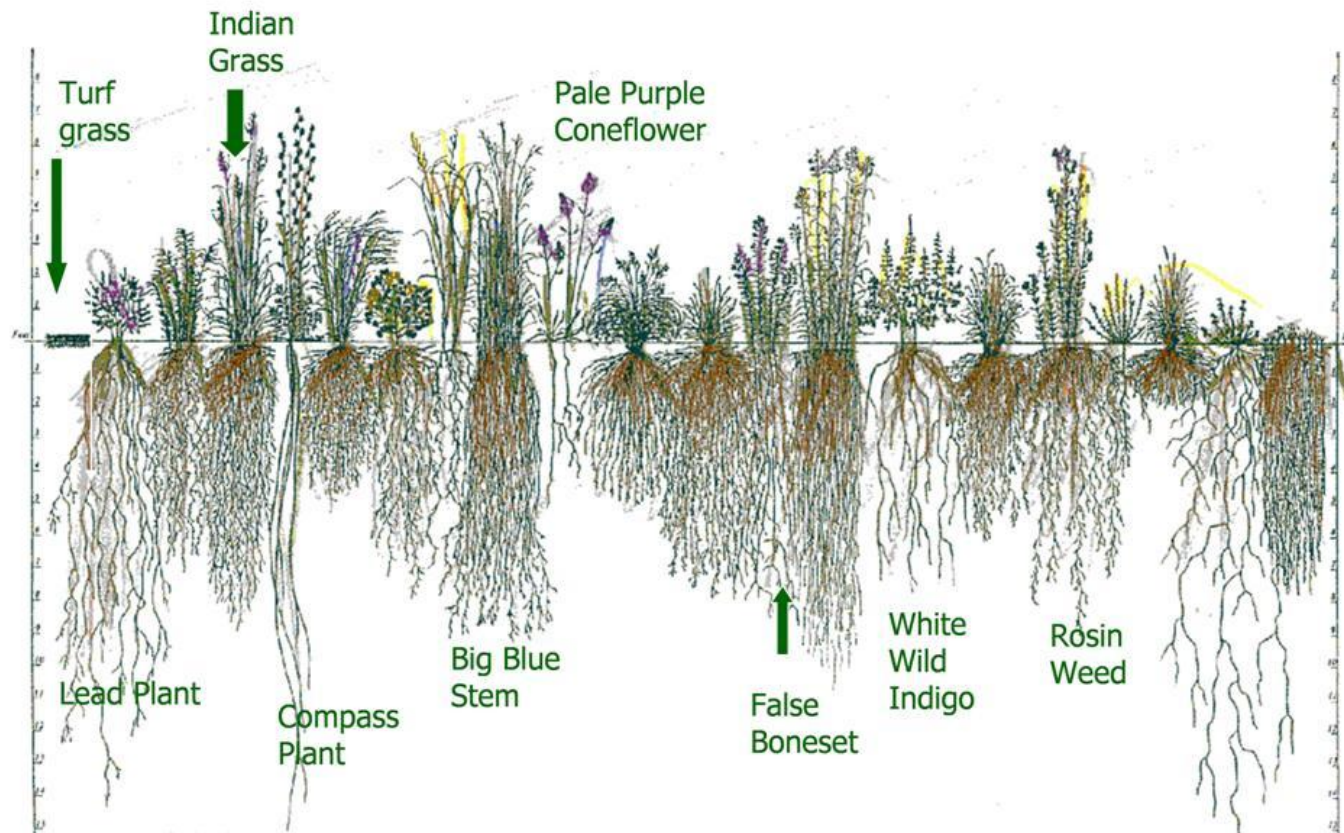


## Prairie Solar Benefits



- More pollinator habitat
- Better water quality
- Groundwater recharge
- Stormwater management
- Improved soil health
- Far better aesthetics
- Equivalent or lower costs
- More community support

# Prairie Root Systems





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## Dairyland Power Cooperative



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# Dairyland Power Cooperative



## Pollinator Friendly Solar Site Act



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- Establishes voluntary standard for claiming solar farms are “Pollinator Friendly”
  - Provide native perennial vegetation and foraging habitat which is beneficial to game birds, songbirds, and pollinators; and
  - reduce storm water runoff and erosion at the solar site



## Pollinator Friendly Solar Site Act



ENVIRONMENTAL LAW & POLICY CENTER

- Applies to sites of 40 kw and over, with ground-mounted panels.
- Habitat is forbidden to include exotic or noxious weeds, as sought by Farm Bureau.



## Requirements

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- Must pass scorecard evaluation
  - Department of Natural Resources sets standards with expert consultation including University of Illinois, Department of Entomology.
- Reflects similar efforts in other states.
- Draft now available, final due February 21, 2019.

## Pollinator Friendly Solar Scorecard

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- Flexibility – Can achieve a pollinator friendly site standard or an exceptional habitat standard.
- Avoids greenwashing
- Assures PFS claims reflect actual habitat creation

## DRAFT Illinois Solar Site Pollinator Habitat Planning Form

### 1. FLOWERING PLANT DIVERSITY IN SITE PERIMETER & BUFFER AREA (species with more than 1% cover)

- |  |         |
|--|---------|
| <input type="checkbox"/> 5-10 flowering species  | +5 pts  |
| <input type="checkbox"/> 10-15 flowering species | +8 pts  |
| <input type="checkbox"/> 16-20 flowering species | +10 pts |
| <input type="checkbox"/> >20 flowering species   | +15 pts |

*Exclude invasive plant species from total*

### 2. PLANT DIVERSITY IN ROWS & UNDER SOLAR ARRAY\*

- |  |         |
|--|---------|
| <input type="checkbox"/> 4-6 species         | +8 pts  |
| <input type="checkbox"/> More than 7 species | +10 pts |

### 3. PERCENT OF SITE VEGETATION COVER TO BE DOMINATED BY WILDFLOWERS\*\*

- |  |         |
|--|---------|
| <input type="checkbox"/> 26- 50 %      | +5 pts  |
| <input type="checkbox"/> 51-75 %       | +10 pts |
| <input type="checkbox"/> More than 75% | +20 pts |

*Projects may have different species mixes under the solar array panels and in the perimeter. Flower cover should be averaged across the entire site. The percentage should be calculated from total numbers of forb seeds vs. grass seeds (from all seed mixes) planned for the site. Sites that are planned to be co-located with honeybee hives need to have 10% more flowers to receive points in a given category.*

### 4. PERCENT OF SITE DOMINATED BY NATIVE PLANT SPECIES\*\*\*

- |  |         |
|--|---------|
| <input type="checkbox"/> 26- 50 %      | +5 pts  |
| <input type="checkbox"/> 51-75 %       | +10 pts |
| <input type="checkbox"/> More than 75% | +15 pts |

### 5. PLANNED SEASONS WITH AT LEAST THREE BLOOMING FORB SPECIES PRESENT (check all that apply)

- |   |        |
|---|--------|
| <input type="checkbox"/> Spring (April-May)       | +5 pts |
| <input type="checkbox"/> Summer (June-August)     | +5 pts |
| <input type="checkbox"/> Fall (September-October) | +5 pts |

### 6. HABITAT SITE PREPARATION PRIOR TO IMPLEMENTATION (check/add all that apply)

- |   |         |
|---|---------|
| <input type="checkbox"/> Measures taken to control weeds prior to seeding | +5 pts  |
| <input type="checkbox"/> None   | -10 pts |

### 7. AVAILABLE HABITAT COMPONENTS WITHIN 0.25 MILES (check/add all that apply)

- |  |        |
|--|--------|
| <input type="checkbox"/> Native bunch grass for bee nesting  | +2 pt  |
| <input type="checkbox"/> Native trees/shrubs for bee nesting | +2pt   |
| <input type="checkbox"/> Clean, perennial water sources      | +2 pt  |
| <input type="checkbox"/> Created habitat nesting features    | +2 pts |

### 8. SITE PLANNING AND MANAGEMENT

- |  |         |
|--|---------|
| <input type="checkbox"/> Detailed establishment and management plan developed                            | +10 pts |
| <input type="checkbox"/> Signage legible at forty or more feet stating pollinator friendly solar habitat | +3 pts  |

### 9. SEEDS USED FOR WILDFLOWER AREAS

- |  |        |
|--|--------|
| <input type="checkbox"/> Mixes are seeded using at least 40 seeds per square foot        | +5 pts |
| <input type="checkbox"/> All wildflower seeds are from a source within 150 miles of site | +8 pts |
| <input type="checkbox"/> At least 2% milkweed cover to be established from seeds/plants  | +7 pts |

### 10. INSECTICIDE RISK

- |   |         |
|---|---------|
| <input type="checkbox"/> Planned on-site use of insecticide or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc)                          | -40 pts |
| <input type="checkbox"/> Communication/registration with local chemical applicators or on <a href="http://www.fieldwatch.com">www.fieldwatch.com</a> to prevent drift | +5 pts  |

Total Points:

**Provides Exceptional Habitat Meets Pollinator Standards**

**85 and higher  
70 – 84**

## Stearns County, MN Ordinance

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- County Land Use Ordinance
- Requires that solar farms be planted with native grasses and flowers that provide habitat for bees and butterflies
- Will provide hundreds of acres of critical habitat for threatened pollinators



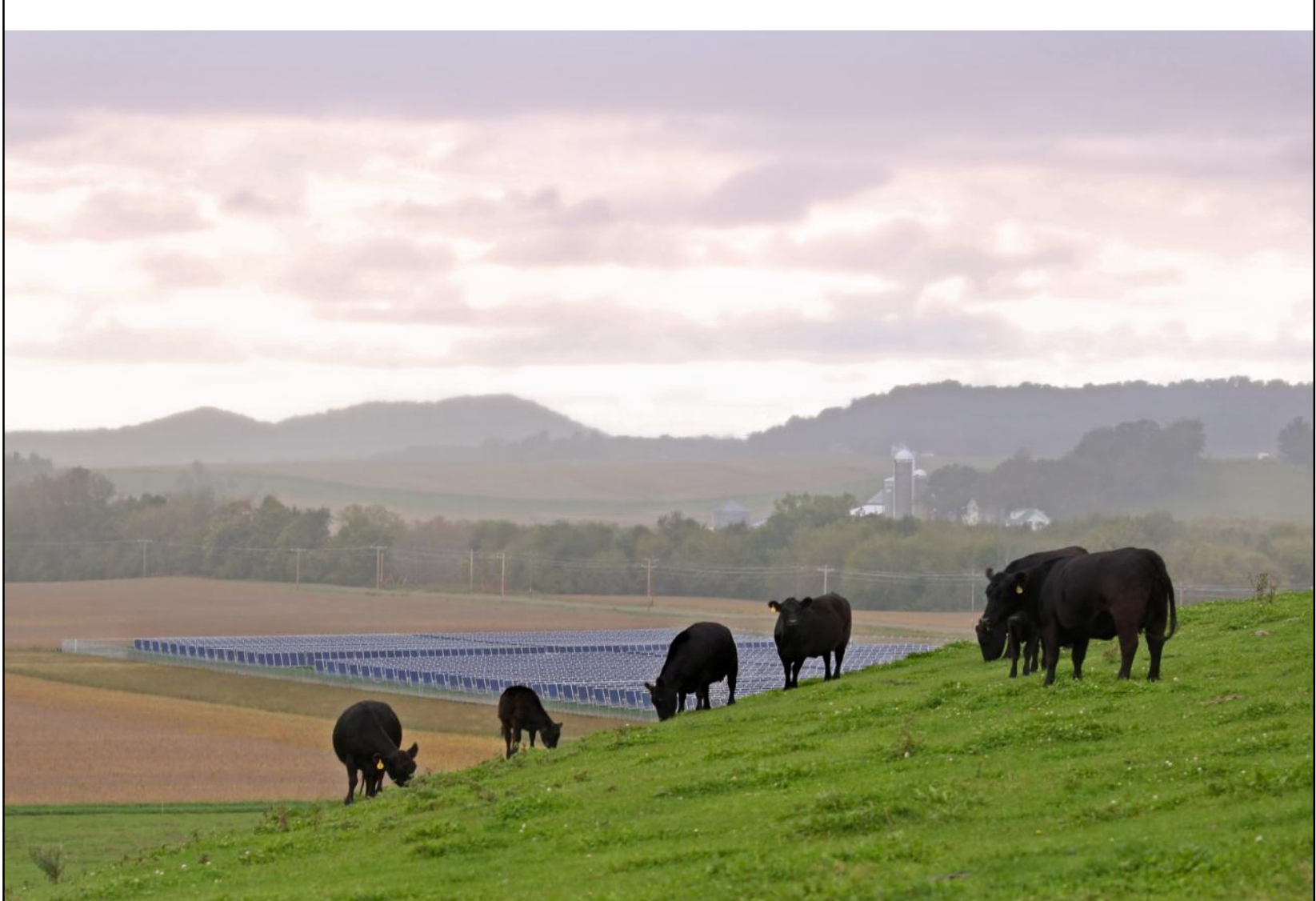
## Going forward

- Fertile area for new ideas
- Policy makers should allow for flexibility and innovation
- More jobs and economic development



## Teamwork!





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## **Conclusion**

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*Thank you for listening!*

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FarmEnergy.org

RuralSolarStories.org

