Solar in Indiana:
Regional and State Overview

Leah Thill

Michiana Area Council of Governments

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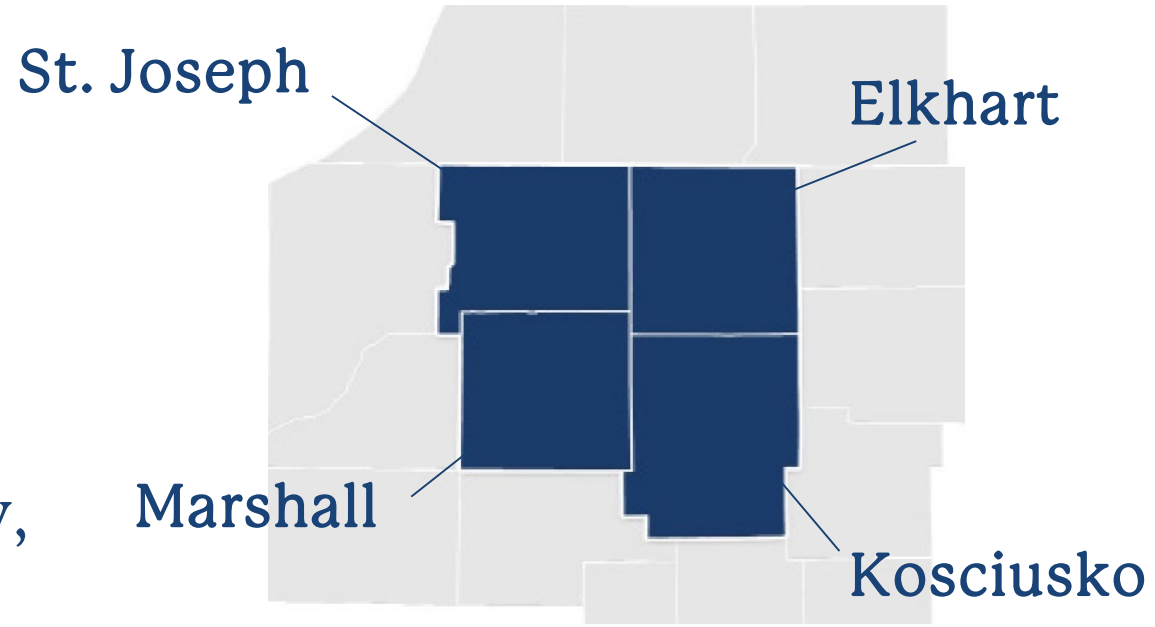

MACOG's Vision

- Advance the Region's economic vitality,
- Enhance quality of life,
- Build strong sense of place,
- Expand opportunities that attract and retain talent.

How?

By studying and attempting to resolve interlocal issues:
Transportation, transit, economic development, environment, etc.

Leah Thill
Environmental Planner

Regional and State Overview

- **Background on solar in Indiana:**

Solar resource, price, growth, utility plans

- Local Government Role

- Pollinator-Friendly Solar
  - Technical Guide, MACOG
  - St. Joseph County ordinance
  - Scorecard

Pictured: REES Theatre, Plymouth, IN

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Solar Energy Experience

Department of Energy SolSmart program
- Technical Advisor, 2017 & 2019
- 7 communities in earned designation

Local Solarize Initiative
- Supported volunteer-led initiative throughout northern Indiana in 2017 and 2019

Pollinator-Friendly Solar
- Released a Technical Guide in 2020
- Assisted St. Joseph County in pollinator-friendly language

Pictured: Elkhart County Commissioners and staff
Case Study, IU ERI: https://eri.iu.edu/erit/case-studies/macog-solar-initiatives.html

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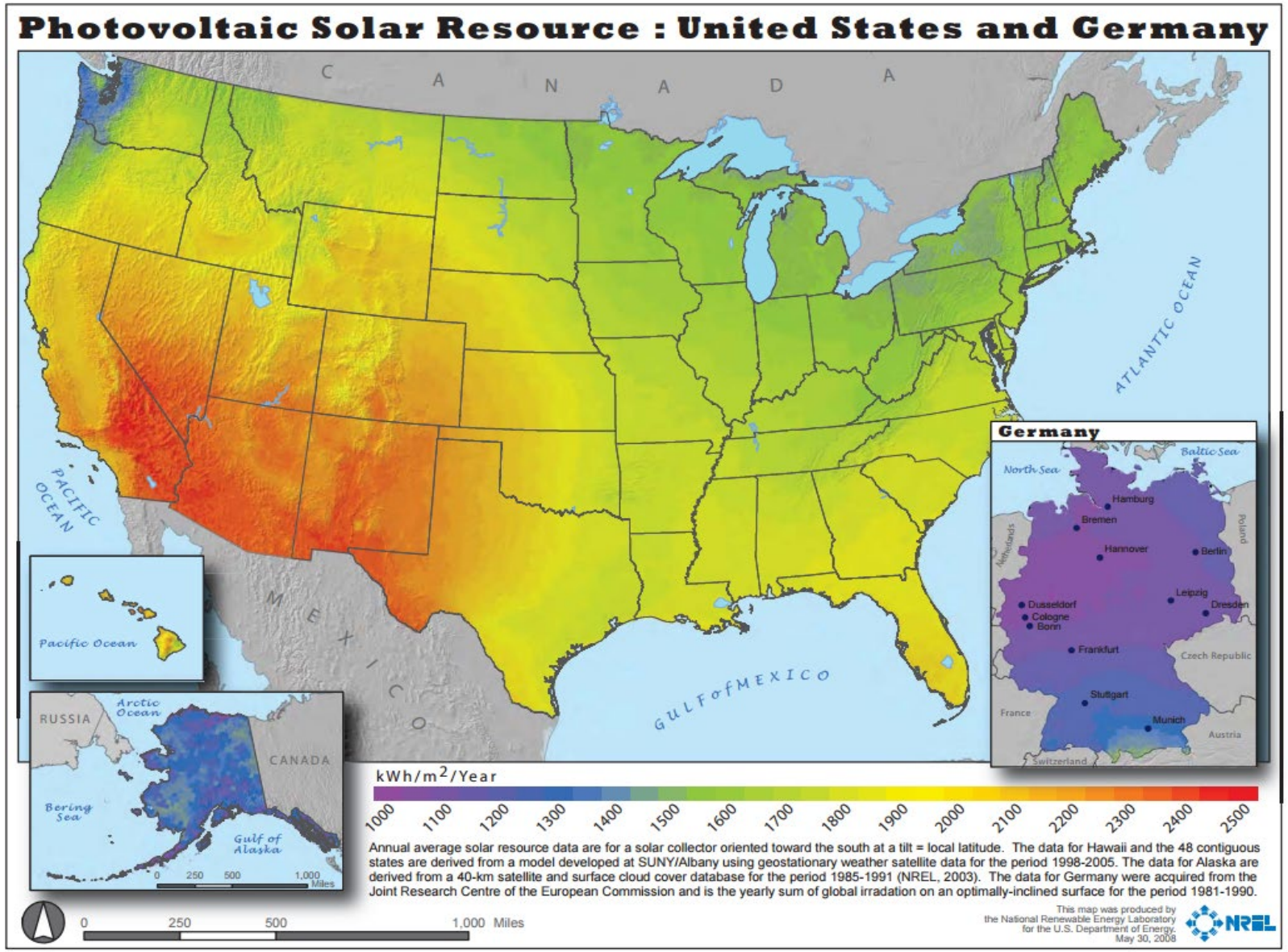
Solar Energy Resource



Do we get enough sun?

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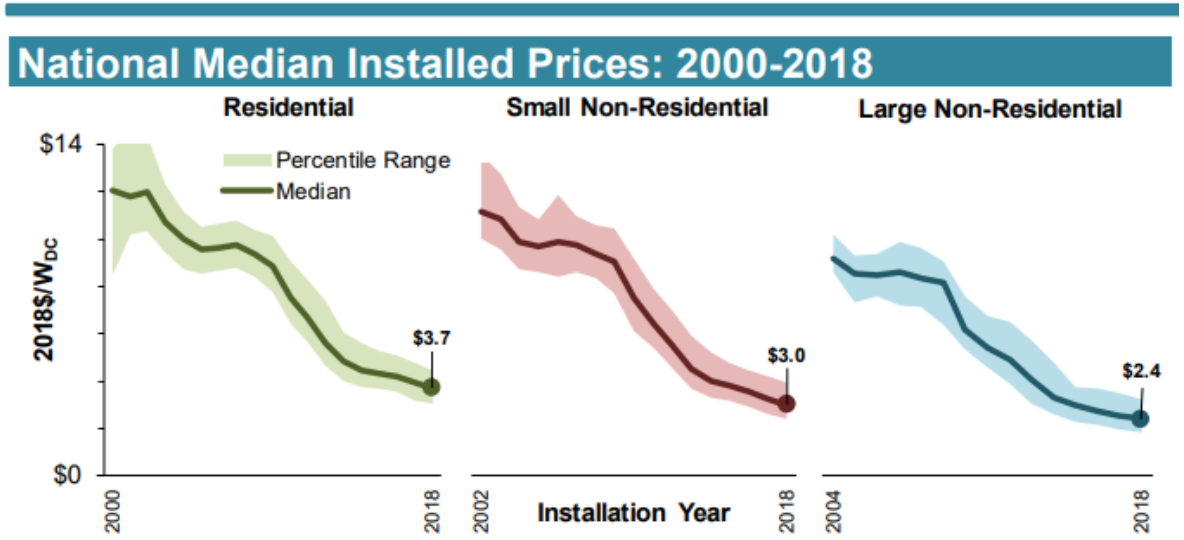
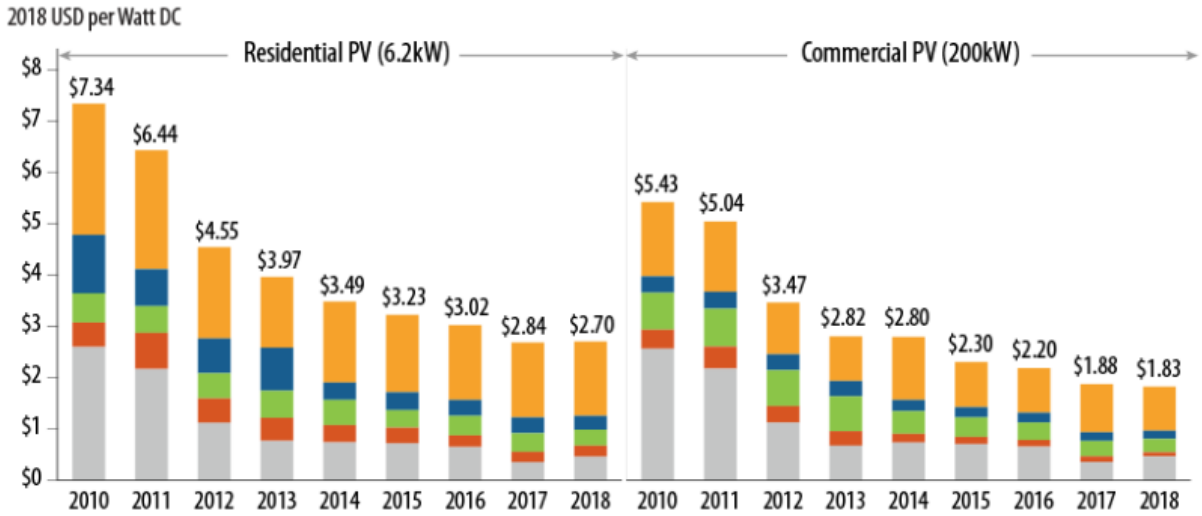
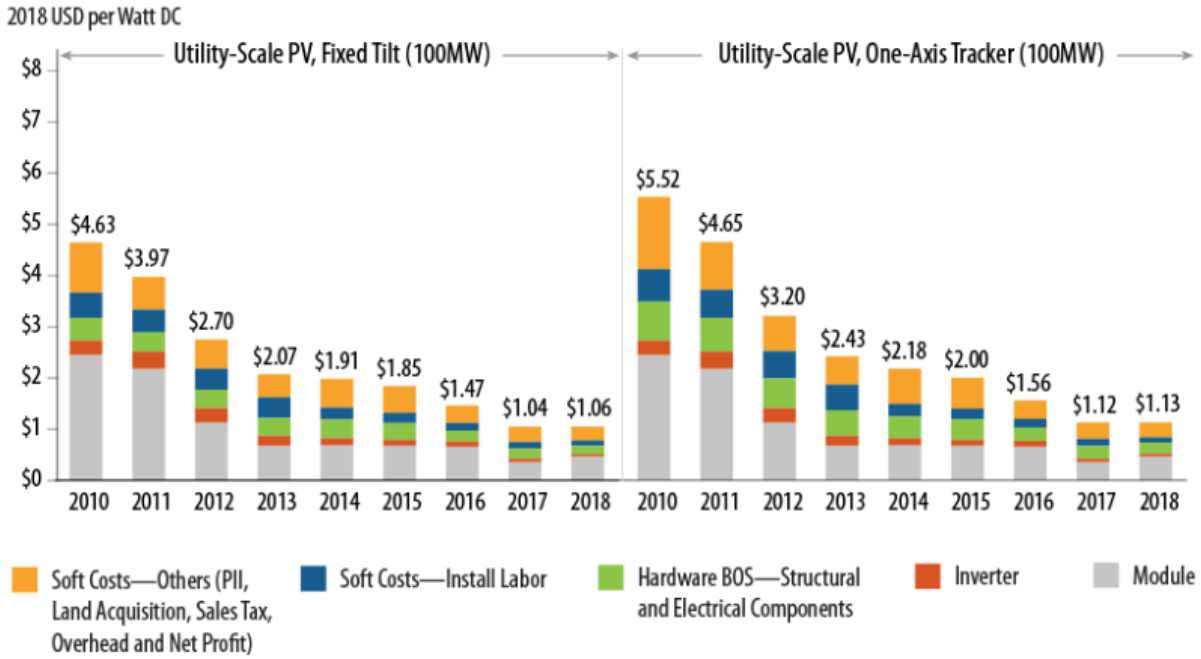
Trends in Installed Cost







Tracking the Sun, Lawrence Berkeley National Laboratory, Oct 2019. https://emp.lbl.gov/tracking-the-sun
Solar Cost Analysis, National Renewable Energy Laboratory. https://www.nrel.gov/analysis/solar-cost-analysis.html

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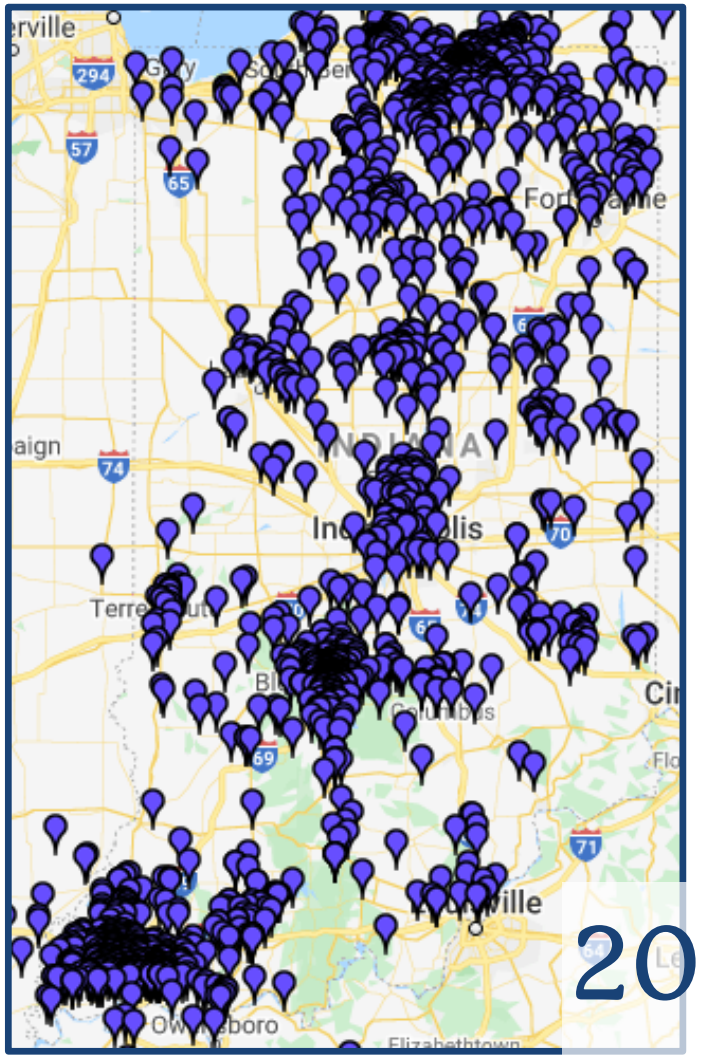
Growth of Solar in Indiana: "It's here, let's plan proactively."

2010



2020

https://www.sirensolar.org/solar-map/

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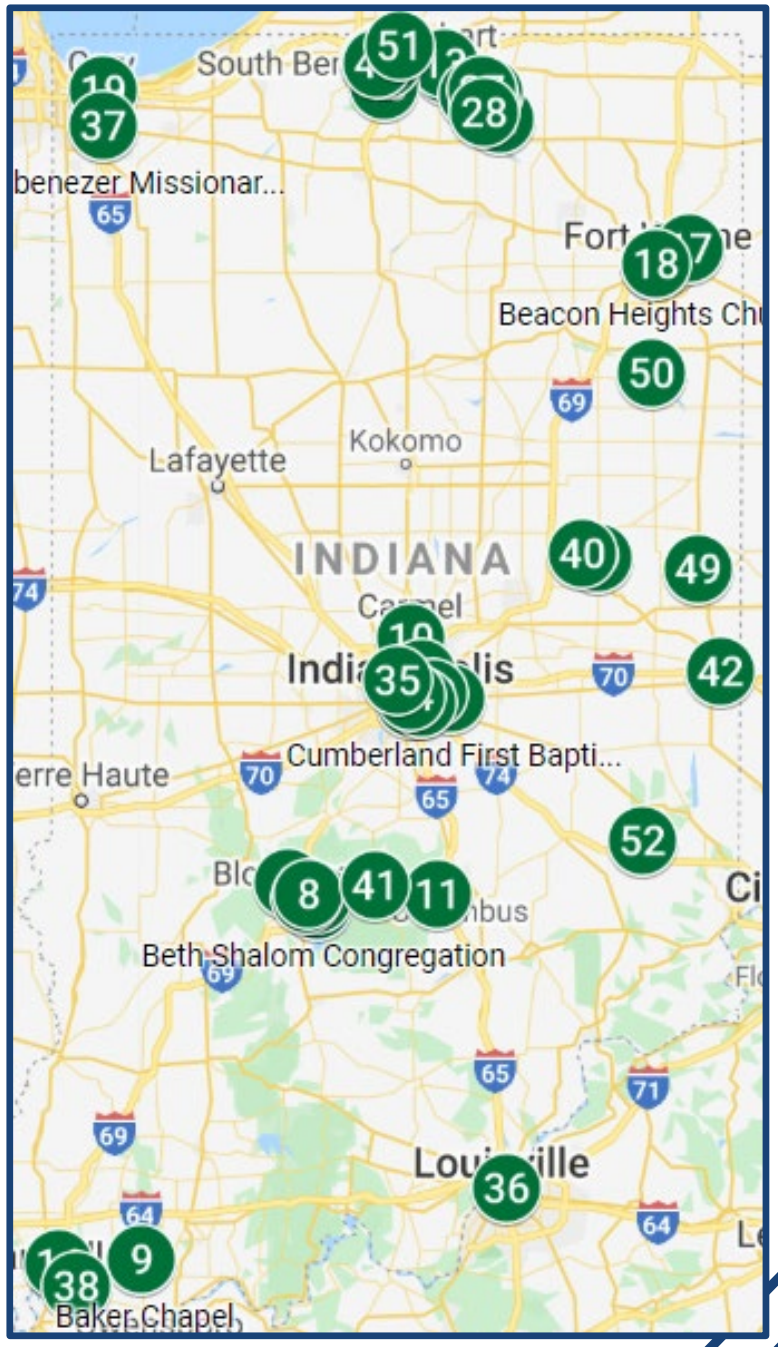
Faith Communities are Solar Leaders

Indiana's Solar Congregations Map by HIPL

Represents over 50 Hoosier congregations

Hoosier Interfaith Power & Light

https://hoosieripl.org/indiana-solar-congregations/



Local Solar Initiatives

SOLARIZE

SOLAR UNITED NEIGHBORS

Solarize Northern Indiana

117 new solar projects
2017 – 2019

Community-based initiatives are active throughout the state:

Bloomington
Boone County
Columbus
East Central (Muncie)
Evansville
Fort Wayne
Hamilton County
Indianapolis
West Lafayette

https://solarizeindiana.org/ https://www.solarunitedneighbors.org/indiana/

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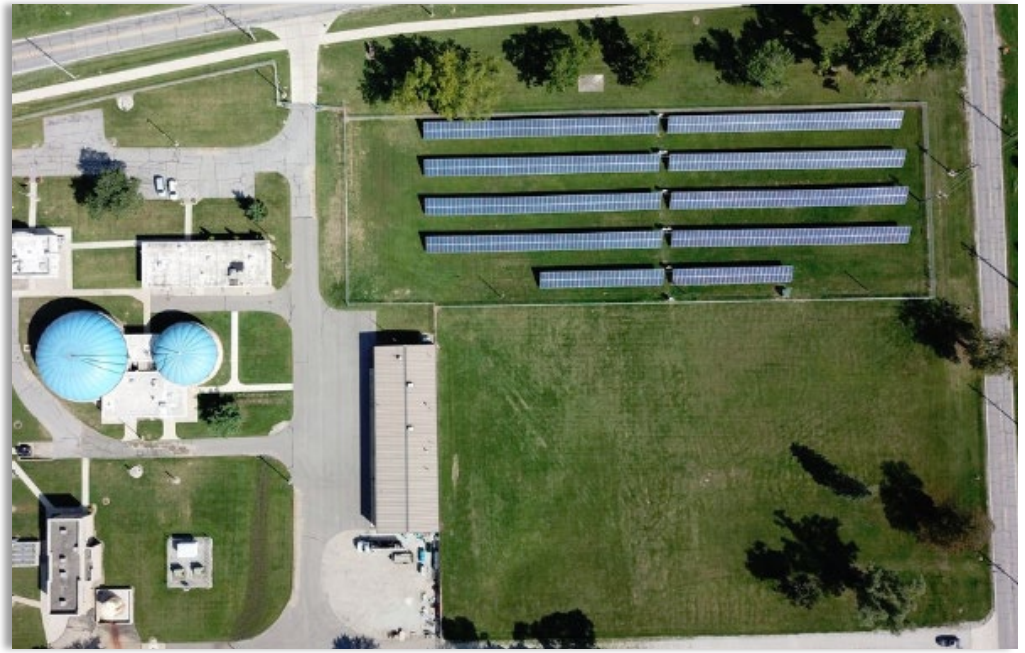
Local Government Projects ('17 – '19)

- City of Bloomington – 5 MW
- Hamilton County Correctional Campus – 3 MW
- North Vernon – 2.36 MW
- Goshen Wastewater Treatment Plant – 0.32 MW (*FIT*)



1 MW ~ 100 Hoosier Households

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Photo Credit (L to R): Hamilton County; Solscient Energy; Johnson Melloh Solutions, City of Bloomington,

Schools - Public Projects ('17 – '19)

- Wawasee Community Schools – 3.4 MW
- Warsaw Community Schools – 2.8 MW
- Michigan City Area Schools – 2.8 MW
- East Washington (New Pekin) – 2.4 MW
- Evansville-Vanderburgh Schools – 1.4 MW
- Orleans Community Schools – 1.3 MW

Other Indiana Public Schools with solar:
7. Delphi , 8. Eastern Howard, 9. Frankton-Lapel, 10. Fremont, 11. Jac-Cen-Del, 12. Madison Grant United, 13. Mill Creek West, 14. Monroe County, 15. North Putnam,16. Oak Hill, 17. Orleans, 18. Rising Sun, 19. Sheridan, 20. Taylor, 21. Tippecanoe Valley, 22. Tipton, 23. Tri-Creek, 24. Wayne Township

Photo Credit (L to R): Performance Services; Solscient Energy; The Goshen News

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College/Universities (‘18 – ’19)

- Ancilla College/The Center at Donaldson – 0.5 MW
- Goshen College – 0.28 MW, 2018
- University of Notre Dame - 0.15 MW, 2017

Photo Credit (L to R): Goshen College, Notre Dame, The Center at Donaldson.

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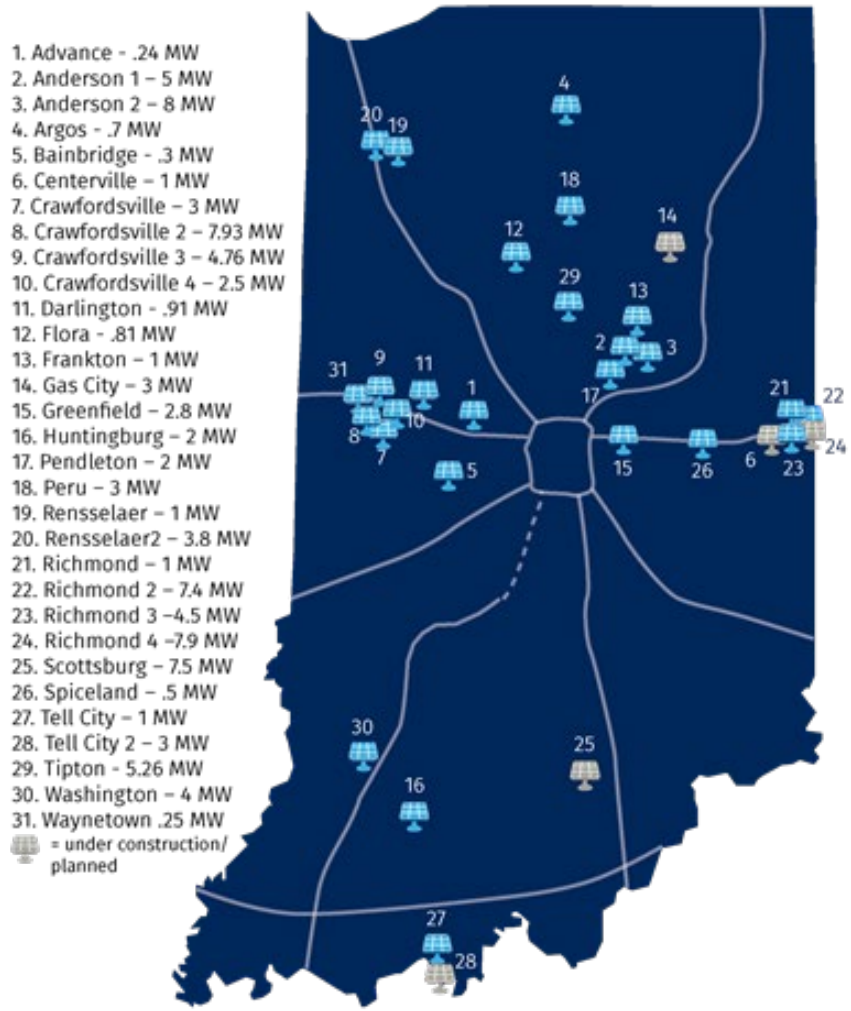
Municipal & Rural Utilities

Indiana Municipal Power Agency (IMPA)

- 25+ solar parks from 0.25 MW to 8 MW
- More planned

REMCs:

- Hoosier Energy partnership (G&T), 10% goal
- REMC Community Solar options
  - Tipmont, Kankakee Valley



IMPA, https://www.impa.com/solar
Hoosier Energy, https://www.hoosierenergy.com/about/energy-strategy/renewable-energy/

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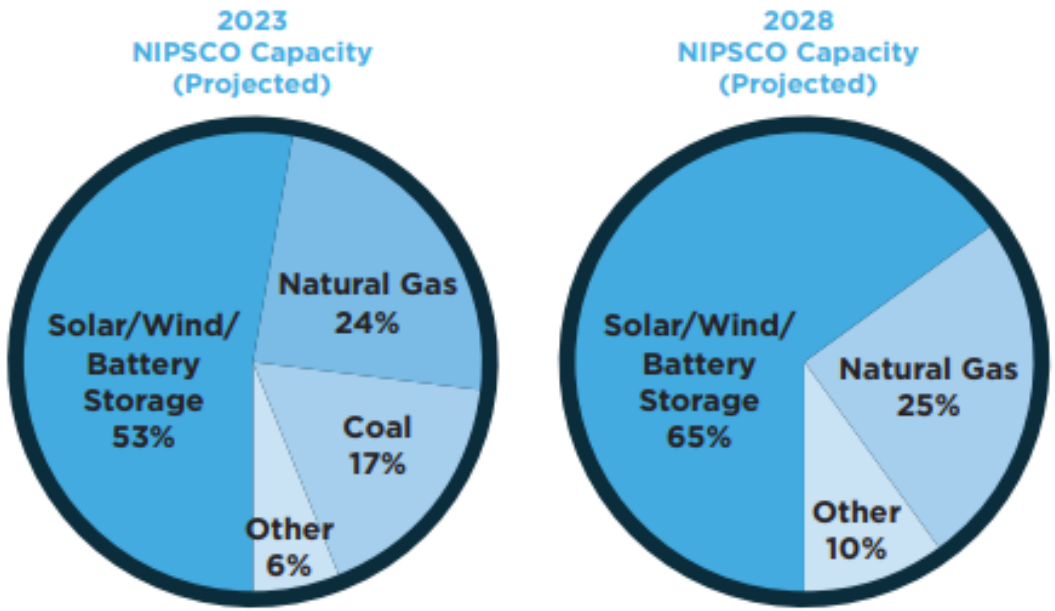
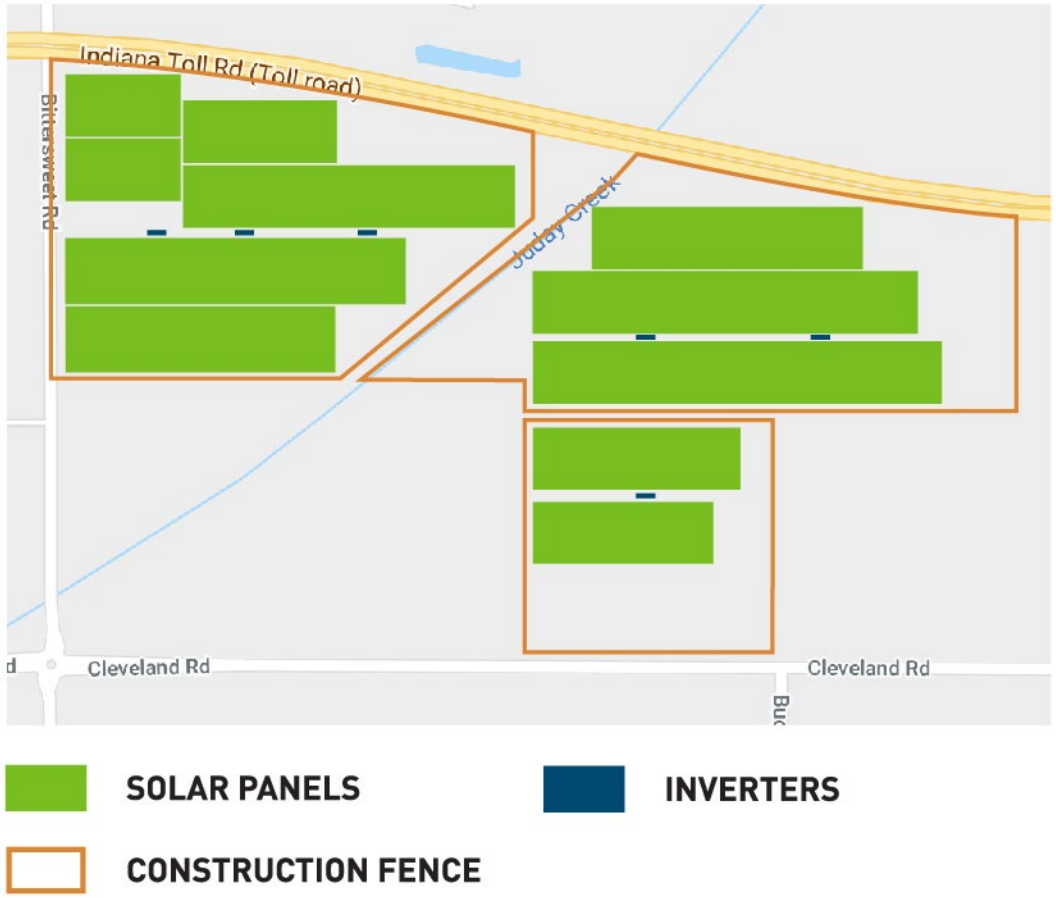
Investor-Owned Utility Plans

Indiana's electricity portfolio is changing… and it is about to change rapidly.

NIPSCO Integrated Resource Plan



Indiana Michigan Power
St. Joseph Solar Farm



www.nipsco.com/our-company/about-us/regulatory-information/irp
https://www.indianamichiganpower.com/info/news/cleanpower/
www.IndianaMichiganPower.com/StJosephSolar

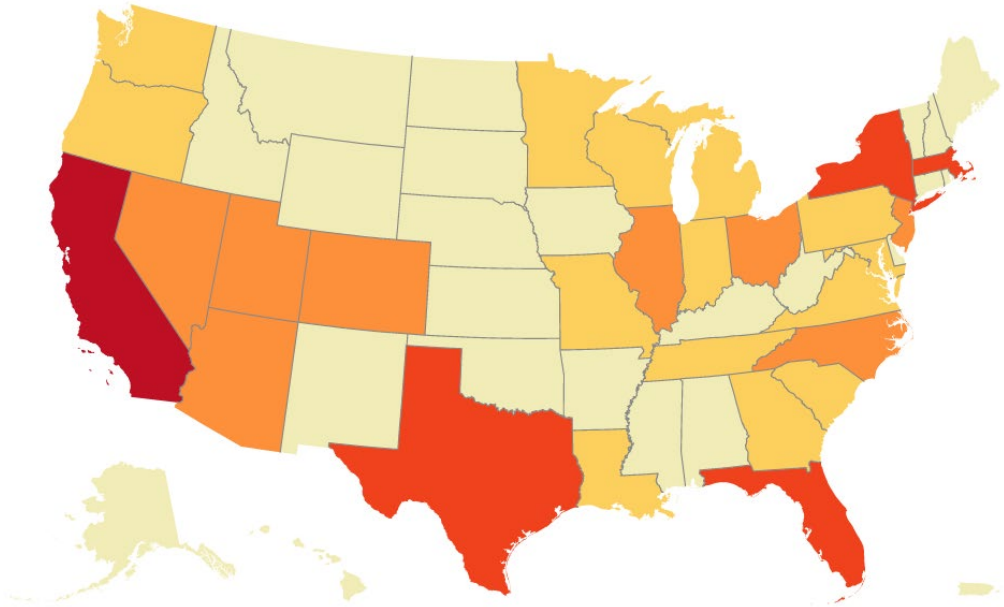
Local Government Perspective

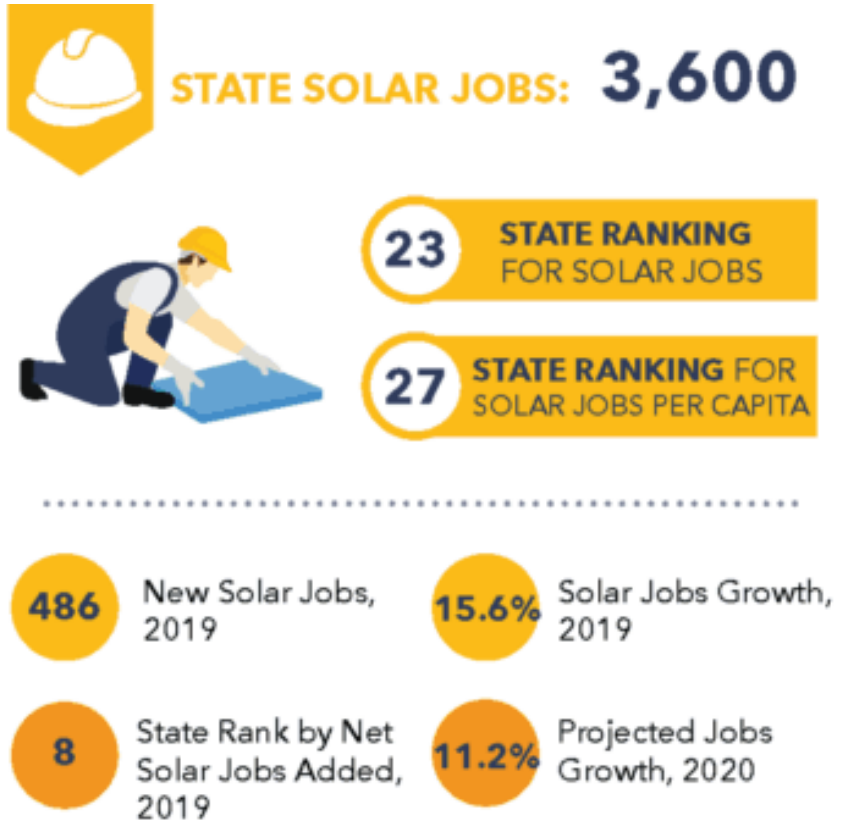
Why	Where	How	What

• Save money
• Meet sustainability targets and goals
• Jump start economic development
• Create job training opportunities
• Demonstrate environmental leadership
	• Schools
	• Municipal facilities
	• Water treatment facilities
	• Bus depots
	• Brownfields
	• Abandoned lots
	• Capped landfills
	• Open space
	• Roadside
	• Airports
		• Direct Purchase
		• PPA
		• ESPC
		• Grants
		• Hybrid Solutions
			• Roof mount
			• Ground mount
			• Parking Canopies
			• Picnic Structures
			• Unique
			  • Solar flowers
			  • Solar facades

Economic Development & Jobs

Solar Jobs Census 2019



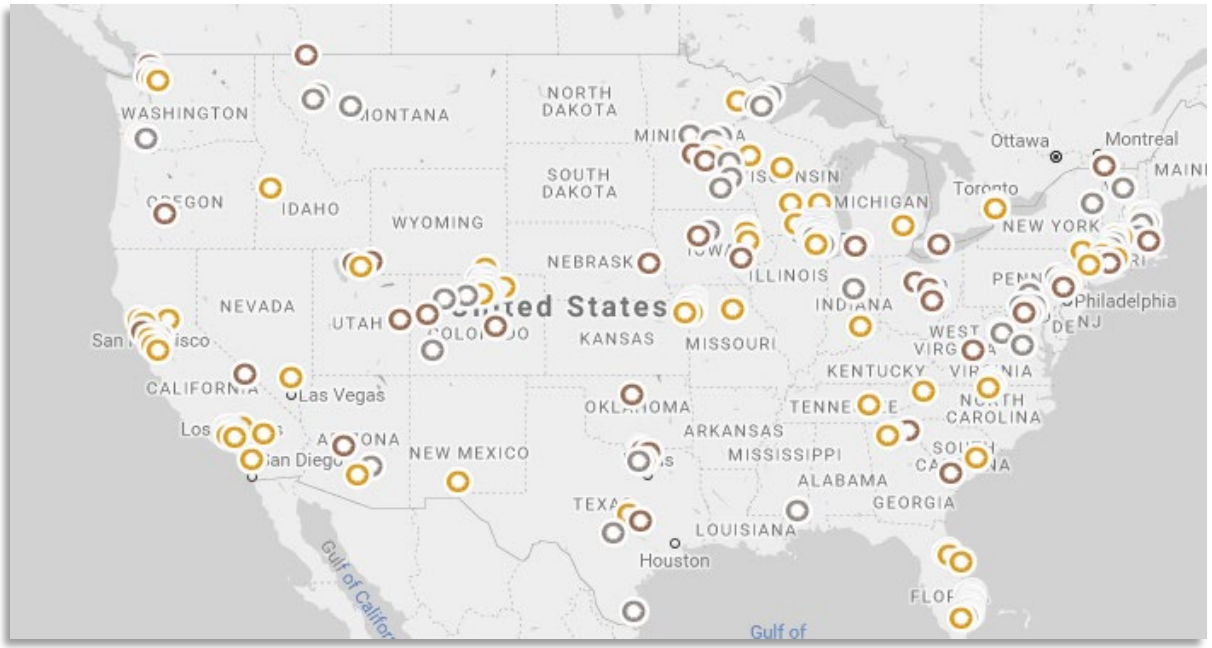


The Solar Foundation, http://www.solarstates.org/
Indiana Fact Sheet, https://www.thesolarfoundation.org/solar-jobs-census/factsheet-2019-IN/

Over 300 SolSmart Communities

SOLSMART

NATIONALLY DISTINGUISHED. **LOCALLY POWERED.**



Local Governments Earn Designation

PERMITTING
TRAINING

PLANNING & ZONING
COMMUNITY ENGAGEMENT

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Indiana SolSmart Communities:

Elkhart County
Goshen
Indianapolis
Marshall County
Nappanee
Plymouth
South Bend
St. Joseph County

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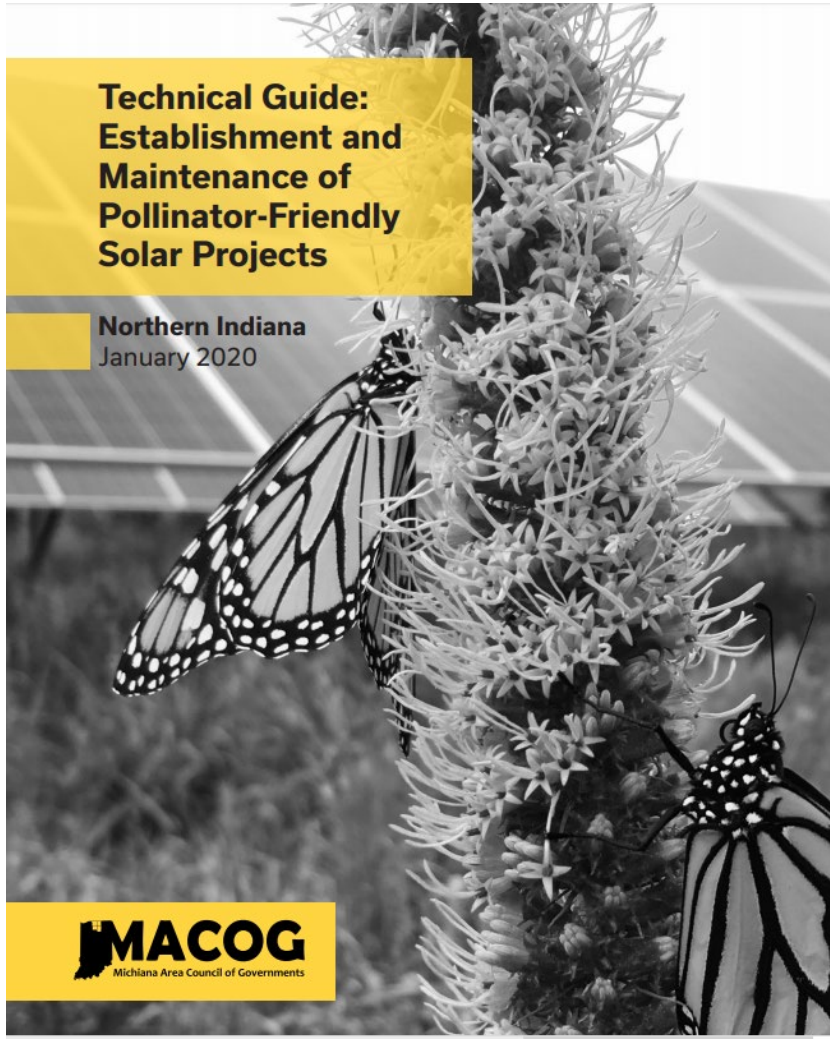
Recognizing local governments for spurring solar market growth

SOLSMART
NATIONALLY DISTINGUISHED. **LOCALLY POWERED.**

- SolSmart will **recognizes U.S. local governments** with a nationally prestigious solar designation.
- Goal: To make it **faster**, **easier**, and more **affordable** for more Americans to choose solar energy,
- SolSmart designation demonstrates that a community is "**open for solar business**"
- SolSmart provides **targeted, no-cost technical assistance** in critical soft cost reduction areas to help communities achieve "soft cost" reduction.

FUNDED BY THE U.S. DEPARTMENT OF ENERGY SOLAR ENERGY TECHNOLOGIES OFFICE

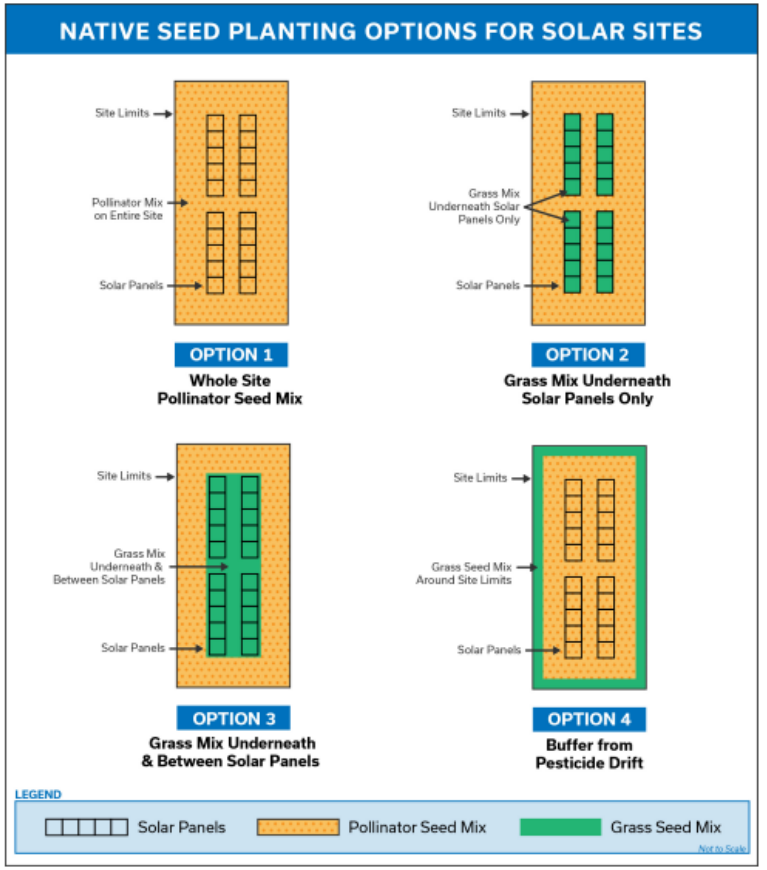
Pollinator-Friendly Solar – MACOG Technical Guide



Native Seed Planting Layout Recommendations

It is recommended to work with your seed provided, DNR, or NRCS staff to develop an appropriate seed mix distribution and planting layout for your specific site.

Native Seed Planting Layout Options and Seed Mix Examples for Solar Sites



http://macog.com/solar_energy.html

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St. Joseph County, IN Ordinance (Feb. 2020)

(1) Pollinator-friendly seed mixes and native plants are required around the SES at a rate of two (2) square feet of plantings for every one (1) square foot of solar panels. For reference, best practices, and maintenance information see *Technical Guide: Establishment and Maintenance of Pollinator-Friendly Solar Projects (2020) – Northern Indiana – Michiana Area Council of Governments, as amended.*

(2) The Zoning Administrator may approve the redistribution of the required landscaping to other locations on the site.

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Other Notable Developments:

Pollinator-Friendly Ordinances:

Porter County (April 2020), Randolph County (July 2020),

Henry County (proposed)

Pollinator-friendly solar projects underway:

City of Logansport – 16 MW

St. Joseph County – 20 MW (Indiana Michigan Power)

Randolph County – 200 MW (Hoosier Energy)

https://www.solarpowerworldonline.com/2020/07/indiana-county-adopts-first-ever-solar-energy-ordinance-requiring-pollinator-friendly-groundcover/

https://eq-research.com/eq-publications/pollinator-friendly-solar-in-indiana/

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Pollinator-Friendly Solar – Why?

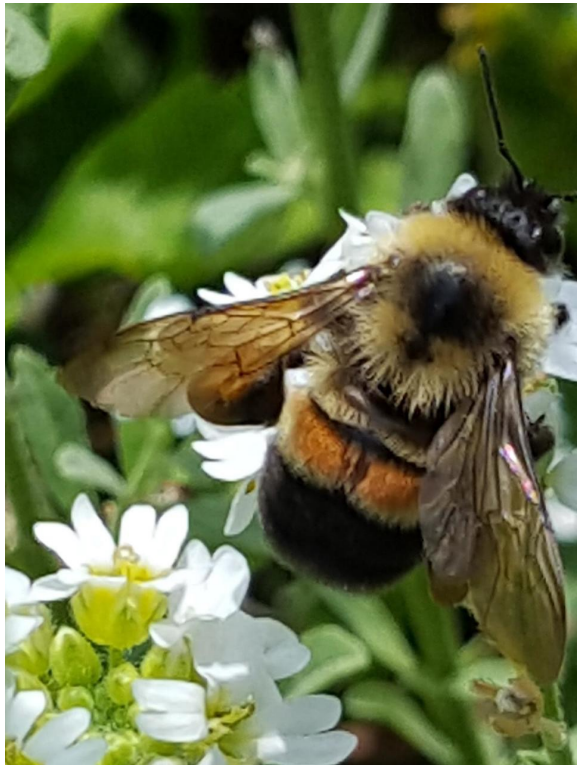
"We found that five out of seven crops showed evidence of pollinator limitation."

Riley et al. 2020

"bee abundance declined across 23% of US land area. This decline was generally associated with conversion of natural habitats to row crops."

Koh et al. 2015

Pollinator-Friendly Solar – Why?



Pollinator-Friendly Solar – Why?

Pollinator-Friendly Solar – Why?

2020 Indiana Solar Site Pollinator Habitat Planning Scorecard

Informed by the pollinator-friendly solar scorecards published in other States across the US, we provide this Indiana scorecard as a starting point for solar projects to be considered "pollinator-friendly" in Indiana.

Note: In Indiana it is illegal to plant any invasive pests designated by the Terrestrial Plant Rule. Consult this list during your planning phase.

1. Planned percent of native species in array area (select one)

10-25%	+4 pts
26-50%	+6 pts
51-75%	+8 pts
>75%	+10 pts

Remove 20 pts for the inclusion of invasive species as per the Indiana Invasive Species Council

2. Vegetative buffer planned adjacent to the solar site (select all that apply)

Buffer planned outside and/or inside of array fencing	+5 pts
Buffer is at least 30ft deep (or as deep as property allotment allows) as measured from array fencing	+5 pts
Buffer has native shrubs/trees	+10 pts

3. Percentage of seeds across the site sourced within 150 miles (select one)

51-75%	+5 pts
75-90%	+10 pts
91-100%	+15 pts

Add an additional 5pts if all seeds are also local ecotypes

4. Planned number of species in site perimeter and buffer area (select one)

5-9 species	+4 pts
10-15 species	+6 pts
16-19 species	+8 pts
>20 species	+10 pts

Exclude all non-native species

5. Planned number of species under array area (select one)

5-9 species	+4 pts
10-15 species	+6 pts
16-19 species	+8 pts
>20 species	+10 pts

6. Additional diversity of species in site perimeter and buffer (select all that apply)

Plant mix includes at least 5 grasses	+5 pts
Plant mix includes at least 5 forbs	+5 pts
Plant mix includes at least 2 milkweeds	+2 pts

7. Additional diversity of species under site array (select all that apply)

Plant mix includes at least 5 grasses	+5 pts
Plant mix includes at least 5 forbs	+5 pts
Plant mix includes at least 2 milkweeds	+2 pts

If array mix contains fewer than 4 forb species subtract 10 pts
If array mix contains only a single species subtract 20 pts

8. Planned percentage of native species in perimeter and buffer area (select one)

10-25%	+4 pts
26-50%	+6 pts
51-75%	+8 pts
>75%	+10 pts

Remove 20 pts for the inclusion of invasive species as per the Indiana Invasive Species Council

9. Planned percentage of the entire site's vegetative cover dominated by flowering plants (select one)

15-25 %	+2 pts
26-50 %	+5 pts
51-75 %	+10 pts
More than 75%	+15 pts
No flowering plants	-15 pts

10. Planned seasons with at least three blooming species present (select all that apply)

Blooms from Spring (April-May) to Fall (September-October)	+15 pts

11. Site preparation prior to implementation (select all that apply)

Soil preparation done to promote germination and reduce erosion as appropriate for the site.	+10 pts
Temporary site seed mix uses native plant mix	+10 pts
Measures taken to control weeds prior to seeding	+10 pts
None	-10 pts

12. Site planning and management (select all that apply)

Detailed establishment and future site management plan developed	+10 pts
Signage legible at forty or more feet stating "pollinator-friendly solar habitat"	+5 pts
Plan to engage with or educate the public on the benefits of pollinator-friendly solar	+5 pts
Site is involved in an on-going research project with a University or other organization	+10 pts

13. Insecticide risk (select all that apply)

Planned on-site use of broadcast insecticide or pre-planting seed/plant treatment (excluding buildings/electrical boxes, etc.)	-40 pts
Communication/registration with local chemical applicators or on www.fieldwatch.com to prevent drift	+5 pts

Does not meet standards - < 100
Meets preliminary standards – 100 or greater
Provides exceptional habitat – 125 or greater

PURDUE UNIVERSITY

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