



# Missouri Solar and Agriculture

## Solar and Prime Farmland

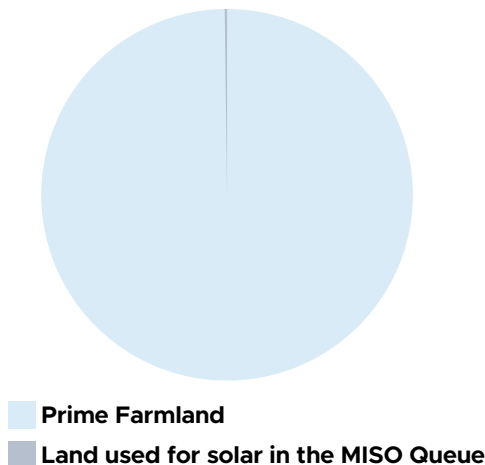
Missouri is home to about 27.8 million acres of farmland, about 12.9 million acres of which are considered “prime.”<sup>1</sup>

- Wind and solar are compatible and profitable ways farmers can grow their business as the stewards of their own land.
- Limiting use of prime farmland is unnecessary, and doing so infringes upon private property rights. All possible sites should be evaluated to best serve the community, the environment and our clean energy needs.

## For Perspective...

There are 3,036 MW of solar in the MISO Queue across Missouri,<sup>2</sup> requiring approximately 25,800 acres of land. If every solar farm were sited on prime farmland, only 0.20% of Missouri's prime farmland would be used.

Missouri Prime Farmland<sup>1</sup>



## Solar Land Use

Land used for solar remains versatile, coexisting with a variety of conservation efforts.

- An average of between 7 and 10 acres of land are required to produce one megawatt (MW) of electricity from solar energy.<sup>3</sup>
- Some community garden and utility-scale solar projects pair beehives with pollinator-friendly native plants and flowers in and around the project area.
- Pollinator-friendly solar can recharge groundwater and reduce soil erosion, at the same time increasing yield of pollinator-dependent crops, such as soybeans.<sup>4</sup>

## Agrivoltaics: A Value-Added Farmer Friendly Solution

Combining traditional farming and solar technology is called agrivoltaics.<sup>5</sup>

Agrivoltaics have a wide range of benefits for farmers, both immediate and long-term. Altogether, conservation and vegetation plans amidst renewables lead to healthier soil, improved water storage and filtration, sequestration of carbon, erosion reduction, habitat preservation and lower local energy costs.<sup>6</sup>

## prime·farm·land

### NOUN

Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses.

### ADDRESS

507 Asbury Street, Suite 201, St. Paul, MN 55104

### OFFICE

651.644.3400

### WEB

CleanGridAlliance.org



## Property Rights

A landowner has the right to make decisions about how their land is used.

Renewables...

- Help diversify income portfolios.
- Are harvested all year long.
- Are drought-proof, high-yield land outputs that can produce for decades at a time without expensive inputs like fertilizers, pesticides, and irrigation.

American Clean Power Estimates

**MO Farmers, Ranchers,  
& Landowners Receive**

**\$500K**

**in annual land-lease  
payments from solar**

Crop	Production Value per 1,000 Acres	Harvested Acreage Actual
Solar	\$3,669,133	1,000*
Cotton	\$1,058,400	315,000
Rice	\$975,120	199,000
Corn	\$874,500	3,600,000
Soybeans	\$676,200	5,700,000
Wheat	\$444,600	640,000
Oats	\$282,000	50,000
Hay	\$241,280	3,140,000
*Approximate		

## Current Solar Crop Values in Missouri

Missouri has 90 MW<sup>7</sup> of solar, occupying approximately 1,000 acres of land.

- In 2021, MO solar projects generated over 100,000 MWh of electricity.<sup>8</sup>
- At a value of \$36.42 per MWh,<sup>9</sup> Missouri's existing solar footprint has an annual production value of over \$3.6 million.

## Sources

- 1.U.S. Department of Agriculture. 2020. Summary Report: 2017 National Resources Inventory, Natural Resources Conservation Service. [https://www.nrcs.usda.gov/wps/PA\\_NRCSConsumption/download?cid=nrcseprd1657225&ext=pdf](https://www.nrcs.usda.gov/wps/PA_NRCSConsumption/download?cid=nrcseprd1657225&ext=pdf)
- 2.MISO, 2022. Generator Interconnection Queue. [https://www.misoenergy.org/planning/generator-interconnection/GI\\_Queue/](https://www.misoenergy.org/planning/generator-interconnection/GI_Queue/)
- 3.Birkholz, D. et al. 2020. "Solar Energy Production and Prime Farmland," Minnesota Department of Commerce and Minnesota Department of Agriculture. <https://mn.gov/eera/web/doc/13929/>
- 4.Siegner, K. et al. 2019. "Maximizing Land Use Benefits from Utility-Scale Solar," Yale Center for Business and the Environment. <https://cbey.yale.edu/research/maximizing-land-use-benefits-from-utility-scale-solar>
- 5.Lane, C. 2022. "Agrivoltaics: How Solar and Farmland Can Fight Climate Change." Solar Reviews Blog. <https://www.solarreviews.com/blog/all-about-agrivoltaics>
- 6.Benage, Megan, et al. "Guidance for Developing a Vegetation Establishment and Management Plan for Solar Facilities." Environmental Review of Energy Projects, MN Commerce Department; Division of Energy Resources, Mar. 2021, <https://apps.commerce.state.mn.us/eera/web/page/home>
- 7.American Clean Power Association, 2022. Data Search, Clean Power IQ.
- 8.EIA, 2021. "State Electricity Profiles." <https://www.eia.gov/electricity/state/missouri/>
- 9.Calculated average price of electricity based on MISO 2021 Real-Time Final Market LMPs.

### ADDRESS

507 Asbury Street, Suite 201, St. Paul, MN 55104

### OFFICE

651.644.3400

### WEB

CleanGridAlliance.org