

Minnesota Solar and Agriculture

Solar and Prime Farmland

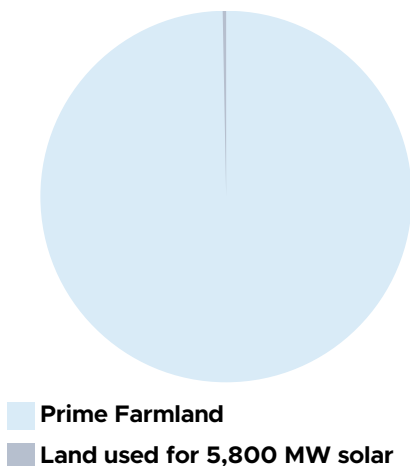
Minnesota is home to about 25.5 million acres of farmland, about 17.3 million acres of which are considered “prime.”¹

- Wind and solar are compatible and profitable ways farmers can grow their business as the stewards of their own land.
- Solar farms are developed on prime farmland for a variety of reasons, including access to the electric grid.
- Minnesota has a significant amount of prime farmland, which makes it hard to avoid.

For Perspective...

Minnesota has 5,800 MW of solar in the MISO Queue,² requiring approximately 50,000 acres of land.³ If all of this solar were to be sited exclusively on prime farmland, it would only use 0.3% of the land considered “prime.” It is the policy of the state of Minnesota to reach 100% carbon-free electricity by 2040,⁴ and the solar projects in the MISO Queue are a substantial part of meeting that goal.

Minnesota Prime Farmland ¹



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.³
- Some projects pair beehives with pollinator-friendly native plants and flowers in and around the project area, which can recharge groundwater and reduce soil erosion, at the same time increasing yield of pollinator-dependent crops, such as soybeans.⁵
- Mowing under panels is expensive,^{6,7} especially at the utility-scale. Some projects employ sheep or even cattle grazing as a vegetation management strategy, which will become increasingly valuable as projects grow in size.

Agricultural Impact Mitigation Plans: A Farm Friendly Practice

Minnesota solar developers must write an Agricultural Impact Mitigation Plan (AIMP)⁸

Solar developers submit AIMPs in order to identify measures they will take to avoid, correct, or mitigate potential adverse impacts to agricultural land resulting from construction, operation, and decommissioning of the project. These plans are flexible to accommodate the needs of the site and surrounding environment.

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.⁹

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.

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.

Crop	Production Value per 10,000 Acres	Harvested Acreage Actual
Solar	\$109,972,912	10,000*
Potatoes	\$45,475,000	42,000
Corn	\$9,469,500	8,400,000
Sweet Corn	\$7,207,500	98,400
Soybeans	\$6,298,000	7,650,000
Canola	\$4,887,500	63,000
Peas	\$4,872,000	53,600
Sunflower	\$4,680,000	57,000
Wheat	\$4,281,600	1,210,000
Hay	\$3,787,800	1,090,000
Barley	\$2,843,500	55,000
Rye	\$2,618,000	57,000
Oats	\$2,582,100	180,000

*Approximate
 Note: Crop values calculated using data from USDA NASS

Sources

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10. American Clean Power Association, 2023. Data Search, Clean Power IQ.
11. EIA, 2021. "State Electricity Profiles." <https://www.eia.gov/electricity/state/minnesota/>
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American Clean Power Estimates

MN Farmers, Ranchers, & Landowners Receive

\$8.5 Million
 in annual land-lease payments from solar

Current Solar & Crop Values in Minnesota

Minnesota has 1,239 MW¹⁰ of solar, occupying approximately 10,000 acres of land.

- In 2021, MN solar projects generated nearly 1.9 million MWh of electricity.¹¹
- At a value of \$58.08 per MWh,¹² Minnesota's existing solar footprint has an annual production value of nearly \$110 million.

Our Calculations

SOLAR

MWh * Avg price of electricity = Production Value

CROPS

Yield per acre * 10,000 = Yield per 10,000 acres

Yield per 10,000 acres * Price per unit = Production Value