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Analysis uncovers local environmental impacts of solar farms in Wisconsin

Researchers looked at water quality, soil health, erosion and wildlife habitat

MADISON, WI — Integrating solar into conventional farmland can have a positive impact on the health of the environment nearby, according to a <u>new analysis</u> from Clean Wisconsin. Large-scale solar projects can improve soil health on conventionally-farmed land, provide habitat for native pollinators and improve water quality by reducing sediment and chemical fertilizer runoff into nearby waterways.

According to Clean Wisconsin's Solar Farm Impact Analysis:

- Solar farms that replace conventional row crops like corn and soybeans reduce sediment and phosphorus pollution runoff into nearby lakes, rivers and streams by 75-95%.
- When deep-rooted, perennial vegetation is planted among the panels, solar farms can increase soil carbon sequestration by 65% and improve overall soil health.
- Planting perennial vegetation among the panels also improves wildlife habitat compared to existing cropland, including a 300% improvement in habitat quality for pollinators, which are in steep decline.

"In Wisconsin, solar projects are being sited on agricultural land, which is attractive to developers as it is clear of trees and relatively flat," says Clean Wisconsin Science Program Director Paul Mathewson. "Intensive annual row crop agriculture in Wisconsin is a primary contributor to topsoil loss and many of Wisconsin's most pressing water quality problems, including contamination of drinking water from nitrates and pesticides and pollution of lakes and rivers from phosphorus and soil erosion. When this land use is replaced with a solar farm that maintains perennial grassland cover and requires no fertilizer additions, we can see a net increase in local environmental quality, which is what this report really highlights." Mathewson says benefits are maximized when solar is sited in areas with soils prone to erosion and runoff or where there are already known water contamination issues from nitrates, phosphorus and pesticides.

Mathewson noted that solar farms produce 100 times more net energy per acre than corn grown for ethanol and are a far more efficient use of land for energy production. About 1.5 million acres of land in Wisconsin is currently used to grow corn for ethanol production. The state only needs a fraction of that for solar—about 200,000 acres—to meet net-zero carbon goals without affecting land needed to grow crops for food.

Free Energy?

Health benefits of solar were also considered as part of the analysis. Mathewson found that replacing electricity generated from coal and gas burning power plants with clean solar energy results in public health benefits of 5-10 cents per kWh in Wisconsin. This savings exceeds the cost of generating solar electricity (3-4 cents per kWh).

"We know that large-scale solar farms are now among the cheapest ways to produce energy in Wisconsin," Mathewson says. "But this underscores the public health costs we've been shouldering for decades because of air pollution caused by burning coal and gas. Solar can finally help us begin to eliminate those health harms and costs."

On behalf of its more than 30,000 members, supporters and its coalition partners, Clean Wisconsin works to combat climate change and pollution in our air, water, and land, and ensure a healthy future for every Wisconsin community.