

**MCHENRY COUNTY**  
**SOLAR PROJECT**

FREQUENTLY ASKED QUESTIONS ON GROUND-MOUNTED  
**SOLAR PHOTOVOLTAIC SYSTEMS**



### **Do solar power facilities in rural areas take farmland out of agricultural commission permanently?**

The use of ag land for a solar energy facility is only temporary, and the land can be restored to its original condition after the solar farm is decommissioned. Compared to other forms of development where farmland is paved over (for shopping centers, amusement parks, manufacturing facilities, suburban housing tracts, and highways), solar projects prevent more impactful development from occurring, preserving the land for agricultural use in perpetuity.

The total amount of agricultural land being used for solar energy is minuscule compared to the conversion of agricultural land permanently to residential housing and commercial development.

In arrangements where a landowner has agreed to lease property to a solar project, the ongoing annual lease payments will continue to go to the landowner, who will retain ownership of the land both during and after the lease. At the end of the lease and when the project is responsibly decommissioned, the landowner could resume farming the land. In other development conversions, the farmer sells the land to another party - usually a housing developer or commercial real estate broker.

Solar farms present landowners with an opportunity for a higher value use on their land. This also allows the landowner to diversify their income away from agricultural products alone, better weather economic downturns, and to keep the land in the family.

Farmland has gotten more productive over the years with better farming equipment and techniques, resulting in higher yields on the same amount of land. This is also due to improvements in seed varieties, fertilizers, pesticides, machinery, reduced tillage, irrigation, crop rotations, and pest management systems.<sup>3</sup>

### **How much farmland is utilized by a solar project?**

Only a portion of farmland is suitable for solar energy generation. And, even as installations of utility-scale solar continue to expand, they still do not pose a significant risk to the loss of agricultural land. To generate enough electricity to power the entire country, solar facilities would need to occupy roughly the same area devoted to surface coal mining. In fact, solar projects allow land to recover by letting the soil rest. In the future, when a solar project is decommissioned, farming can once again resume on that land. This starkly contrasts other development, which often leaves land unable to convert back to agricultural use easily.<sup>4</sup>

Solar projects give farmers and landowners an opportunity to utilize their land to harvest another stable cash crop—the sun. Many farmers who host a solar project have not made a choice to give up farming completely, but have taken a small acreage out of agricultural production for renewable energy production. For some landowners, this can be a hedge against shifting commodity prices that can sustain the rest of their agricultural production.

## Ambient Temperature

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### Does the presence of ground-mounted solar arrays cause higher ambient temperatures in the surrounding neighborhood?

All available evidence indicates that there is no solar “heat island” effect caused by the functioning of solar arrays. PV panels are off the ground and surrounded by air, so the heat is dissipated very rapidly. It does not build up and become stored as with rooftops or pavement.

## Cleaning Protocol

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### What is the best way to clean solar panel arrays?

Panels are typically only cleaned a few times a year based on soiling levels, though areas that receive regular rainfall can significantly reduce the need for deliberate cleaning of the panel. Should a lack of rain or extreme dust conditions warrant cleaning, a water truck is typically used to wash dirt and natural buildup from the panels. However, in the right situation, an arrangement with a participating landowner may be made to use their water supply.

## Cost of Power

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### Will a solar project in my community lower my utility bills?

A benefit of solar power is that it provides a long-term hedge against increasing prices. Solar power does not consume any fuel and allows utilities to purchase energy at stable long-term rates, which may help reduce future electricity price increases. Customers will save money in the long term, and once built, this solar project will be an important contributor to the county’s tax base. This will provide more money for schools and essential government services.

## Efficiency

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### Where does the power go?

Think of solar energy just like the other crops that are currently harvested in your community, perhaps corn, wheat, or dairy. While some of those resources stay local, many are shipped outside your community, but provide valuable income and jobs locally. Solar energy is no different. While it is impossible to know where exactly the electrons flow once they enter the electrical grid, the benefits of producing that energy, such as tax revenues, stay local.

## How will the project produce energy throughout the winter or on cloudy days?

The project will be able to produce energy throughout the entire year, even in the winter or on cloudy days. While the output will be maximized on clear days, solar radiation will still hit the solar panels as sunshine beams through the clouds.

Modern panels also feature technology that uses bifacial modules on the front and rear sides of the panels so they can absorb radiation to generate electricity. The modules' rear side absorbs sunshine radiation reflected from the ground. When there is snow on the ground, the additional sunshine reflecting off the snow amplifies the sunshine radiation absorbed from the ground.

## Health / Materials / Water Issues

### Can chemicals that might be contained in solar PV threaten public drinking water systems and/or wetland resources?

All solar panels are contained in a solid matrix, are insoluble, and are enclosed. Therefore, releases are not a concern. Rules are in place to ensure that ground-mounted solar arrays are installed in a way that protects public water supplies, wetlands, and other water resource areas.<sup>1</sup>

### Are there health risks from the electric and magnetic fields (EMF) from solar panels?

Solar energy produces no emissions, waste, odor or byproducts. Silicon solar cells were produced commercially in the 1950s and the first solar power plant was built over 35 years ago in southern California. PV arrays generate EMF in the same extremely low frequency (ELF) range as electrical appliances and wiring found in most homes and buildings.

The extremely low frequency EMF from PV arrays is the same as the EMF people are exposed to from household electrical appliances, wiring in buildings, and power transmission lines (all at the power frequency of 60 hertz). In comparison, EMF produced by cell phones, radios, and microwaves is at much higher frequencies (30,000 hertz and above). Clean Energy Results Questions & Answers Ground-Mounted Solar Photovoltaic Systems, prepared by Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, and Massachusetts Clean Energy Center (June 2015, page 10). A person outside of the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. In 2005, a task group of scientific experts convened by the World Health Organization (WHO) concluded that there were no substantive health issues related to electric fields at levels generally encountered by members of the public.<sup>2</sup>

### Will a solar farm create stormwater runoff and water drainage issues?

In many situations, during the development phase of a solar project, drainage studies and calculations may be conducted by third-party experts. It is typical to find that a solar project area's post-construction condition will create less stormwater runoff than the current pre-construction condition of cultivated land. Ecological benefits are expected to accrue over time from the temporary but long-term conversion of agricultural land to native plant communities. Native plant species tend to have deeper and more complex root systems, which allow for improved water absorption and retention than in soil on agricultural land. As a result, erosion and stormwater runoff will be reduced.

## Panel Design / Visual Impacts

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### How high are the panels off the ground? How tall do the panels stand?

Solar panels sit approximately 4' off the ground, depending on site conditions. Considering a common solar panel size is 36' x 66', the approximate total height of the panels at the highest point is typically 7-8' but does not exceed a height of 10'.

### How does the traffic associated with large solar projects impact nearby residential and agricultural properties?

During construction, there will be increased traffic associated with construction activities. However, after the construction phase is complete, operating solar projects do not attract high volumes of additional traffic.

### Why was this area selected for a solar project?

The project area is suitable for utility-scale solar facility development due to its proximity to available transmission capacity and significant energy demand within the electrical grid. The project also provides significant local economic benefits and is a form of development that will maintain the rural character of the area.

## Hunting

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### How will solar arrays impact deer or other hunting?

There is a possibility there will be a temporary impact on uses to areas adjacent to the property during construction. Once operational, there is very little activity at a solar project, and deer and other wildlife quickly return. It's not a matter of deer staying away -- it's a matter of keeping them out of the solar facility area where they graze on the grasses. Hunting outside the project area is not affected, and the presence of the solar project does not impact the hunting rights of non-participating landowners.

## Sound

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### How does the sound of large solar projects impact nearby residential and agricultural properties?

Solar projects are effectively silent, except for the tracking motors and inverters that might produce an ambient hum. This is typically not audible from outside the project enclosure.

### What action is taken to protect the public from areas where solar arrays are installed?

Large-scale ground-mounted arrays are enclosed by fencing. This prevents children and the general public from coming into contact with the installations, thus preventing unsafe conditions. The National Electric Code requires that conductors, a part of solar PV arrays, are installed so they are not readily accessible. In addition, warning signs and occasional alarm systems are installed to deter unauthorized individuals from entering the solar array area.

### Can electrical and other solar-related equipment cause fires?

Only a small portion of the materials in the panels are flammable, and those components cannot self-support a significant fire. The flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer back sheets (framed solar panels), plastic junction boxes, and insulation on wiring. The rest of the panel is composed of non-flammable components, including layers of protective glass that make up three-quarters of the panel's weight.

<sup>1</sup>Clean Energy Results Questions & Answers Ground-Mounted Solar Photovoltaic Systems, prepared by Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, and Massachusetts Clean Energy Center (June 2015, page 20).

<sup>2</sup>NC State University. Health and Safety Impacts of Solar Photovoltaics. NC Clean Energy Technology Center, May 2017, page 12.

<sup>3</sup>David G. Loomis, Ph.D. (2020). Economic Impact and Land Use Analysis of Mark Center Solar. Bloomington: Strategic Economic Research.

<sup>4</sup>Solar Energy Industries Association, "Solar & Agricultural Land Use," SEIA.org, July, 2019, <https://www.seia.org/research-resources/solar-agricultural-land-use>