CLEAR MOUNTAIN
ENERGY CENTER

FREQUENTLY ASKED QUESTIONS ON GROUND-MOUNTED

SOLAR PHOTOVOLTAIC SYSTEMS

Ag Land Use

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, highways), a de-commissionable solar farm is a far more favorable option.[3]
- 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.[3]
- In the arrangements where a landowner has agreed to lease property to the 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 land is sold by the farmer to another party – usually a housing developer or commercial real estate broker.[3]
- 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 keep the land in the family.[3]
- 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.[3]

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

How much farmland is utilized by a solar project?

Only a portion of farmland is suitable for solar energy generation. Supplying the entire U.S. with 100% PV solar energy would require about 0.6% of America's total land area. When a project is decommissioned, the land is returned to its original state, and farmers have the opportunity to go back to farming the land if they choose. *(NREL and the U.S. Department of Energy)*

Ambient Temperature

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

What is the best way to clean solar panels?

The most effective way to clean solar panels is with natural weather sources such as rain. Should lack of rain or extreme dust conditions warrant cleaning, a water truck is typically used to wash dirt and natural buildup from the panels.

Cost of Power

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

An important benefit of solar power to ratepayers is that it provides a long-term hedge against increasing prices because it does not consume any fuel and allows utilities to purchase energy at stable long-term rates. This may help to reduce future increases in electricity prices. This saves money for ratepayers in the long term, and once built, this solar project will be an important contributor to the county's tax base, providing more money for schools and essential government services such as first responders.

End-of-Life Decommissioning

How are solar panels managed after they are no longer in use? Can they be recycled, and do hazardous waste disposal requirements apply?

The average life of solar PV panels can be 20-30 years or longer after initial installation. At the time of decommissioning, panels may be reused, recycled, or disposed of. There are a few different types of solar panels used in ground-mounted PV systems. Solar module manufacturers typically provide a list of materials used in their product, which may be used to determine the proper disposal requirements at the time of decommissioning.[1]

1 Massachusetts Department of Energy Resources; Massachusetts Department of Environmental Protection; Massachusetts Clean Energy Center June 2015

Efficiency

Where does the power go?

Think of solar energy just like the other crops, like corn, wheat, and dairy that are currently harvested in your community. 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 from producing that energy, such as tax revenues created, stay local.

Hunting

How will solar PV arrays impact deer or other hunting?

During construction, it is possible there would be a temporary impact on uses to areas adjacent to the project. 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 more a matter of keeping them out of the solar facility area where they like to graze on the grasses. Hunting outside the project area is not affected, and hunting rights of non-participating landowners are not impacted by the presence of the solar project.

Health / Materials

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.[1]

1 Massachusetts Department of Energy Resources; Massachusetts Department of Environmental Protection; Massachusetts Clean Energy Center June 2015

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

Solar energy produces no emissions, waste, odor, or byproducts. The extremely low-frequency EMF from PV arrays and transmission lines is the same as the EMF people are exposed to from household electrical appliances and wiring in buildings.

Property Values

Do ground-mounted solar PV arrays negatively impact property values?

The American Society of Farm Managers & Rural Appraisers posted a blog on February 16, 2021 that summarized the findings of several studies on solar impact on rural property values. In addition, it featured the conclusions of four land appraisal experts on the same topic. The studies and experts reported no known consistent negative impacts on rural area property values due to solar. Especially when developers work with landowners and residents to properly sit and conceal solar farms from view. *(https://www.asfmra.org/blogs/asfmra-press/2021/02/16/solars-impact-on-land-values)*

Public Safety

What public safety issues arise from accessing areas where solar arrays are installed? Can electrical and other solar-related equipment cause fires?

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 has mandatory requirements for the electrical safety of solar PV arrays. It requires that conductors, which are part of solar PV arrays, be installed so they are not readily accessible. In addition, warning signs and sometimes alarm systems are installed to deter unauthorized individuals from entering the solar array area.

Only a small portion of 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 backsheets (framed solar panels), plastic junction boxes, and insulation on wiring. The rest of the panel is composed of non-flammable components, including the layers of protective glass that make up three quarters of the panel's weight.

Solar Panel Design / Visual Impacts

What are the visual impacts of the solar array once constructed?

Large solar projects have similar characteristics to a greenhouse or single-story residence. They are often enclosed by fencing and/or landscaping to minimize visual impacts.

How important are reflectivity and potential visual impacts from solar projects, especially near airports?

Solar panels are designed to absorb solar energy and convert it into electricity. They reflect only about 2 percent of incoming light, so issues with glare from PV panels are rare. Solar module glass has less reflectivity than water or window glass, and reflected light from solar panels will have a significantly lower intensity than glare from direct sunlight. Many projects throughout the U.S. and the world have been installed near airports with no impact on flight operation. There have been no U.S. aircraft accident cases in which glare caused by a solar energy facility was cited as a factor. Proper siting procedures can ensure panels are placed in a way that minimizes any potential glare to surrounding areas.[1]

1 Massachusetts Department of Energy Resources; Massachusetts Department of Environmental Protection; Massachusetts Clean Energy Center June 2015

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

During construction, there will be increased traffic associated with the construction activities. However, once the construction is complete, and the site is operational, there will only be 1-2 vehicular trips per day to and from the site.

Sound

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

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.