STONY RUN
SOLAR PROJECT

FREQUENTLY ASKED QUESTIONS ON GROUND-MOUNTED

SOLAR PHOTOVOLTAIC SYSTEMS

Ag Land Use

How can solar power facilities enhance rural ecosystems?

There are many important components to preserving and enhancing a healthy environment for farming, and a solar facility may support a rural community over generations through: Improved Soil Health - a solar facility can passively enhance the soil through the establishment of regionally appropriate perennial vegetation underneath and around the solar panels. Reduced Nutrient Runoff - vegetation at solar sites does not typically require routine applications like fertilizer, and perennial grasses further stabilize soil, which decreases runoff by intercepting sediment. Enhanced Stormwater Management – once operational, a typical solar project will maintain permanent vegetation on site, and the spacing between the panels and rows enables water to flow underneath and between the panels. Soil Formation and Retention – during construction, compaction may occur at select parts of a solar project site. Therefore, developers may aerate or till the soil or plant deep-rooted vegetation to mitigate these impacts - consistent with federal and state construction permits. After construction, tillage of the soil does not occur. Reduced Pesticide Use – solar development does not require insecticides and herbicides may only be used during the site preparation but is applied more targeted once the project is operational. Reduced Water Use – solar sites typically require little water during construction and operations, and rainfall is generally sufficient to settle dust and clean panels. Preserving Future Farm Opportunities – land leases for solar can help families preserve their farm for the next generation through stable income to support farm operations and relieved pressure of selling to permanent land use development like residential or commercial real estate.[1]

Ambient Temperature

Does the presence of ground-mounted solar arrays cause higher ambient temperatures in the surrounding neighborhood (i.e., the “heat island” effect)?

All available evidence indicates that there is no solar “heat island” effect caused by the functioning of solar arrays. Solar panels absorb photons from direct sunlight and convert it to electricity, minimizing the likelihood of substantially changing temperatures at the site or the surrounding neighborhood. Because solar PV modules are thin and lightweight, they do not store a large amount of heat. This and the fact that panels are shown to cool to ambient air temperature as soon as the sun sets, a study by Sunpower, a private solar manufacturer, concludes that the area surrounding a large-scale solar array is unlikely to experience a net heating change from the panels.[2]

Cleaning Protocol

If it snows, does the snow need to be actively removed from the panels?

Snow can serve as a natural cleaning agent that wipes away any dirt as it melts and slides away. In most cases, snow removal is unnecessary, but operations and maintenance personnel will monitor the solar array and may remove snow if necessary.

Cost of Power

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.

End-of-Life Decommissioning / Recycling

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.[2]

What happens during the decommissioning phase?

Upon completion of the economic life of a project, or potentially permit expiration, if the project owner determines not to apply for a new permit, the decision to decommission the facility can be made. Decommissioning refers to removal of equipment (panels, racking, wires, and inverters and transformers) as well as other operational structures (foundations and fencing) and restoration of the site. Depending on specific project decommission agreements, during this process, the site may be revegetated to help with erosion and dust control, and access roads may be removed. Unlike some other forms of development, a decommissioned solar site can be repurposed for other uses, such as agriculture production.[3]

Efficiency

Where does the power go?

Stony Run is a utility-scale solar energy facility that will serve customers within the PJM regional transmission organization. This means that the electricity generated by the solar project will be injected into the high-voltage electric grid and wholesale electricity market at the Turner and Providence substation. From there, the energy will be distributed to every consumer that is connected to that substation and line.

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.

How do solar panels perform in extremely high heat?

Solar panels are designed to perform in extreme heat or cold. There are many reputable solar panel manufacturers, but all produce panels with similar operational requirements. For bifacial solar panels, -40 degrees to 185 degrees Fahrenheit module temperature is acceptable.

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.

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).[4]

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.[5]

Can solar panels be damaged by hail and strong winds?

Solar panels are designed to withstand extreme weather, including hail and thunderstorms. However, just like your car windshield can get damaged, the same can happen to solar panels (though rare). If a solar panel were to become damaged from severe weather or any other reason, it would likely be the glass that has become damaged, and there would be no risk of exposure to the contents. The Savion team has plenty of experience developing solar projects in high-wind zones. Our projects have shown to be virtually undamaged by direct hits from CAT 3 storms in the past. But, even if something were to hit the area and damage the solar panels, the solar project would be well-insured, with plans to make repairs.

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.

What is inside a solar panel?

Solar panels consist of glass, aluminum, copper, and semiconductor materials. Solar cells are made of either connected silicon atoms or thin layers of photovoltaic material that have been placed onto glass or metal and are responsible for converting energy from sunlight into electricity. The thin layer of solar cells is sealed on both sides and covered with glass and an aluminum frame. The primary solar cell technologies used are Crystalline silicon (c-Si) and thin film Cadmium telluride (CdTe). While several different solar cell technologies exist, over 90% of the U.S. solar market uses Crystalline silicon (c-Si) cells.[6]

Are the materials inside a solar panel safe?

Yes. Modern commercial solar panels do not contain sufficient hazardous material to pose a danger to the environment and human health. The primary component in crystalline silicon solar cells is silicon, the second-most common element on earth.[6]

Solar Panel Design / Visual Impacts

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.

Property Values

How do ground-mounted solar PV arrays adjacent to residential neighborhoods influence the property values in those neighborhoods?

A 2014 study completed in Chatham County, North Carolina, concluded that the nearby presence of solar facilities had no impact on the value of homes, agricultural land, or vacant residential land. When possible and feasible, project developers may work with project stakeholders to include screening vegetation along the site borders to minimize visual impacts on surrounding neighborhoods.

A review of nationwide literature shows little evidence that solar arrays influence nearby property values. Once operational, solar projects are quiet facilities that generate little traffic (post-construction), create minimal sound, and produce no emissions.[2]

Public Safety

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.

What happens during project construction?

Construction of a solar facility can take up to one year or more in total for large utility-scale projects. The basic types of activities that will take place include site preparation, construction, revegetation, and operations. Once solar projects are built, there is little traffic in and out of the site.[7]

Sound

Is there sound associated with the solar project?

Solar projects have little to no sound audible outside of the fence line of the project. Inverters and transformers make a humming sound during the day when the facility is generating electricity. Any sound will be inaudible at the fence line. Sound impacts can be mitigated through the use of proper siting procedures. Transportation and maintenance equipment, like cars, trucks, lawnmowers, and string trimmers, are common sources of sound on solar projects that most people are accustomed to hearing elsewhere. Construction of a solar project is typically between 10-12 months.

[1]American Clean Power, “How Solar Power Enhances Rural Ecosystems,” CleanPower.org, February 2023, https://cleanpower.org/wp-content uploads/gateway/2023/03/ACP_Solar_and_Farmland.pdf Protection, and Massachusetts Clean Energy Center (June 2015, page 20).

[2] Massachusetts Department of Energy Resources. Clean Energy Results Questions & Answers GroundMounted Solar Photovoltaic Systems. Massachusetts Department of Environmental Protection. Massachusetts Clean Energy Center, June 2015.

[3] American Clean Power, “What Happens When a Solar Facility is Decommissioned?,” CleanPower.org, December, 2021.

[4] 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).

[5]NC State University. Health and Safety Impacts of Solar Photovoltaics. NC Clean Energy Technology Center, May 2017, page 12.

[6]American Clean Power, “Solar Panels and Your Community,” CleanPower.org, August 30, 2022, https://cleanpower.https://cleanpower.org/wpcontent/uploads/gateway/2022/08/ACP_FactSheet_SolarCommunity_220830.pdf

[7]American Clean Power, “Solar as a Neighbor: Living Near a Solar Project,” CleanPower.org, July 2024, https://cleanpower.org/resources/solar-as-a-neighbor-living-near-a-solar-project/