

Solar as a Neighbor: Living Near a Solar Project



Background

As of 2021, there are more than 3,500 utility-scale solar projects in the United States. Millions of Americans – from California to Texas to New Hampshire – live near large solar projects. If a new solar project is proposed in your community, it is important to understand how the project will fit into the existing landscape. This fact sheet explores what it is like to live near a solar project.

Citing clean air benefits, the North Carolina State University notes “the overall impact of solar development on human health is overwhelmingly positive.”¹ Health benefits from solar relate to the avoidance of air pollution and greenhouse gas emissions from other generation sources, both of which have immediate, long term and cumulative negative health effects.²

Unlike other forms of electricity generation, operating solar facilities do not produce greenhouse gas emissions, odors, smoke clouds, or vapor. Additionally, solar facilities represent a stable source of revenue for localities and impose few costs on public services.³ American Clean Power (ACP) estimates state and local jurisdictions have accrued over \$548 million in tax payments from utility-scale solar projects.

What happens during project construction?

Solar project construction can take approximately one year or more in total for large systems. The types of activities that take place for a typical project, and what to expect around the site are outlined below.

Phase 1: Site Preparation

Open, flat spaces are generally preferable for solar projects and most sites still require a degree of site preparation to ensure they can accommodate the panels, maintenance building, and other equipment. Equipment used during this phase can include chainsaws, chippers, dozers, scrapers, end loaders, and trucks. Topsoil is typically stripped during construction but preserved on-site before performing cut/fill operations. Cut/fill operations level out the slope of the land, help control runoff and enable panels to be spaced appropriately.

Next, the developer will place fencing and temporary job site trailers on the site and construct an area to store panels and prepare them for installation, and access roads to facilitate entry and exit from the site.

Phase 2: Construction

Light duty trucks will also be used to transport construction workers to and from the site. To transport the panels and equipment onto the site, semi-trucks are used daily for several weeks during the delivery of racking equipment and solar modules. Typical construction equipment such as backhoes, pile drivers, scrapers, bulldozers, dump trucks, watering trucks, forklifts, bucket or concrete trucks and compactors may also be used during construction.

Maximum noise from the above equipment does not exceed 72 decibels from 200 feet away, according to the Federal Highway Administration Construction Handbook.^{5,6} This is equivalent to the noise of busy office.⁶

Pile drivers are used to place steel posts into the ground that support the panel racking system. Panels are attached to the racking system, which can include a tracking function to follow the sun throughout each day.

¹NC State University, Health and Safety Impacts of Solar Photovoltaics, <https://content.ces.ncsu.edu/health-and-safety-impacts-of-solar-photovoltaics> (2017)

²CDC. Climate Change Decreases the Quality of the Air We Breathe. https://www.cdc.gov/climateandhealth/pubs/air-quality-final_508.pdf/.

³Mangum Economics. The Economic Development Contribution of Utility-Scale Solar to Virginia. May 2020. Available: <https://mdvseia.org/wp-content/uploads/2020/06/MDVSEIA-Report.pdf>

⁴U.S. Department of Transportation. FHWA Highway Construction Handbook. 2006. https://rosap.ntl.bts.gov/view/dot/8837/dot_8837_DS1.pdf

Trenches are dug to bury wiring connecting the equipment, which will include the solar panels, transformers, and inverters. An inverter converts power from the solar panels from direct current (DC) into alternating current (AC), and transformers change the AC voltage. Individual components can be the size of a refrigerator, or multiple inverters can be assembled together on a skid with transformers, control systems and other necessary components.

Once construction is complete, a solar facility will have operations personnel maintain the vegetation, inspect the facility, make necessary repairs, and ensure efficient operations.

Phase 3: Revegetation and Operations

As parts of a project near completion, temporary staging and laydown areas and other temporary disturbance areas are restored. After construction, topsoil is reapplied to help revegetate the site and establish ground cover. Revegetation helps prevent erosion, manage stormwater, and support the surrounding ecosystem. Once construction is complete, a solar facility typically has one truck on-site weekly, with potentially more personnel on site depending upon maintenance needs. Operations personnel maintain the vegetation, inspect the facility, make necessary repairs, and ensure efficient operations.

How much traffic can I expect after the project is built?

Once solar projects are built, there is little traffic in and out of the project site. Most of the vehicular traffic will be made up of light duty trucks to transport the staff responsible for maintaining the vegetation around the project, or cleaning panel surfaces to ensure maximum power production.

How much noise do solar projects make?

While solar panels do not emit sound, inverters are the only primary component of a solar project that produces sound. These inverters are typically at least 100 feet from the nearest dwelling, and the sound of inverters from this distance is no higher than 38 decibels (dBA), quieter than a refrigerator hum^{6,7}. As inverters only make sound when they are working, there is typically no noise emitted at night.

Can I expect glare from the panels?

Solar panels are designed to capture, and not reflect, as much light as possible. Nonetheless, the glass from solar panels can produce glare. Studies indicate that the potential glare from solar arrays is comparable to glare from a body of smooth water.⁷ Modern PV panels reflect as little as two percent of incoming sunlight, which is about the same as water and less than soil or even wood shingles.⁷

To further reduce visual impacts from solar facilities, developers may plant vegetation along the perimeter of the project to provide visual barriers in accordance with local ordinance requirements.

Do solar projects make the surrounding area warmer?

Studies have indicated no significant "heat-island effect" from solar facilities, finding no consistent temperature difference between the solar project area and the surrounding area.⁸

⁵Kimley-Horn, LLC. "Noise Impact Assessment – Project Construction." July 17 2020. Available: <https://www.roundhillsolarproject.com/wp-content/uploads/2020/11/Attachment-J-Noise-Memo.pdf>

⁶ Ibid

⁷ National Renewable Energy Laboratory. Research and Analysis Demonstrate the Lack of Impacts of Glare from Photovoltaic Modules. July 2018. <https://www.nrel.gov/state-local-tribal/blog/posts/research-and-analysis-demonstrate-the-lack-of-impacts-of-glare-from-photovoltaic-modules.html>

⁸ V. Fthenakis and Y. Yu, "Analysis of the potential for a heat island effect in large solar farms," 2013 IEEE 39th Photovoltaic Specialists Conference (PVSC), 2013, pp. 3362-3366, doi: 10.1109/PVSC.2013.6745171.