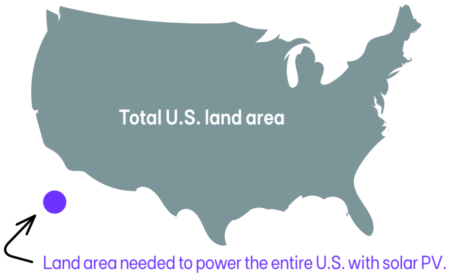
Solar parks, land, and wildlife

When landowners choose to lease a part of their land to a solar park, they receive **stable, reliable revenue** throughout the project's multi-decade life and give their land time to naturally rest. **At the end of the solar park's life, the equipment is removed and the land can return to its original use**, including farming and ranching.

Land use

According to the U.S. Department of Energy, to achieve the necessary greatest amount of decarbonization by 2050, solar will need to grow from three percent of the U.S. electric supply today to **40 percent by 2035** and **45 percent by 2050**.[1]



The entire United States could be powered by solar energy with just **0.5 percent** of the nation's land.[2]

Land Use Comparison[1]
(contiguous U.S. surface area)

Ecological land benefits

EDPR is responsible for providing vegetation management of the ground cover below the panels and the buffer zone surrounding them, throughout each solar project's operational life. EDPR uses seed mixes suitable and non-invasive to the area, often getting recommendationes from local experts.

Research from the Argonne National Laboratory has found that cultivating native vegetation at solar parks provides positive ecosystem services to the land, contributing to its long-term health and sustainability.[3]

Diverse vegetation can have many potential ecological benefits, including:[3]

- **3x increase** Pollinator Supply
- **65% increase** Carbon Storage Potential
- **95% increase** Soil/Sediment Retention
- **19% increase** Water Retention

When pollinator habitats are colocated at solar parks, their benefits can include reduced erosion, improved water quality, and the support of nearby agriculture reliant upon pollinators.[4]

Environment and wildlife

EDPR is deeply committed to protecting the land so it is ready to serve future generations, and must comply with federal, state, and local environmental and wildlife regulations and standards to ensure that any impact we have to surrounding land, wildlife, and migration patterns is minimal.

Riverstart Solar Park | Randolph County, IN

Environmental savings

On average, after .5-1.2 years of operation, utility-scale solar projects produce enough electricity to offset all the energy needed to manufacture, operate for 30 years, decommission, and process wastes. The average time it takes for projects to pay off their carbon footprint is 2.1 years.[5] For the rest of their anticipated 30-35-year lifespan, there is a net-positive impact, avoiding emissions and producing clean energy.

Throughout a solar park's multi-decade life, an average 100 MW solar project will: [6]

AVOID **139,000 metric tons** of carbon emissions *which is equivalent to* **30,000 cars** off the road or planting **six million** trees.

PREVENT **80 million gallons** of water used at fossil-fuel plants for equivalent generation *which is equivalent to* **600 million** water bottles or **121** Olympic swimming pools.

A typical 100 MW utility-scale solar park produces **enough electricity to power two NFL Super Bowl stadiums simultaneously.**

Solar panels are designed to capture light, not reflect it. PV models are generally less reflective than house or car windows. Studies have indicated there is no significant "heat-island effect" from solar facilities, finding no consistent temperature difference between the solar project area and the surrounding area.[7]

Solar panel safety

Modern, commercial solar panels do not contain materials that would pose a threat to the environment or human health. Solar panels are designed and manufactured to withstand harsh environmental conditions and extreme weather events. There are no liquids in the panels to spill or leech into the soil.[8]

Cattlemen Solar Park | Milam County, TX

Riverstart Solar Park | Randolph County, Indiana

Wildlife and solar energy

Birds, bats, bugs, and other wildlife live peacefully among solar parks and often benefit from biodiversity increases caused by planting locally-suitable seed mixes below the panels.

EDPR does numerous environmental impact studies before a project's construction, complying with regulations at the local, state, and federal levels. This allows adjustments to be made to project layouts to accommodate animal migration patterns when necessary. Depending upon the ecology of the site and required security regulations, wildlife-permeable fencing, with large enough gaps for small to medium-sized animals to navigate, can be integrated into the project design.

The Audubon Society supports solar power due to its reduction in carbon emissions and positive impact on birds.[9]

Room to grow

A solar park is comprised of inverters, piles, access roads, a substation, and rows of solar panels.

With approximately 10-15 feet of spacing between the solar panel rows, the actual infrastructure of a solar park can take up **less than 40 percent of all the land** needed for the project.

Solar panels leave ample room for vegetation to grow beneath and between them. If the panel area is discounted, **less than 10 percent of the total project area is occupied by infrastructure that can't also grow vegetation.**

A study by the Great Plains Institute on solar energy's impact on land use found:

- The proportion of solar land use is rarely larger than one percent in any given county, which demonstrates a low development risk to local productive agricultural capacity.[10]
- A conservative estimate of the impact of solar development is that it utilizes **10 acres to generate one megawatt (MW)** of electricity.[11]

On average, a **single MW of solar capacity** can power over **200 homes.**[12]

[1] U.S. Department of Energy, Solar Features Study Fact Sheet, 2021.
[2] George Washington University Solar Institute. "How much land would it take to power the U.S. with solar?" September 2008.
[3] Walston et. Al. 2021. "Modeling the Ecosystem Services of Native Vegetation Management Practices at Solar Energy Facilities in the Midwestern United States"
[4] "Buzzing around Solar: Pollinator Habitat under Solar Arrays." Energy.Gov, June 2022, www.energy.gov/eere/solar/articles/buzzing-around-solar-pollinator-habitat-under-solar-arrays.
[5] NREL, Energy and Carbon Payback Times for Modern U.S. Utility Photovoltaic Systems, https://www.nrel.gov/docs/fy24osti/88653.pdf.
[6] American Clean Power Association, 2021 Annual Market Report, 2022.
[7] Solar Farm and Photovoltaics Summary and Assessment," Updated April 2022, available at: https://odh.ohio.gov/know-our-programs/health-assessment-section/media/summary-solarfarms
[8] American Clean Power Association, Solar Community Fact Sheet, 2022.
[9] https://www.audubon.org/news/why-solar-power-good-birds#:~:text=Another%20problem%20with%20large%20solar,solar%20projects%20in%20the%20desert.
[10] Great Plains Institute for Sustainable Development, The True Land Footprint of Solar Energy, 2021.
[11] "Land Use & Solar Development." Solar Energy Industries Association, www.seia.org/initiatives/land-use-solar-development, 2021.
[12] American Clean Power Association, Annual Market Report, 2022.

edp

www.edprnorthamerica.com