

# Land-use requirements for solar power plants in the united states

How much land do solar power plants use?

For direct land-use requirements, the capacity-weighted average is 7.3 acre/MWac, with 40% of power plants within 6 and 8 acres/MWac. Other published estimates of solar direct land use generally fall within these ranges.

How much area do solar power plants need?

Generation-weighted averages for total area requirements range from about 3 acres/GWh/yr for CSP towers and CPV installations to 5.5 acres/GWh/yr for small 2-axis flat panel PV power plants. Across all solar technologies, the total area generation-weighted average is 3.5 acres/GWh/yr with 40% of power plants within 3 and 4 acres/GWh/yr.

How much land does a solar system need?

To meet current demand, the PV requirements of the assumed base mix exceed 1% of the total land area in 19 states, largely reflecting larger population density in many eastern states. Also of note is the land requirement for Washington, DC, where the total solar footprint exceeds the city's total land area.

What are the two types of solar plant land use?

We identify two major "classes" of solar plant land use: (1) direct impact (i.e., disturbed land due to physical infrastructure development), and (2) total area (i.e., land associated with the complete solar plant project).

How much energy does a solar power plant generate a year?

Across all solar technologies, the total area generation-weighted average is 3.5 acres/GWh/yr with 40% of power plants within 3 and 4 acres/GWh/yr. For direct-area requirements the generation-weighted average is 2.9 acres/GWh/yr, with 49% of power plants within 2.5 and 3.5 acres/GWh/yr.

What is a utility-scale solar power plant?

We define utility-scale as greater than 1 MWdc for PV plants and greater than 1 MWac for CSP plants. Table ES-1. Summary of Land-Use Requirements for PV and CSP Projects in the United States We found total land-use requirements for solar power plants to have a wide range across technologies.

The rapid deployment of large numbers of utility-scale photovoltaic (PV) plants in the United States, combined with heightened expectations of future deployment, has raised concerns ...

For direct land use requirements, the capacity-weighted average is 7.3 acres per MW, with 40% of power plants within 6 and 8 acres per MW. According to lead author Sean Ong, one of the...

This report covers data and analysis of the land use associated with utility-scale ground-mounted solar facilities, defined as installations greater than 1 MW. We begin by discussing standard ...

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"Land-Use Requirements for Solar Power Plants in the United States." NREL/TP-6A20-56290. o Nearly a decade later, NREL's 2013 report is still often referenced and cited for ...

TY - JOUR. T1 - Land-Use Requirements and the Per-Capita Solar Footprint for Photovoltaic Generation in the United States. AU - Denholm, Paul. AU - Margolis, Robert M.

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In this report, we estimate the state-by-state per-capita "solar electric footprint" for the United States, defined as the land area required to supply all end-use electricity from solar ...

The land requirement of a PV solar plant is contingent upon the tracking type of the PV panel, i.e., a flat-paneled, fixed-tilt, or tracking mechanism. The panels may be mounted ...

22% of power plants: Within 8 and 10 acres/MWac. Direct land-use requirements: Capacity-weighted average is 7.3 acre/MWac; 40% of power plants: Within 6 and 8 acres/MWac. The table below, courtesy of the National ...

22% of power plants: Within 8 and 10 acres/MWac. 40% of power plants: Within 6 and 8 acres/MWac. The table below, courtesy of the National Renewable Energy Laboratory, highlights the differences in land-use ...

A previous NREL report, "Land-use Requirements and the Per-capita Solar Footprint for Photovoltaic Generation in the United States," had estimated that if solar energy ...

o The last comprehensive review of (semi-)empirical data on solar "power and energy density was an NREL paper published in June 2013 (with data through mid-2012), and ...

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perspective of land use. Third, adequate sunlight is ubiquitous and present in predictable amounts almost everywhere. As we move away from fossil-fuel energy, PV use will ...

and solar electricity generation in the United States in 2015. For each source, it approximates the land used

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during resource production, by energy plants, for transport and ...

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