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# Floating Photovoltaic Technical Potential: A Novel Geospatial Approach on Federally Controlled Reservoirs in the United States

## New Geographic Method Reveals Floating Solar Photovoltaic Potential on U.S. Federal Reservoirs

The global floating solar photovoltaic (FPV) industry is expanding rapidly, with an average annual growth rate of 142% in installed capacity from 2014 to 2022. But understanding its role in future energy systems is still in the early stages. Since 2019, no papers have been published that have attempted to measure floating solar technical potential in the United States. And none have been published that have used detailed methods considering specific waterbody characteristics, a standard approach for ground-mounted solar and wind energy.

NREL's journal article, [Floating Photovoltaic Technical Potential: A Novel Geospatial Approach on Federally Controlled Reservoirs in the United States](#), developed

a new geospatial methodology to estimate technical potential in the United States. The study focused U.S. federally owned and regulated reservoirs that were managed by the U.S. Army Corps of Engineers (USACE), Bureau of Reclamation, and/or a Federal Energy Regulatory Commission-licensed hydropower project. For the purposes of this study, researchers focused on reservoirs that weren't part of a USACE- maintained navigable waterway and didn't have average monthly low temperatures below -15°C.

Even though a waterbody may be potentially suitable for floating solar, development may not be feasible in all areas of that waterbody. Since shallow water cannot support floating solar projects, areas with water depths below 1 m were excluded. NREL analyzed water depth estimates using bathymetry survey data. Using this data, along with the slope and waterbody area, helped researchers determine the feasibility of floating solar development.

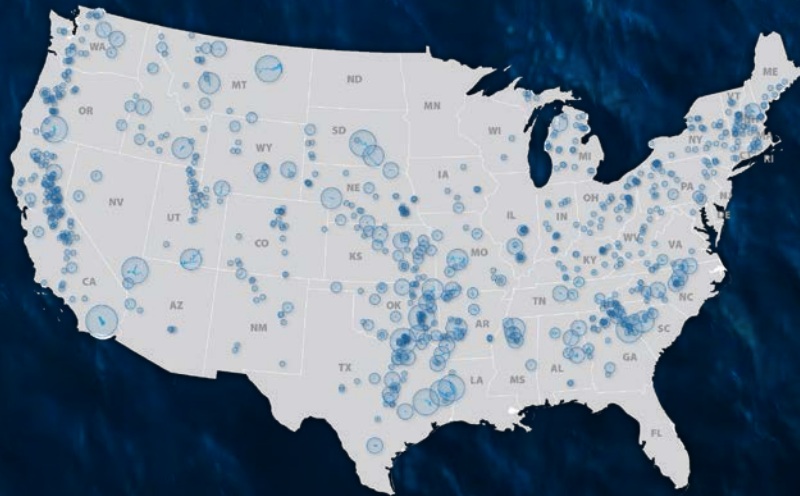
The results of the analysis show ample technical potential for floating solar development on these reservoirs, ranging

from 861 to 1,042 gigawatts of capacity (1,221 to 1,476 terawatt-hours alternating current), and the suitability of reservoirs for floating solar panel development varies greatly depending on specific factors at each location, including existing recreation and dam operations.

“Even if you could develop 10% of the floating solar projects from what we identified, that would go a long way. By exploring floating solar in relation to federally owned and regulated reservoirs, we have the potential to help meet the country's energy needs.”

—Evan Rosenlieb, NREL Geospatial Scientist

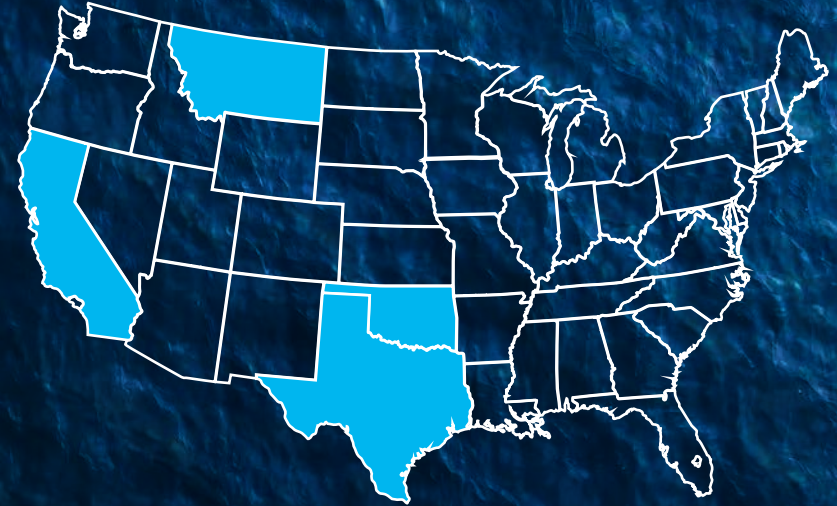




Capacity (MW)

- 50,000 to 77,000
- 16,000 to 50,000
- 8,000 to 16,000
- 3,000 to 8,000
- 1,000 to 3,000
- <1,000

FPV potential capacity is **well distributed** across the United States.



## FPV Potential Capacity



- Texas:** 137 GW ← *16% of the nation's total FPV capacity*
- California:** 102 GW
- Oklahoma:** 84 GW
- Montana:** 44 GW



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For more information

**Evan Rosenlieb**  
Geospatial Scientist  
Evan.Rosenlieb@nrel.gov

**Aaron Levine, Esq.**  
Senior Legal & Regulatory Analyst  
Aaron.Levine@nrel.gov

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