Tiraspol utility-scale solar

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Berkeley Lab’s annual Utility-Scale Solar Report has become one of the industry’s go-to resources for tracking the evolution of large-scale solar (and storage) deployment across the United States. The 2024 Edition analyzes ground-mounted PV projects above 5 MW ac, offering invaluable insights into deployment trends, technology adoption, costs, and project economics.

In this first of several short videos, HeatSpring instructor Tim Taylor breaks down key findings from this comprehensive report and examines what they reveal about the state of utility-scale solar.

In this map, you can see the location of the solar facilities with the size of the circle representing the size of the facility. Gray circles are the facilities installed before 2023. The dark green circles, they’re the facilities that are installed or were installed in 2023.

18.5 GWac was installed in the U.S. in 2023, which brings the total cumulative utility-scale solar to 80.2 GW. ERCOT in Texas added the most in 2023, which was 4.2 GW, but new installations are relatively well distributed across the country in different regions.

The red and the orange shading is indicative of the irradiance. We’re starting to see more installations in the northern regions, particularly in the Midwest, which is helped by the cost-effectiveness of tracking and the ability to increase production with that tracking. In fact, 96% of all new solar capacity utilizes tracking.

Lastly, 5.3 GW of the 18.5 GW of solar that were installed were part of hybrid solar battery projects. The battery value chain and all the various benefits that batteries can provide are certainly increasing. Most of the new battery capacity was built in California ISO and the non-ISO western part of the U.S.

Looking forward, we see clear evidence of the future growth of utility-scale solar and the interconnection queues, which show the amount of solar that is waiting to be studied. This graph shows the solar PV queues for the 10 years between 2014 and 2023. For each year, the blue color represents capacity that entered into the queue in prior years, and the green color represents the capacity that entered the queue in that particular year.

The striped portion of each bar shows the amount of solar capacity that was part of a hybrid plant, meaning a solar battery. Particularly note that in California ISO and the non-ISO West, the large amount of solar capacity being added as part of solar battery plants. The other regions have far less, both in terms of absolute MWs and as a percentage of the total solar capacity.

Almost 1,100 GW of solar capacity was in the interconnection queues at the end of 2023. To put that into perspective, the total installed generating capacity in the U.S. is only about 1,300 GW.

Now, one thing about queues is historically, a relatively small percentage of the queue capacity is actually built, and it’s somewhere around 10%, maybe slightly higher. This is likely due to a number of reasons. One reason is that developers don’t have access to all the information they need on whether to build a plant until they enter the queue and then get the study results. Other reasons can include changes in financial and market conditions, such as changing interest rates or inflation or even supply chain issues.

Alright, that’s it for this video. I will be talking about other aspects of this report in future videos. In the meantime, if you want to learn more about electric transmission and the interconnection of solar PV to transmission, as well as many other topics in the energy transition, just scan the QR code here or head over to Heatspring. Thank you for watching!

Utility-scale U.S. solar installations are set to continue record-breaking growth with over 32 GW installed in 2024, due in part to a requirement that modules imported during the anti-circumvention tariff moratorium be in service by December, according to a report released Monday by the American Clean Power Association.

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