



Energy storage grid Ukraine

Can a solar PV-plus-storage system improve resilience in Ukraine?

NREL is working with USAID, the Ministry of Energy of Ukraine, and the Ministry for Communities, Territories, and Infrastructure Development of Ukraine to design a microgrid pilot project that will demonstrate how a solar photovoltaic (PV)-plus-storage system could enhance resilience under the present conditions in Ukraine.

Is Russia targeting Ukraine's energy system?

Ukraine's energy system has been regularly targeted by Russia since its full-scale invasion in 2022, with attacks intensifying since the spring of 2024. The targeting of energy infrastructure has had wide-ranging consequences for the provision of energy to Ukrainian households and other consumers.

Does decentralisation drive energy security in Ukraine?

Despite the high investment risks, the construction of a more decentralised system has begun, increasing resilience to attack and laying the groundwork for a distinctive longer-term transition pathway. In contrast with other countries, where decentralisation has been driven by sustainability concerns, the clear driver in Ukraine is energy security.

Can European companies use Ukraine's large storage sites?

Ukraine can offer the bulk of its large storage sites (30 bcm, mainly in Western Ukraine) for use by European companies, but security risks mean that European traders have so far made limited use of this option. Lower storage utilisation weighs on the revenue and profitability of Ukraine's system operator.

How important is Ukraine's energy sector?

Ukraine's air defences provided some protection, but the scale of the attack and the resulting disruption highlighted once again the vital strategic importance of Ukraine's energy sector, as well as the ever-present risks to the country's energy supply.

Where can we find Ukraine 4km solar resource data?

Ukraine 4-km solar resource data, available on the RE Data Explorer platform. Illustration by Billy Roberts, NREL. While U.S. technical support to Ukraine might not get the same level of attention as its defense support, these data sets are crucial for Ukrainians to envision and enact a clean energy transition for their country in a systemic way.

This report describes the urgent challenges facing Ukraine's energy sector and outlines tangible actions that can be taken by Ukraine and its partners to address its immediate energy security vulnerabilities ahead of the winter, while bolstering long-term resilience.

Energy storage: Microgrids can include energy storage systems, providing a buffer against sudden disruptions.



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Grid monitoring and control: Microgrids are equipped with advanced monitoring and control systems that can detect anomalies and quickly restore power, helping to identify and mitigate the effects of attacks.

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The plan to link Ukraine's energy mix with that of the European Union includes up to 1 GW of clean power and energy storage facilities in neighboring Poland. DTEK, in August 2024, acquired the rights to construct a 133 MW/532 MWh battery storage site in Trzebinia, in southern Poland .

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Ukrainian energy company DTEK plans to invest EUR140m (\$155m) to develop a range of energy storage systems with 200MW capacity to bolster the country's energy security ...

This study investigates the utilization of energy storage facilities in the Ukrainian power system, focusing on their capabilities in the ancillary services market. The authors present the outcomes of a modeling approach that simulates the operation of a hypothetical...

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Ukrainian energy company DTEK plans to invest EUR140m (\$155m) to develop a range of energy storage systems with 200MW capacity to bolster the country's energy security and improve grid stability. The initiative will establish DTEK as the country's largest investor in energy storage.

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Ukraine aims to build a distributed battery energy storage system (BESS) grid, Morrow added. Potential deliveries under the MOU may reach gigawatt-hour levels, Morrow said, although the exact volumes are yet to be agreed. Ukraine needs a significant amount of BESS over the next few years for grid stabilising, it added.



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