



UKRAINE ENERGY STORAGE MARKET ANALYSIS

Battery energy storage already plays a role in some segments of the Ukrainian electricity markets and in many small off-grid power systems in handling war-related power outages. With the expected increase in renewables and a more fluctuating electricity generation profile, this largely untapped market in Ukraine will be one of the key industries in the renewable sector for private investors, both domestic and international, to support market development. Andriy Gerus, Chair of the Parliamentary Energy Committee, publicly stated in 2024 that he believes that more industrial-scale energy storage projects will be built in Ukraine in the coming years. Ukraine can benefit from the rapidly growing market for batteries and technological innovation if it can ensure that market regulations incentivise battery installation, both utility-scale (to reduce strain on the system and provide grid services) and behind-the-meter (for businesses and households to enhance resilience and self-consumption), in optimal locations.

Market Overview & Growth Trends (2020–2024)

In early 2022, Ukraine had a total installed renewable generation capacity of almost 10 GW, and most of its flexible generation for balancing the grid was from thermal power plants, pumped storage and hydropower plants.¹

In 2024, after two years of targeted attacks by Russia on Ukraine's energy system and the destruction of several hydropower plants key to the provision of ancillary services, the loss of or damage to a significant portion of its pre-war generation infrastructure, which led to curtailment and rolling blackouts, among other issues,² meant that it faced substantial deficits in flexible generation and a need for peak and semi-peak capacities, as well as energy storage.

At the same time, with large parts of the country's energy generation capacity damaged, destroyed or unavailable, due to occupation, and the ambitious targets set for renewables for the coming years, decentralised and renewable generation is becoming the key to the future of Ukraine's energy sector and energy security.

Nonetheless, in early 2025, renewables barely contributed to meeting evening peak demand.³ This situation opens up new market participation opportunities for energy storage installations.

Most of the development in Ukraine's battery energy storage system (BESS) market since 2022 has indeed happened on a small scale. **Many small off-grid BESSs were installed by businesses, communities and households**, together with solar panels, to ensure energy supply during blackouts and to optimise self-consumption, reducing energy costs and also lowering peak load in the system. During the past three years, Ukrainians have been rapidly installing solar panels, with an estimated 800–900 MWh of solar generation installed in 2024 alone. Most of these systems have been installed 'behind the meter' for self-consumption. Similarly, installers reported significant numbers of BESS installations, despite only 12 MWh of BESSs being connected to consumer networks (with applications open for another 12 MW). This trend is supported by import data, showing a 105% increase in battery imports in 2024 to **\$950 million**.⁴

The **first industrial-scale BESS** was installed in Ukraine in 2021 by DTEK, the largest private energy company in Ukraine. DTEK collaborated with American BESS producers Honeywell and SunGrid to install a 1 MW system at the Zaporizhzhia thermal power plant in Energodar. This pilot project was registered as a reserve capacity provider with Ukrenergo.

More recently, with **new legislation passed in early 2025 providing for the co-location of energy storage** facilities with existing renewables behind one grid connection point, another business opportunity – selling to the wholesale electricity market and taking advantage of price spreads – is shaping up.

Market assessments with more information on the current state of the wind and solar markets are also available on the website of the German-Ukrainian Energy Partnership.

2025 Outlook & Expansion Potential

As of 2025, common **business models** for BESSs in Ukraine include providing ancillary services to the transmission system operator Ukrenergo (it is necessary to obtain a Certificate of Compliance with the requirements for ancillary services) as well as engaging in price arbitrage by buying and charging electricity during low-demand periods and selling during peak hours on day-ahead and intraday markets. **New legislation passed in early 2025 providing for the co-location of energy storage** facilities with existing renewables behind one grid connection point is further driving this business opportunity.

The market for large-scale BESSs is gaining momentum. A project announced in 2023 by OKKO, a Ukrainian oil product trader, recently deployed a 20 MWh BESS with an investment value of somewhere between €20 million and €22 million in February 2025.⁵ In August 2024, several subsidiaries of DTEK Renewables took part in ancillary services auctions and won five-year contracts for 140 MWh of reserve capacity. The company expects to have BESS projects with a total capacity of 200 MWh installed by the end of 2025 and plans to build an additional 300 MWh.⁶ DTEK's 140 MWh project will be the largest BESS in Eastern Europe when it is deployed. Ukrenergo's most recent auction for fast-start reserve capacity (including BESSs) was held in August 2024 and was drastically oversubscribed. A total of 39 companies took part in the auctions and ended up sinking the price with fierce competition for a 'market that does not yet exist'.⁷ These auctions indicate a clear move by Ukrenergo to facilitate the building of BESS capacity, which is essential for effective electricity system balancing and restoration capabilities.

In addition, on 11 September 2025, DTEK, together with the U.S. company Fluence Energy, Inc., commissioned the largest energy storage complex in Ukraine. The project, with a total investment volume of €125 million, consists of six battery energy storage systems (BESS) located in the Kyiv and Dnipropetrovsk regions.

The total capacity of these installations amounts to 200 MW, with an energy storage capacity of 400 MWh. This is sufficient to supply electricity to 600,000 households for two hours. The project is the first large-scale investment initiative in lithium-ion storage facilities in Ukraine and demonstrates the readiness of businesses to invest despite the risks of war.

In a significant development, the agro-industrial holding MHP commissioned an industrial-scale BESS at one of its facilities in late 2023, demonstrating a tangible move towards energy independence and security.⁸ Ecotech Ukraine's outlook has changed now in 2025, and the company considers energy storage to be one of the most profitable areas in the energy sector to invest in.

Innovation and research around the battery value chain is happening too. Recently, a Ukrainian-founded start-up, now based in the United States, successfully raised funds to scale up an early-stage prototype of what they are billing as the world's first rare metal-free, sustainably produced battery.⁹ Established Ukrainian mining company BGV Group, with early positive laboratory test results, is advancing with its strategy to develop lithium-ion batteries using Ukrainian-mined graphite, with the aim of establishing the entire supply chain in Ukraine. However, due to rapidly developing BESS technology, it may take some time before these innovations are able – if ever – to compete on the market with established global brands.¹⁰ In July 2025, Berlin Economics published a study assessing the potential competitiveness of a Ukrainian battery value chain in more detail.

Electricity Market Design & Regulatory Challenges

For a detailed overview of Ukraine's energy market and legislative developments in recent years, please refer to the [publications](#) linked on the German-Ukrainian Energy Partnership website.

The Ukrainian energy market is undergoing a transformation thanks to legislation supporting **self-consumption and energy storage**, aimed at decentralising electricity supply, boosting energy independence and integrating renewables into the energy system.¹¹ Already in 2022, the transmission system operator's Generation Adequacy Assessment Report concluded that the power system did not meet adequacy requirements in terms of capacity or reserves. Meeting these requirements would call for at least **0.8 GWh of energy storage systems with a total capacity of 2 GWh**, paired effectively to optimise renewable energy sources (National Energy and Climate Plan).

The first legal framework for BESSs (Law 2046-IX), established in 2022, provides that they must be licensed, with the exception of storage units that are only used to store one's own energy and whose total output does not exceed the licence exemption threshold. Prosumers – entities that both consume and produce energy – and consumers are permitted to install energy storage systems without licences, provided they do not export energy to the national grid or other entities.

If storage system operators are official participants in the energy market and their activities include **selling stored energy** and **providing balancing and other ancillary services** such activities require obtaining a license — either for carrying out business activities in the field of energy storage, or for electricity generation, in cases where electricity is produced from renewable energy sources for subsequent storage.¹²

Currently, a license for carrying out business activities in the field of energy storage is mandatory if the total installed capacity of the energy storage installations is at least 150 kW and their storage capacity is at least 150 kWh. This threshold allows for the regulation of large commercial projects, while leaving smaller, private installations outside the complex licensing procedure, thereby encouraging the development of decentralized solutions. As of August 2025, nine companies have received licences from the Ukraine's National Energy and Utilities Regulatory Commission (NEURC) to carry out energy storage activities.¹³

Improvements to expand the rights of electricity consumers were made in 2023 through NEURC Resolution No. 847 in a necessary step to accommodate the growing number of privately owned solar and storage installations. The resolution enables an active consumer, who may not be the owner of the generating equipment (e.g. a tenant), to purchase electricity directly from the facility's owner. Crucially, the price for this electricity is not fixed by a state tariff but is **contractually agreed** between the parties.¹⁴

The net billing mechanism was introduced in 2023¹⁵ and allows individuals or entities generating renewable energy, for example, through solar panels, to sell excess electricity back to the grid, with compensation calculated based on the day-ahead price for each hour. Net billing can incentivise people to manage their own energy consumption flexibly; however, it is currently economically less attractive in Ukraine due to artificially low household electricity prices.

The most recent amendments of **legislation (Law 4213-IX, 14 January 2025)**¹⁶ **greatly relaxed conditions for BESS facilities**. Most notably, the law removed the restriction that disqualified active consumers with over 1 MW installed capacity if exports exceeded 50% of consumption and raised the licence-free generation threshold from 5 MW to 20 MW until 1 January 2028. Energy storage facilities co-located with existing renewable energy plants and without a separate licence may now also feed electricity into or draw electricity from grid networks, as long as the amount does not exceed the permitted connection capacity. Separate commercial metering of electricity to and from the storage facility is mandatory, and failure to comply may result in disconnection from the grid.

Some regulatory gaps still remain for BESSs. There is some ambiguity around the role of third-party BESSs and active consumers' own BESSs in the self-generation framework.

This gap in legal clarity undermines investor confidence in energy storage. However, all the recent government announcements, targeted BESS auctions and legislative updates indicate a positive trend for BESS integration in Ukraine.

Market Risks & Mitigation Strategies

The BESS market is developing rapidly worldwide and in Ukraine, and while BESSs can be rapidly deployed, there are some obstacles to investing.

High capital costs in an uncertain conflict environment are the main barrier to investment. In wartime conditions and amid changing regulations, investors remain hesitant due to uncertain return timelines. However, the energy storage market is gradually gaining momentum, which may help mitigate some of these concerns, especially since payback can be calculated once a clear business model is defined. **Supply chain risks** must also be taken into account – almost all BESSs installed in Ukraine are supplied internationally, mainly from the United States and China. Unstable trade circumstances and shifting tariffs might impact factors such as supply and price.

During the conflict, one main de-risking strategy for foreign investors is war risk insurance. Many energy sector investors can access concessional loans or blended finance mechanisms from international institutions aiming to de-risk and promote investment. Pillar II of the European Union's Ukraine Facility and German investment guarantees may also be leveraged to help mitigate investment risks.

Overall, there are low rates of connection to the grid for BESSs in Ukraine. The timelines for obtaining technical conditions and carrying out connection works may be considerable, particularly due to the need to modernize substations and transformers. Long processing times for applications, and the risk of additional costs often lead consumers to avoid formalities and go the 'self-consumption' route. This procedure is not viable for larger-scale projects, so keeping the size of a BESS to ≤5 MW (or ≤20 MW temporarily until 2028) would lower entry barriers. For large-scale projects, working with local Ukrainian counterparts may be necessary with a view to handling the formalities.

Technically retrofitting existing substations to incorporate further storage facilities is a growing practice. Projects such as the **Volyn 110/35/10 kV substation retrofit**¹⁷ show that **technical integration is feasible** without full grid overhauls, which also expedites the grid connection process and reduces project costs.

Energy storage brings key opportunities and much-needed operational flexibility into Ukraine's energy system. Investors should view this as a strategic market and regularly **monitor regulatory updates** to keep up with the rapidly developing energy storage market.

Below is a selection of the most recent projects and project announcements.

Company	Capacity (MW)	Battery supplier	Investment (\$)	Purpose of BESS facility
OKKO	20 MW	Fluence (US/Germany)	€20-22 million	Ancillary services
KNESS ¹⁸	30 MW	Fluence (US/Germany)		Ancillary services
DTEK ¹⁹	200 MW, 400 MWh	Fluence (US/Germany)	€140 million	Ancillary services
EDS Ukraine ²⁰	n/a	(Unclear, but Chinese supplier)		Substation retrofit
AmperGood ²¹	45 kW, 50 kWh battery	Plyontech (China)		Self-consumer, connected to solar panels
GSL Energy	50 kW, 600 kWh battery	GSL Energy (China)		Self-consumer of the industrial park

For further business-related questions, please feel free to reach out to the German Chamber of Commerce in Kyiv – contact person Andrii Chubyk: andrii.chubyk@ukraine.ahk.de.

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Dag-Hammarskjöld-Weg 1-5
65760 Eschborn

[The German-Ukrainian Energy Partnership
| Energy Partnership Ukraine](http://The-German-Ukrainian-Energy-Partnership-|_Energy-Partnership-Ukraine)
ep.ukraine@giz.de

Authors: Cheryl White, Helen Naser,
Oleksandra Zaika, Theo Kraus

Concept & design: Hanna Aksenova

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