



BATTERY ENERGY STORAGE FOR UKRAINE
TEN-E (PECI) Groups meeting – 2nd joint meeting
“Electricity” and “Gases” Groups
Thursday, 18 April 2024





SUMMARY OF THE PROJECT



DTEK is an integrated power producer that includes thermal generation, renewables, oil and gas, electricity distribution and trading.

We intend to develop, build and operate 225 MW / 450 MWh lithium-ion battery storage plants situated in 3 locations with a single control center

- Due to the ongoing massive shelling of critical infrastructure, many thermal and hydroelectric power plants have been severely damaged.
- In addition to the loss of electricity generation capacity, frequency regulation services are provided by TPPs (FCR, aFRR) and HPPs (aFRR).
- There is a significant shortage of frequency regulation capacity in Ukraine, which is further exacerbated by damage to critical infrastructure. To cover the lack of frequency regulation capacity, the fastest way is to install new storage batteries, compared to new construction of thermal power units and overhauling existing severely damaged equipment. As stand-alone equipment, BESS requires less construction work and power plant integration than gas turbine or combined cycle plants.
- The new construction of storage batteries will also increase frequency control capabilities of the Ukraine/Moldova control unit (LFC UA/MD).
- Power Oscillation Damping (POD) control will strengthen the interconnector with continental Europe and security of supply
- New BESS construction is needed to unlock the growth of intermittent renewables and help balance the grid. The latest available NPC Ukrenergo's Generation Adequacy Report (Ukraine's transmission system operator) mentions the construction of 700 MW of new battery storage capacities.



Total project size

225 MW / 450 MWH

Estimated investment

€290 MLN¹

Net annual output

315 GWh per year

Useful life

10 YEARS / 2 cycles per day

Value stack

FCR², aFRR³, POD⁴, energy shift

¹ Including costs for batteries augmentation after 10 years of operation

² FCR – Frequency Containment Reserve

³ aFRR – automatic Frequency Restoration Reserve

⁴ POD – power oscillation damping



225 MW / 450 MWH BATTERIES FOR THE GRID SUPPORT



WHAT	Li-Ion 2h battery energy storage systems will be deployed to support the grid by providing power oscillation damping (POD), grid frequency regulations and power reserves
WHERE	Energy storage will be strategically deployed at TSO level switchyards (220 kV and higher) to increase round trip efficiency and make impact on the national grid. By connecting storage to high voltage grid DTEK will make them visible and dispatchable to the Ukraine's TSO "Ukrenergo"
WHY	To provide power oscillation damping and to maintain electrical stability in real-time by responding to deviations in the frequency flowing over the grid. Power plant and transmission line destruction created a significant shortage of power reserves and made the grid vulnerable. BESS is also the fastest way to recover frequency control capabilities compared to building a new power units.
WHO	DTEK gained significant experience in storage systems by commissioning first Ukrainian grid-scale Li-Ion battery in 2021. DTEK EPC team with Tier 1 suppliers can deploy the project on time and budget



	2024			2025				2026				2027				2028				2029		
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
Construction stages																						
1st stage – 25 MW																						
Financing closure and project development																						
Production & delivery																						
Commissioning																						
COD 1 st stage																						
2nd stage – 100 MW																						
Production & delivery																						
Commissioning																						
COD 2 nd stage																						
3rd stage – 100 MW																						
Production & delivery																						
Commissioning																						
COD 3 rd stage																						





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