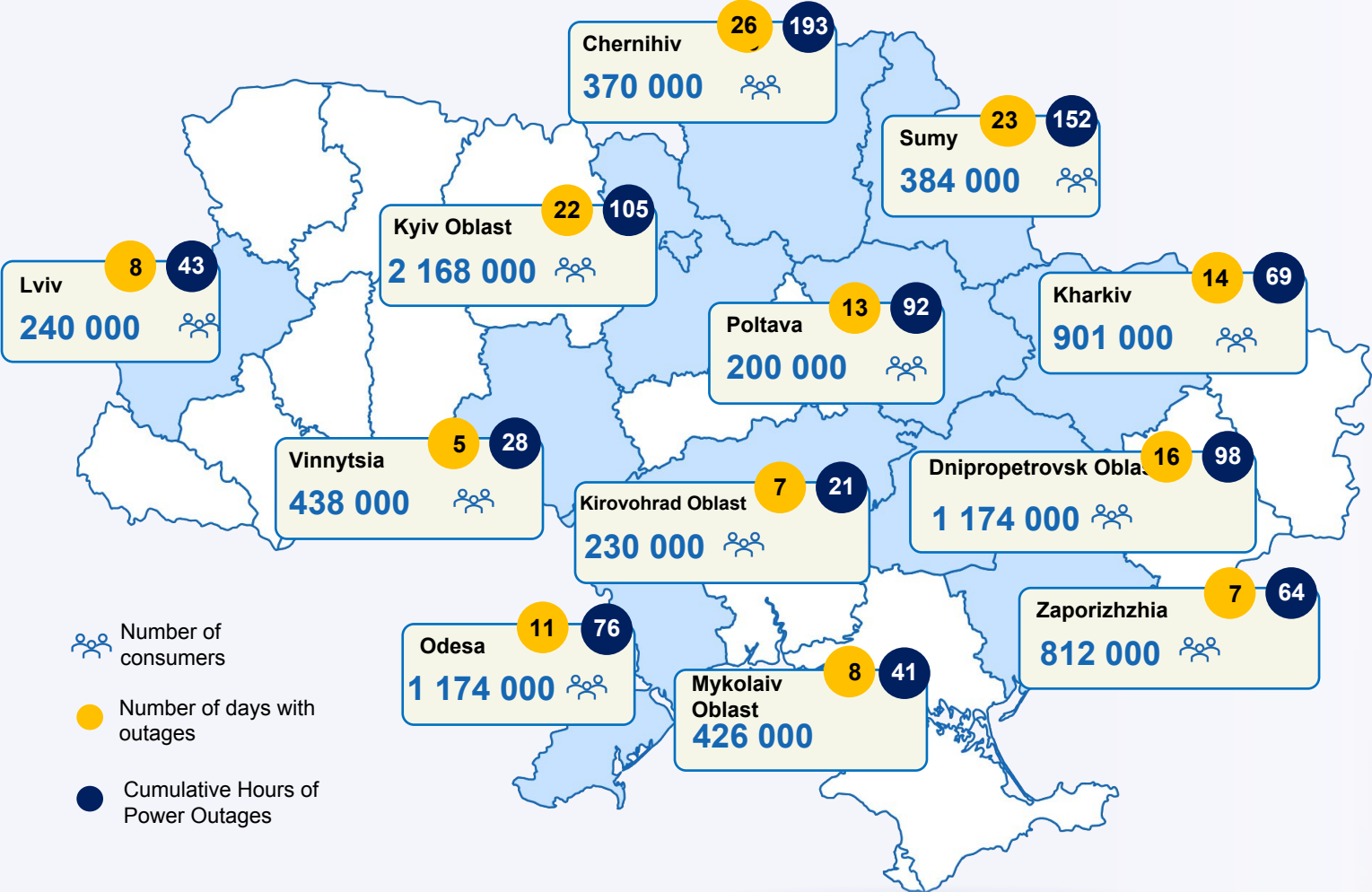


BESS: Profit, Efficiency, Resilience

Panel Discussion

IMPACT OF POWER OUTAGES

OCTOBER – NOVEMBER 2025



- Number of consumers
- Number of days with outages
- Cumulative Hours of Power Outages



4-10 hours

average daily power outages duration, as of October-November 2025



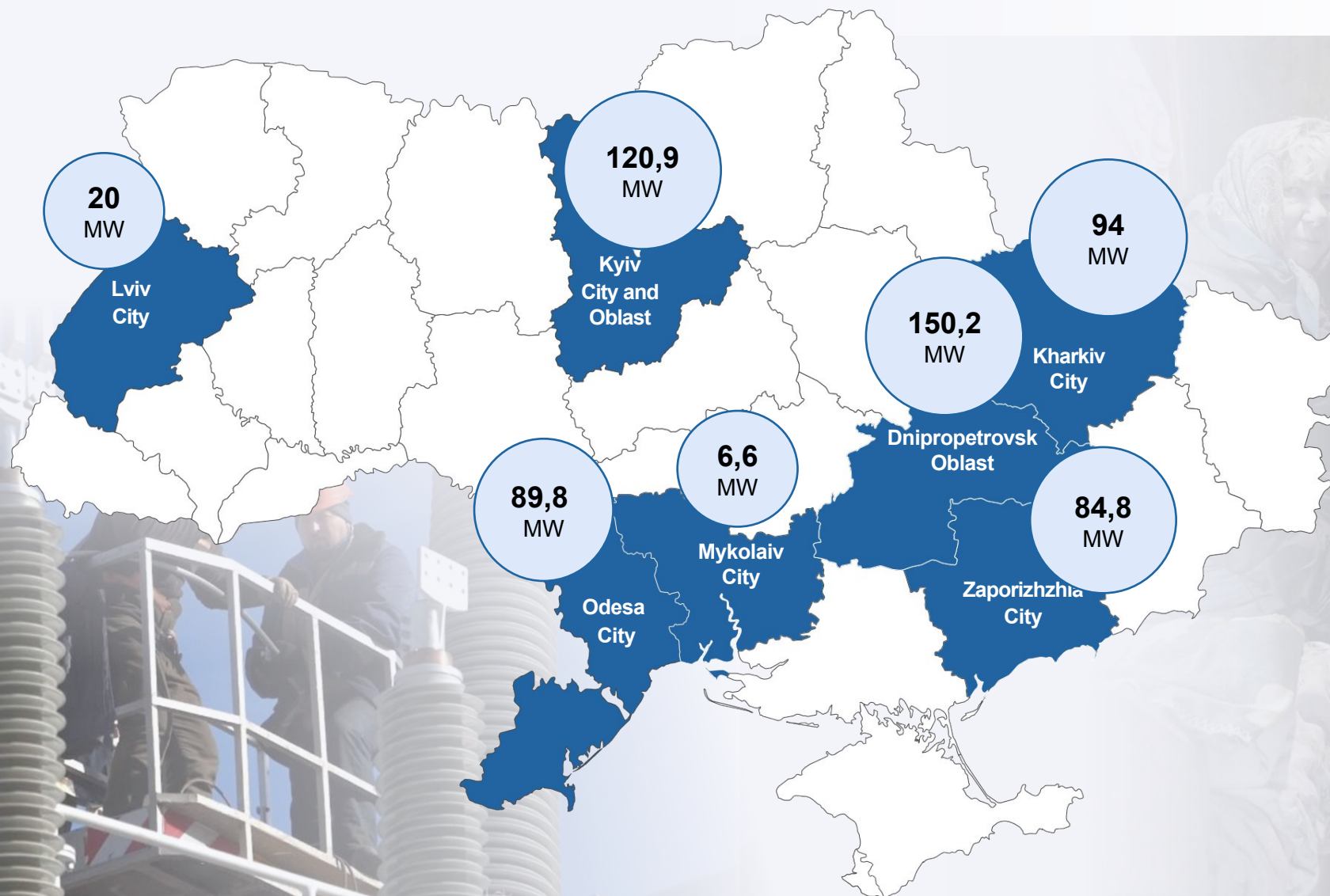
63%

November has already seen a 63% increase in power outages compared to the previous month

The data covers regions where the duration of power outages exceeded four hours

SUPPORTING MUNICIPALITIES WITH CRITICAL ENERGY INFRASTRUCTURE

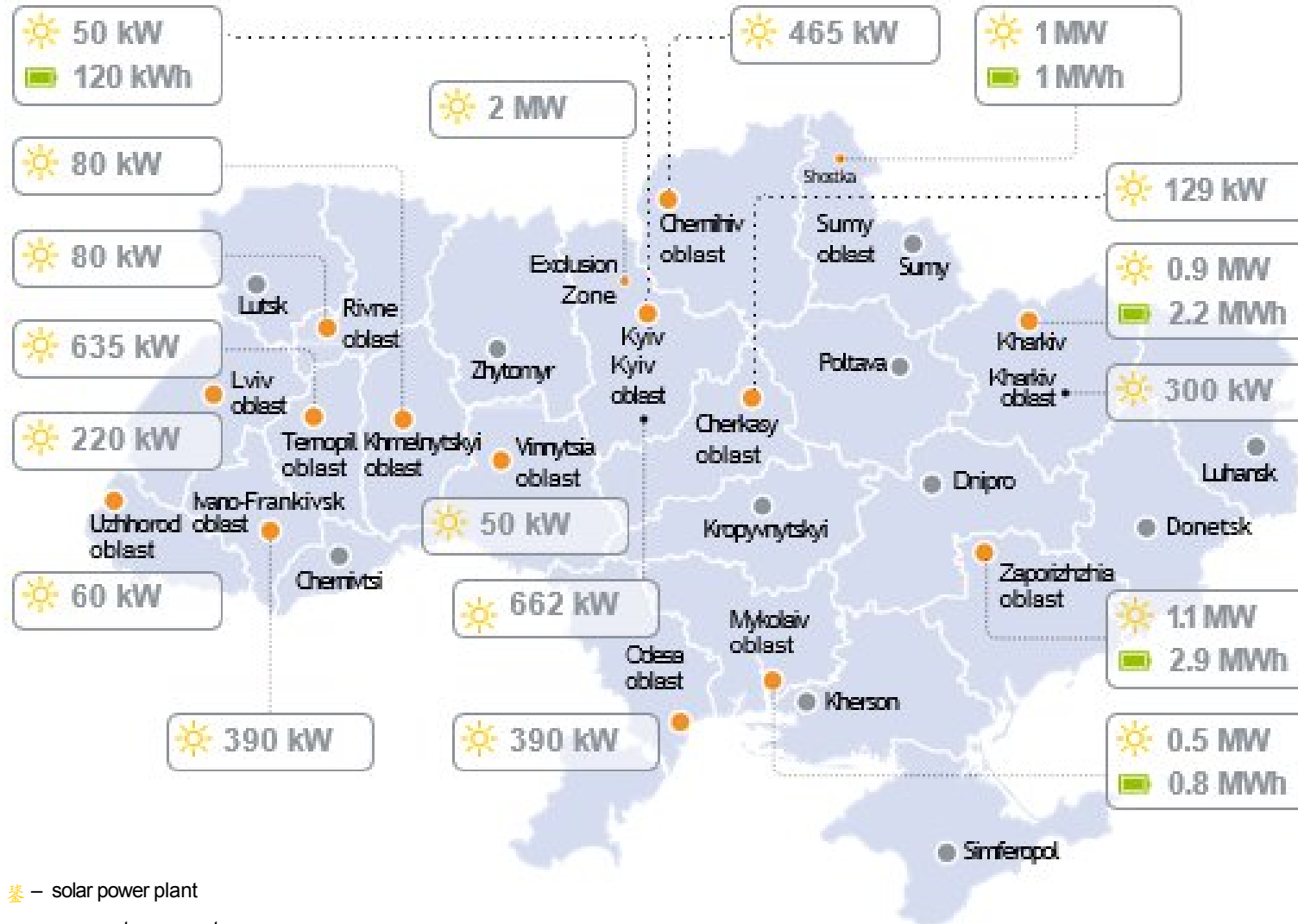
electricity, heat, water and sewage supply



566,3 MW
procured or being
procured

408,1 MW
Delivered

Supporting municipalities with solar power plants in 2025



UNDP Grant Funded Projects

(2025-2026)

5.6 MW + 7,1 MWh BESS

KYIV

☀️ 50 kW + 🔋 120 kWh

ZAPORIZHZHIA

☀️ 1.1 MW + 🔋 2.9 MWh

KHARKIV

☀️ 0.9 MW + 🔋 2.2 MWh

SHOSTKA

☀️ 1 MW + 🔋 1 MWh

MYKOLAIV

☀️ 0.5 MW + 🔋 0.8 MWh

EXCLUSION ZONE

☀️ 2 MW

UNDP ESCO Support

8 MW ESCO Solar Projects for Communities:

- **54 Community facilities**
- **U.S. \$ 6,5M**

Priority objects for SES installation



Why hospitals and water utilities?

Critical infrastructure

Facilities with year-round
electricity consumption

Regions that require priority support

Regions with the highest number of sunny days per year (to maximize generation):

- Odesa region
- Kherson region
- Mykolaiv region
- Zaporizhzhia region
- Dnipropetrovsk region

Regions most affected by the war (to increase energy stability):

- Kharkiv region
- Chernihiv region
- Sumy region
- Kyiv region
- Zaporizhzhia region

Expected benefits from implementing SPP on critical infrastructure

Reduced electricity costs	Reducing hospital and water utility budget expenditures, which will allow funds to be directed to other critical needs	Protection against future increases in electricity tariffs.	
Reducing dependence on traditional energy sources	Reduction in electricity consumption from the grid.	Increasing the energy independence of communities from centralized energy supply.	Using renewable energy for sustainable development.
Improving service stability in crisis situations	Uninterrupted power supply for hospitals and water utilities during outages.	Providing backup power for intensive care units, operating rooms, and laboratories.	Stable operation of water supply pumping stations to provide the population with drinking water.
Environmental and social benefits	Reduction of CO ₂ emissions and improvement of the environmental situation.	Fulfilment of Ukraine's international climate commitments.	

UNDP methodology for selecting projects to attract grant funding



Outcome of the evaluation of options for technical/technological solutions

Power generation source type	Wind PGFs*	Solar PGFs	Hydro- and pumped-storage PGFs	Coal-fired PGFs	Biomass PGFs	Natural gas or biogas PGFs**
The fastest possible equipment availability	No	Partially	No	No	Yes	Yes
Simple and fast installation and commissioning	No	Yes	No	No	Partially	Yes
Maximum possible flexibility (ability to ensure system flexibility)	Conditionally ...	Conditionally ...	Yes	Partially	Partially	Yes
Independence from weather and other conditions (ability to operate continuously)	No	No	Conditionally	Yes	Conditionally	Yes
Operation on the most widespread and available fuels	N/A	N/A	N/A	No	Yes	Yes
No need for special support	No	No	Yes	Yes	Yes	Yes
Possible long-term continuous use	Yes	Yes	Yes	No	Yes	Yes
Additional possibilities for increasing of economic benefits from the use	Partially	Partially	No	Yes	Yes	Yes
Positive impact on the green transition	Yes	Yes	Yes	No	Yes	Partially
Overall score	8	11	11	7	15	17

GEOGRAPHICAL KEY SELECTION CRITERIA *according to UNDP city selection methodology for energy support

Population & Energy Demand

1. Consideration of large population centers and IDP movements impacting energy needs.

Vulnerability to Attacks

1. Proximity to active conflict zones (high risk for cities within 100 km).
2. Frequency of past attacks on energy infrastructure.

Vulnerability of the City's Energy Hub

1. **Blackout risks** due to reliance on high-voltage networks.
2. **Infrastructure robustness** (number of substations, redundancy of high-voltage lines).
3. **Disruptions to power supply** from damaged substations and transmission lines.
4. **Local generation availability** to sustain critical services independently.

An Example of a Successful UNDP SPP Project

Kharkiv Hospital No. 8



The project was implemented with donor support from the Kingdom of Norway



 **170 kW**
SPP capacity

 **100 kWh**
battery capacity

 **186 000 kW**
annual electricity production

 **до 50%**
annual replacement of
traditional electricity

 **1,5 mln UAH**
annual cost
savings



Financial Instruments For Implementing Solar Energy Solutions For Critical Infrastructure



**AFFORDABLE
CREDITS**



JOINT STOCK COMPANY

DECARBONIZATION FUND OF UKRAINE

ESCO mechanisms

MFI Loans

Grants

- up to UAH 150 million
- at 5-7-9% per annum
- for 10 years

- up to UAH 20 million
- at 9% per annum
- for 10 years

- 100% private investment

Call for Partners

According to the Ukrainian Renewable Energy Association, in 2024, nearly 600 MW of solar power plants were installed for independent consumption (some of which were installed to provide critical infrastructure for communities).

However, today, solar power plants cover less than 1% of the country's needs. After all, there are about 20,000 hospitals and water utilities in Ukraine.

Therefore, only synergy between donors, the state, and the private sector will allow for the effective scaling of solar power plant projects, combining grant funding, national support programs, and private investment.



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