

# USEA Strengthens Moldova's Energy Security Through Grid Modernization and Renewable Integration



The United States Energy Association is strengthening Moldova's energy security by modernizing its transmission grid and enabling the reliable integration of renewable energy. Through advanced technical assessments and digital planning tools, USEA has reduced reliance on imports, supported domestic generation, and provided Moldova with the infrastructure necessary for a stable, self-sufficient energy future.

For nearly two decades, the United States Energy Association (USEA) has collaborated closely with Moldelectrica, Moldova's national transmission system operator, to promote a more secure, reliable, and modern energy system. This enduring partnership has supported Moldova's strategic milestones, most notably the synchronization of its power system to the European Network of Transmission System Operators for Electricity (ENTSO-E) in 2022. Building on this foundation, USEA's technical assistance from 2022 to 2023 focused on preparing Moldova's transmission grid for a clean energy

future – an essential step toward enhancing national energy security.

Moldova has historically ranked among the least energy-secure countries in the world due to its heavy reliance on Russian energy imports. To address this vulnerability and help Moldova develop a flexible and robust grid, USEA collaborated with Moldelectrica on a Grid Integration and Hosting Capacity Assessment for over 1,200 MW of proposed wind and solar projects. The study used advanced power system modeling, including power flow simulations and N-1 contingency analysis, to evaluate the grid's ability to absorb

variable renewable energy (VRE) without compromising reliability. The assessment identified technical constraints, such as overloaded transmission lines, voltage issues, and substation capacity limits, and provided a prioritized plan for infrastructure upgrades needed to secure Moldova's evolving energy system. These recommendations include upgrades to transformer capacity, reactive power management, and digital grid monitoring. They provide a strategic pathway for safely and reliably integrating growing renewable capacity.

To further bolster operational readiness,

USEA developed a digital hosting capacity tool allowing Moldelectrica to determine the maximum hosting capacity of each substation and transmission line under normal and contingency conditions. These efforts significantly enhance Moldova's energy security by reducing dependence on external electricity sources, increasing domestic renewable energy production, and improving grid resilience.

USEA's technical partnership with Moldelectrica supports Moldova's energy transition goals and equips the country with the necessary tools, data, and infrastructure to ensure a stable, self-reliant power system.