Energy storage investment armenia

Energy storage investment armenia

In the past decades, Armenia has achieved significant progress in utilizing renewable energy sources, primarily through hydropower, which has contributed between a quarter to a third of the country"s energy output. Despite this progress, the majority of Armenia’s electricity still comes from non-renewable sources. Last year Armenia produced 8,907.9 GWh of electricity, up 16% from 2021. The vast majority came from thermal power plants in Yerevan and Hrazdan (43.5%) and the Metsamor Nuclear Power Plant (32%).

Hydropower accounted for 21.8%, while solar stood at 2.7% and wind power at just 0.02%. Overall, renewable sources (hydro, solar, wind) combined generated 2,183 GWh or 24.5% of the total. Armenia exported 17.3% of the total electricity output to Iran and Georgia.

Armenia’s Public Services Regulatory Commission, the country’s utilities regulatory body, reported that as of the beginning of this year, there were 60 utility-scale solar farms operating in Armenia, with a combined installed capacity of 204.8 MW and an average annual generation of 444.8 GWh. These solar farms are concentrated in Aragatsotn (accounting for 45.3% of the installed capacity), Gegharkunik (29%), and Vayots Dzor (20.5%). Together, these three regions contribute nearly 95% of Armenia’s total installed solar capacity.

The first license for a solar farm in Armenia was granted in November 2017, but only 12 were built in the first three years. Last year saw a significant surge in growth, with more than half of all solar farms (34 of 60) built in 2022 alone. These 34 solar farms account for 75% of the total capacity, providing 154 out of 204.8 MW.

In addition to the 204.8 MW capacity of utility-scale solar farms, there are further 11,122 grid-connected solar power systems (like rooftop panels) with a combined capacity of 207.5 MW as of March 1, the Public Services Regulatory Commission told EVN Report.

Data provided by the commission reveals an incredible growth in distributed generation in the past several years. By the end of 2019, the installed capacity of distributed solar generation stood at just 32.9 MW, spread across almost 2,000 systems. In two years, the combined capacity more than quadrupled to reach 136 MW across almost 7,000 systems at the end of 2021.

In 2017, Tamara Babayan, a sustainable energy expert, estimated the potential of Armenia"s distributed solar power at 1,280 MW and almost 1,800 GWh in annual generation. This estimate is based on the assumption that half of the available rooftop area in Armenia is developable, indicating that there is significant potential for further growth in the sector.

The larger cooperation with Masdar includes another 200 MW solar farm, named Ayg-2. It is expected to be built near the town of Yeghvard in Kotayk and the village of Nor Yedesia in Aragatsotn. ANIF says it will

include energy storage. Initial plans estimated an investment of $150 million and a completion date of December 2024, but it has not yet entered the planning phase and it will likely be postponed.

Apart from these, the government"s long-term action plan also aims to build five utility-scale solar farms with a combined capacity of 120 MW and annual generation of 192 GWh by December 2024 and small (below 5 MW) solar farms with a combined capacity of 315 MW by 2029 that would generate 326 GWh annually. The government aims to attract $340 million investment for the latter.

In its long-term strategy, the Armenian government has aimed to increase installed wind energy capacity to up to 500 MW between 2025 and 2040 if there are competitive price offers. The government has stressed the latter point, saying that its support to private businesses will be conditioned by competitive price offers.

The USAID study pointed out that wind energy cost in Armenia is "substantially higher than existing sources," but stated that these costs "will never increase since there is no variable imported fuel cost." The study added that installed costs in Armenia are about 20% higher compared to similar projects in Europe due to "remote siting, lack [of] construction experience and infrastructure, and the generation potential is lower due to elevation factor and lower air density."

According to a study commissioned by the Konrad Adenauer Foundation, Armenia"s roads, including fluctuations in elevation, make them problematic and unsuitable for transporting large turbines (generating 1.5 to 3 MW) and blades (up to 52 meters long). There are ongoing attempts to set up domestic production of small turbines.