

# Armenia battery storage power station cost

What percentage of Armenia's Energy is renewable?

Renewable energy resources, including hydro, represented 7.1% of Armenia's energy mix in 2020. Almost one-third of the country's electricity generation (30% in 2021) came from renewable sources. Forming the foundation of Armenia's renewable energy system as of 6 January 2022 were 189 small, private HPPs (under 30 MW), mostly constructed since 2007.

Does Armenia have solar energy?

Armenia has significant solar energy potential: average annual solar energy flow per square metre of horizontal surface is 1 720 kWh (the European average is 1 000 kWh), and one-quarter of the country's territory is endowed with solar energy resources of 1 850 kWh/m<sup>2</sup> per year. Solar thermal energy is therefore developing rapidly in Armenia.

How important is R&D in energy technology and innovation in Armenia?

Research and development (R&D) in energy technology and innovation in Armenia is not significant, though it is becoming more important. The government's plan to develop new renewable energy technologies will increase the need for technology and innovation funding, and for skilled human resources.

How much does it cost to rebuild a HPP in Armenia?

Various upgrades have been performed since the early 2000s, and one of the seven HPPs (Yerevan HPP) is currently under reconstruction at a cost of USD 40 million. Constructing small HPPs is Armenia's favoured course of action to develop the renewable energy sector and secure energy independence.

Do battery costs scale with energy capacity?

However, not all components of the battery system cost scale directly with the energy capacity (i.e., kWh) of the system (Feldman et al. 2021). For example, the inverter costs scale according to the power capacity (i.e., kW) of the system, and some cost components such as the developer costs can scale with both power and energy.

What is the procedure for energy audits in Armenia?

The Procedure for Energy Audits is the norm-setting legal act that regulates energy audits in Armenia. This procedure was approved by Government Decree 1399-N of 31 August 2006 and revised by Decree 1105-N of 4 August 2011 and Decree 1026-N of 10 September 2015.

o This report analyzed the economic and financial viability of battery storage solutions to ensure the reliable and smooth operation of Armenia's power system in the context of an increasing share of variable renewable energy sources in the grid  
o Several battery variants (ranging from 5 MW to 100 MW, and from 1 to 4 hours

Currently, Armenia is in the initial stages of developing a pilot project on battery storage, with plans for a

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utility-scale project with an estimated installed storage capacity of 1,200 MWh to be tendered in the coming years.

For an investor-owned battery storage, a smaller battery storage variant (30MW) is financially viable for all analysed scenarios and cases. Batteries with a one-hour duration are too small to achieve any significant benefits from arbitrage and should be considered only as battery storage that can achieve

Battery storage costs have changed rapidly over the past decade. In 2016, the National Renewable Energy Laboratory (NREL) published a set of cost projections for utility-scale

Capital cost of utility-scale battery storage systems in the New Policies Scenario, 2017-2040 - Chart and data by the International Energy Agency.

Armenia exports electricity to Iran, Artsakh and to Georgia as well as imports electricity from the mentioned countries. Electricity export to Iran is realized on electricity-for-gas swapping agreement and

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Another batch of grid-connected PV power plants totalling 176.7 MW are under construction, the largest being the Masrik solar PV station with 55 MW of installed capacity. Moreover, more ...

As the share of variable renewable energy generation increases, Armenia might need to install battery storage systems to ensure the reliable and smooth operation of its power system. The Government of

Another batch of grid-connected PV power plants totalling 176.7 MW are under construction, the largest being the Masrik solar PV station with 55 MW of installed capacity. Moreover, more than 6 940 autonomous electricity producers with 136.1 MW of total installed capacity are connected to the distribution grid.

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battery system based on those projections, with storage costs of \$143/kWh, \$198/kWh, and \$248/kWh in 2030 and \$87/kWh, \$149/kWh, and \$248/kWh in 2050. Battery variable operations



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