

THE PROSPECTS FOR ENERGY STORAGE SYSTEMS IN KAZAKHSTAN

The number of renewable energy projects is poised to grow even faster than before in Kazakhstan, as it is becoming a critical component of state policy for economic development and innovation.

Due to the country's geography and climate, the most promising sources of renewable energy are solar and wind. According to estimates in the "Concept for the Development of the Fuel and Energy Complex until 2030," the total potential of renewable energy sources for energy production is 1,885 billion kWh; the thermal potential is 4.3 GW (Government Decree of the Republic of Kazakhstan No. 724, 2014). However, with the current structure of generation mainly from the stations fired by coal and gas and the lack of balancing and reserve capacities, the intermittent nature of wind and solar plants puts even more pressure on the reliability and stability of the overall power system in Kazakhstan.

It is for this reason that KEGOC, the national transmission system operator, is now contemplating the introduction of storage capacities.

Current situation

In accordance with the measures adopted by the Government to support renewable energy projects, the investors have, among other things, the following privileges:

- (a) RE generators are exempt from payment for electricity transmission services;
- (b) The financial cost of imbalances due to the intermittent nature of renewable energy is borne by the FSC;
- (c) Priority dispatch for RE generators;
- (d) The transmission company has no right to refuse to connect the RE facility due to lack of network availability;
- (e) The transmission company bears the expenses for the network's reconstruction and expansion;
- (f) etc.

These support measures create even greater pressure on the balancing electricity market situation. Since its introduction in 2008, the balancing market is still not fully functional, allegedly due to the lack of sophisticated automated metering devices at generators to offer balancing services.¹ The introduction of energy storage could help address this deficiency, however.

¹ Source: <https://www.worldbank.org/en/country/kazakhstan/publication/kazakhstan-power-sector-note>

The legislation gaps

As it currently stands, the legislation relating to the power market in Kazakhstan does not contain any incentives invest in either balancing capacities or in energy storage. Moreover, the incentives provided to the renewable energy projects further exacerbate the problem, while renewable energy could offer solutions. Hydro pump storage; hybrid systems, where solar/wind is combined with battery storage; distributed generation – all these solutions could alleviate the deficit of balancing and reserve power.

The legislation of Kazakhstan lacks the concept of "energy storage system", as well as the concept of "energy storage device", which prevents the regulation of the use of energy storages in the electricity markets. Moreover, the legislation does not contain a definition of the "reserve capacity".

Kazakhstan's Electricity Law also does not include a separate class of energy storage in the definition of electric power industry players. This potentially excludes the participation of energy storage in the wholesale and capacity market.

The definitions of "system services" and "ancillary services" also do not mention energy storage in any manner.

The legislation gaps need to be addressed in order for the energy market to function in fact.

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