

## **Using hybrid energy storage systems with renewable energy sources in Unified Power System of Russia.**

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Active development of generation based on renewable energy sources in the Unified Power System (UPS) of Russia will eventually require changes in traditional technical solutions for the future development of the energy system. The article considers the usage of a hybrid energy storage device with a solar power plant for power supply to consumers in a remote area of the UPS of Russia. There is chosen as a hybrid energy storage system the variant battery-supercapacitor. It is shown in the article that storages of this type has improved technical performance and increased service life. There are considered for the investigated section of the power system the technical variants of increase of reliability of power supply of socially significant consumers, one of which consists in electric network construction of the second circuit of the overhead line 110 kV, and the additional variant - in construction of power station with the storage. It is shown that for the investigated section of the power system the additional variant has twice less capital investments in comparison with the variant providing for power grid construction.

*Key words: improvement of electricity supply reliability, system services in power system, renewable energy, hybrid energy storage system, battery storage, supercapacitor.*