АКЦИОНЕРНОЕ ОБЩЕСТВО
«СИСТЕМНЫЙ ОПЕРАТОР
ЕДИНОЙ ЭНЕРГЕТИЧЕСКОЙ СИСТЕМЫ»

5 February 2024

SO UPS completed the CIGRE study on Large City & Metropolitan Area Power System Development Trends

The Working Group of the Study Committee C1 "System development and economics" of CIGRE (Conseil International des Grands Réseaux Électriques), headed by Stanislav Utts, the leading expert of the Department of Synchronous Operation and Standardization of SO UPS of Russia, has completed the large-scale study "Review of Large City & Metropolitan Area (MA&LC) power system development trends taking into account new generation, grid and information technologies". The study involved 34 experts from 22 countries in Europe, America, South Asia and the Asia-Pacific region.

The world is experiencing a prolonged period of population growth and an increase in urbanization. The number of MA&LC is increasing both in size of population and in surface area. Megacities are becoming centers of energy transition. Accordingly, electricity consumption and power system (PS) load are growing and are concentrated in densely populated areas, and the maximums are being updated. In this regard, experts analyzed the issues of the development of MA&LC power systems like, for example: technical, economic, environmental trends and drivers of the development of MA&LC power systems; the long-term MA&LC power systems development planning peculiarities taking into account energy transition issues; assessment of the power systems reliability and resilience; implementation of the number of technologies in the MA&LC power systems (RES facilities, DG and BESS, FACTS devices and HVDC lines and settings, grid infrastructure facilities, short circuit current limitation technologies, smart grid technologies and DR services, EV's and charging infrastructure).

An important conclusion of the JWG is that the stability and reliability standards especially for MA&LC PS should be provided in energy transition era. Conventional generation is still needed to meet stability and reliability standards in such important points of load. With this aim the following issues are needed:

- Comprehensive MA&LC PS development plan including assessment of plans of heat, water, gas supply industries as well as building and transport infrastructure.
- Installation of the necessary number of interconnectors;
- Transmission and distribution grid reinforcements and upgrades;
- Provision of the necessary level of observability;
- Modernization of emergency control and system protection schemes; and
- Providing adequate amounts of frequency reserves and balancing

Full JWC1.C4.36 TB can be downloaded via the link.

ENDS.