

National Agency of the Republic of
Kyrgyzstan for Anti-Monopoly Policy and
Development of Competition

Topic: Transmission and
Congestion Management in the
Kyrgyz Republic

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In the fuel and energy complex of
the Kyrgyz Republic
the power sector
is the main sector.

«National Power Grid of Kyrgyzstan» (NESK)

- Carries out transit of electricity in the republic;
- Manages the power transmission grid 500 kV, 220 kV and 110 kV;
- Serves as a transporter of electricity from a generator to the final consumer.

Reliability of electricity transmission:

- JSC “NESC” is the owner and operator of the National Power Grid of Kyrgyzstan, and it is responsible for complete and reliable functioning of the transmission power grid and its equipment in accordance with the NESC Utilization Rules.
- In accordance with the NESC Utilization Rules and the Laws of the Kyrgyz Republic on Energy, on Electricity, the transmission company should maintain reliability of electricity transmission.

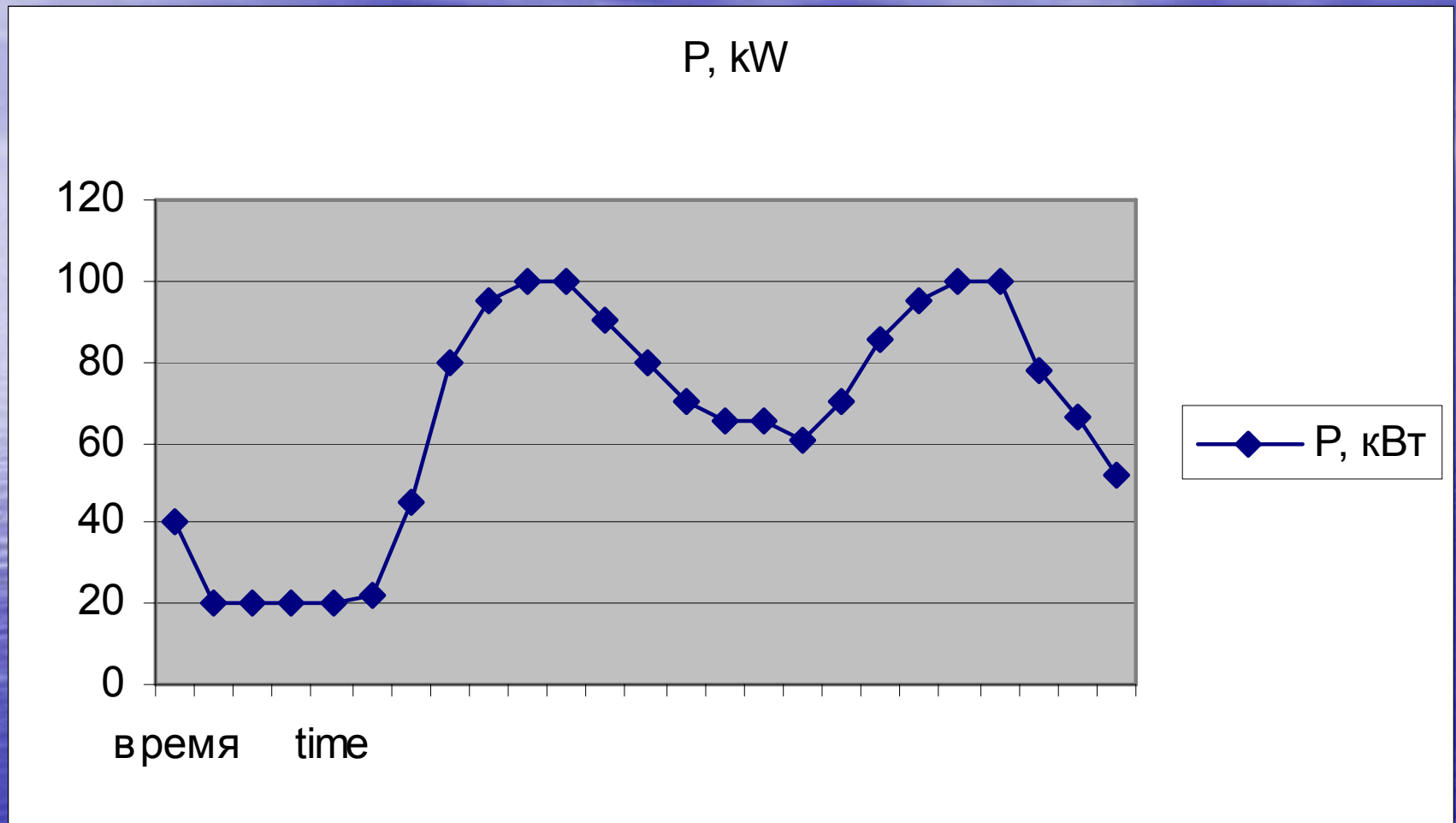
Normal operating mode of electric networks:

- Frequency at all busbars, where the supplied voltage is within the normal working frequency range (from 49.9 Hz to 50.1 Hz), except for short-term deviations within the normal working range of frequency fluctuations (from 49.75 Hz to 50.25 Hz), defined in the reliability standards;
- The voltage level at all connected busbars of any distribution device or substation of the power grid is within the set limits;
- The structure of the equipment is such that irrespective of the seriousness of any potential damage automatic circuit-breakers are able to disconnect the damaged circuit or equipment.

Forecasting load for electric networks:

- Every day a forecast is prepared for the next day, this forecast includes load forecasts for each hour;
- Every day a forecast is prepared for the next period from two to seven days inclusively, daily forecasts include load forecasts for each hour;
- Every week a forecast is prepared for the next 24 months from the date of preparation of the forecast, which includes the daily maximum schedule based on the estimated weekly maximum load taking into account days off and holidays.

Electric load schedule – depending on the time (daily schedule).



Electricity consumption analysis

- Consumption of electricity during winter months increases almost by three times in comparison with the summer period; and all the energy is delivered to subscribers through low voltage networks, which operate with significant congestions and with significant technical losses;
- Having analyzed network operation materials, we found out that the most part of equipment of electric networks work at maximum possible capacity, which entails accelerated depreciation and higher probability of emergency conditions, and also to significant increase of technical losses.

Losses of electricity on transmission

- Transmission losses mean losses of electricity in networks arising in the course of transmission of electricity from one point of connection to another.
- Percentage of technical losses in transmission networks characterize additional losses of electricity as per each increase in the volume of electricity transmitted between two points of connection during a certain period of time and under a certain operational mode;
- The transmission company should calculate the percentage of technical losses on transmission of electricity and should present this information to the distribution companies connected to relevant points;
- Percentage of technical losses calculated by the transmission company is approved by the National Agency for Anti-Monopoly Policy.

Increased technical losses:

- At the maximum transfer capacity during the fall-winter period power transmission lines 500 kV Toktogulskaya HPP – substation «Frunzenskaya» that is in operation for more than 20 years already works;
- Fully loaded is substation «Frunzenskaya» that supplies electricity to the north of the republic;
- By 20% and more are overloaded substations и 220 kV «Kara - Balta», «Uzlovaya», «Oktyabrskaya»;
- Up to 30% of overload experience power transmission lines 220 kV «Kara - Balta» - «Glavnaya»;
- Distribution networks and transformer substations are overloaded, and most of transformers 35/220 kV have load factor of 0.9-1.2 with optimal value being 0.7.

Specified level of losses:

- In 2005, the regulator set the specified level of technical losses equal to 7 %.
- Based on actual data of the transmission company, the level of technical losses was 6.2 %. That is by 0.8 % lower than the specified level.

Construction of Power Transmission Lines

- Power transmission line «Alay - Batken»
220 kV
- Substation «Batken» 220 kV

Future plans:

- Construction of hydropower plants:
- - Kambarata – 1;
- - Kambarata – 2;
- - power transmission lines.

***Thank you for
attention!***