

Outlook and Challenges for Electric Utility Industry <Summary>

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Competition in the Japanese Electricity Market

1. Day-ahead spot trading now accounts for 30% of total electricity sales in Japan, indicating that day-ahead spot prices have significant impacts on the profitability of power generation facilities and competition for retail sales. In central and western Japan, day-ahead spot prices have come closer to fuel costs for coal-fired power plants, affecting the maintenance of LNG-fired power plants. The monthly average day-ahead spot price for some months has slipped below the avoidable cost computed based on variable costs for all electricity sources that are published for feed-in-tariff adjustment, indicating that it has become difficult to recover fixed costs for electricity sources. Spot prices are likely to remain stagnant in 2021.
2. Power producer-supplier companies have taken advantage of retail sales based on such low day-ahead spot prices to expand their power market shares in many regions. Until delivery starts on the capacity market in which electricity retailers are required to make capacity contributions, PPS companies that procure and supply electricity in the low-price spot market may increase their competitiveness.
3. Successful bid price reached the ceiling in an auction for delivery in the capacity market in 2024, becoming a big topic. The average successful bid price, though higher than prices in the U.S. PJM capacity market, is close to levels that have been seen for New York City and new ISO New England capacity markets, indicating that the successful bid prices in Japan are adequate under a tight supply-demand balance.
4. Trading has started in non-FIT non-fossil value certificates. No lower limit price is set for non-FIT non-fossil value certificate trading. Prices came at 1.2 yen/kWh for non-FIT contracts (for renewable energy power sources alone) and 1.1 yen/kWh for non-FIT contracts (for any power sources). The

price levels might have been based on U.S. renewable credit prices.

5. The minimum supply reserve margin of 3% for a cold winter is secured for this winter. If a cold winter is accompanied by a shutdown of a large-capacity power generation facility or any other trouble, the supply-demand balance may tighten. The Hokuriku, Kansai, and Kyushu areas could face supply shortages on a single-handed basis. Supply reserve margins cover Power Source I' that is secured for the severest weather in a decade. If no such power source is considered, the supply reserve margin is expected to slip below 3% in the eastern area.

Stable Supply

6. In Western countries as well, wholesale power market prices have weakened due to falls in electricity demand and in prices of gas, coal, and other primary energy sources (fuel prices) under the COVID-19 pandemic. In an increasing number of countries, growth in renewable power generation capacity has caused higher surcharges and power transmission/distribution costs, leading to higher electricity rates. In a rising number of countries or regions, it has become economically justifiable to have private solar photovoltaics capacity. In some cases, the combination of private solar PV capacity and storage batteries has become favorable.
7. In an increasing number of advanced economies, conventional power generation capacity has indicated a downtrend due to the expansion of renewable power generation capacity and weak wholesale electricity prices. On August 14 and 15, the California ISO triggered rotating outages under a tightening supply-demand balance. In France where nuclear power generation capacity shutdowns have deviated from schedules, this winter has the risk of a tightening power supply-demand balance due to abnormally cold weather. Attention should be paid to the fact that the power supply-demand balance has become vulnerable to tightening caused by abnormally warm or cold weather.
 - ① The Electric Reliability Council of Texas, Ireland, the United Kingdom and Northern Europe, which feature relatively smaller power grids, are taking additional measures as synchronous power generations (including fossil-fired power plants) that have rotational energy called kinetic force to stabilize frequency have decreased due to growth in non-synchronized generations (including wind and solar PV power plants). Given that strict

conditions are imposed on the suppression of renewable power generation, they have additionally deployed fast frequency response (FFR) capacity that can respond to frequency drops more quickly than primary adjustment capacity. Such additional measures can work to push up power generation costs. In Japan, the Organization for Cross-regional Coordination of Transmission Operators has begun to consider how best to respond to kinetic force and other technical problems under the expansion of renewable power generation capacity. Various viewpoints are required for responding to these challenges.

8. Mainly in advanced economies, electricity demand falls and weak wholesale electricity prices under the COVID-19 pandemic have discouraged investment in power facilities. As growth in investment in power transmission/distribution facilities is increasingly criticized in some countries, needs are growing for power source management measures for voltage adjustment and other purposes, rather than equipment investment measures. Japan as well may be increasingly required to adopt power source management measures to hold down electricity rate hikes through investment expansion.

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