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## **Electric Utility Industry and Renewable Energy Outlook and Challenges for 2019**

**<Summary>**

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### Spot electricity market outlook and retail competition

1. Day-ahead spot electricity prices on the Japan Electric Power Exchange tend to be linked to fuel costs for oil-fired power generation positioned as marginal supply capacity. In line with oil price hikes in 2018, the average day-ahead spot electricity price remained around 10 yen/kWh. As oil-fired power generation has shrunk, however, regions and time slots where spot electricity prices depend on variable costs for gas-fired and coal-fired power generation have been emerging. This trend is likely to be enhanced. Electricity trading volume has been increasing rapidly as gross bidding in which traditional electric utilities release some electricity for intragroup transactions to the market has been introduced along with indirect auctioning that subjects bilateral trading through grid interconnection lines to trading via the exchange.
2. Oil's share of the power mix had been kept at a certain level until 2013 but has remained below 5% since 2017. In contrast, renewable energy's share has followed an uptrend, standing at around 10% since FY2017. As oil's share shrinks, time slots in which electricity prices depend on fuel costs for LNG-fired power generation will increase. As electricity based on the feed-in-tariff system for renewable energy power generation has expanded, segmentation<sup>1</sup> in the day-ahead spot electricity market has increased. Market segmentation may increase further on FIT electricity growth and the introduction of the baseload power generation market in FY2020.

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<sup>1</sup> Market segmentation means that when nationwide transactions are established to cause transmission grid congestion, the market may be segmented into areas for area-by-area transactions at different prices.

3. Amid electricity retail competition, the rate of switching from traditional electric utilities to new retailers called power producer and supplier companies rose to 15.0% in August 2018. While stopping a rise in Kansai, the rate has continued to increase in Hokkaido, Tokyo and Kyushu. Although day-ahead spot electricity prices have continued an uptrend due to rising imported fuel prices, with FIT surcharges increasing, electricity rates have failed to rise enough to reflect spot price and fuel cost hikes, indicating that retailers' profit margins have been shrinking. In the high-voltage customers market, those using market-linked avoidable costs for FIT electricity to procure electricity for sales may be suffering losses. PPS companies are required to reconsider their business models as a drastic-change alleviation measure for avoidable costs (allowing the previous avoidable cost calculation method to be used for some cases) is set to expire on the introduction in FY2020 of the baseload power generation market as a new means to secure low-cost supply capacity.

#### Institutional reform trends

4. While retailers' profit margins have shrunk, PPS companies are set to shoulder additional costs on the introduction of non-fossil value trading and capacity markets, complicating discussions on institutional reforms. As the non-fossil value trading and capacity markets are required for environmental conservation and stable electricity supply, stakeholders should consider the government's role of enhancing public relations efforts to make it easier for additional costs to be passed on to retail prices.
5. On the electricity supply-demand balance for this winter, the European Network of Transmission System Operators for Electricity (ENTSO-E) has pointed out that some countries could see electricity supply capacity shortages if renewable energy power generation facilities operate low output. A factor behind the potential capacity shortages is that fossil-fired power plants have been retired on weak wholesale power prices accompanying renewable energy expansion. Japan will have to check whether stable supply could be secured until deliveries are started on the capacity market.

#### Renewable energy power generation

6. Renewable energy power generation capacity in Japan is expected to continue growing, though with growth decelerating. FIT power purchases have followed an uptrend, accounting for 10% of total electricity consumption or 20% of total electricity charges in some months. How to suppress rapid growth in FIT power purchases is becoming a challenge. While cuts in renewable energy power generation costs attract attention as a means to suppress growth in consumers' burden, how to nurture business operators for stable, low-cost solar photovoltaics and wind power

generation is a key challenge.

7. In a global trend, an investment boom can easily come for solar PV power generation. Solar PV capacity rapidly increases and slows down growth. At present, capacity is increasing rapidly in the United States and China. As China accounts for half of the global renewable energy power generation growth, any FIT system change that largely reduces or expands FIT electricity purchases in China can exert great influence on the global renewable energy market. In May 2018 when China announced to suppress solar PV electricity purchases, for example, solar panel supply grew excessive, with prices declining.
8. Japan conducted its first ever solar power generation suppression in the region served by Kyushu Electric Power Co. in October and November. Although the California Independent System Operator (CAISO) has continued to supply solar power generation even during such suppression, Kyushu Electric Power made maximum efforts to transmit electricity to other regions during such suppression in an internationally appropriate manner.
9. From November 2019, the period for electricity retailers' purchase of electricity from residential solar power panels under the FIT system will begin to expire. The government is considering responses to the expiration, including a guidance encouraging households to use solar electricity for themselves. In the world other than Germany and California where subsidies are offered for storage batteries for solar PV power generation, however, no progress has been seen in the installation of such batteries. Given this situation, it would be appropriate to consider mainly how electricity retailers should purchase solar electricity.
10. As well as FIT electricity generation control, next-generation networks for the effective utilization of small-capacity renewable energy power generation facilities are under consideration. Japan is considering N-1 power control and nonfarm connection systems<sup>2</sup> to ease power transmission congestion. However, ideas about how to control and communicate substation capacity at voltage adjustment points vulnerable to congestion and about efficient output control may have to be put into order.

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<sup>2</sup> The N-1 power control system allows spare transmission cables for use in the event of accidents to be connected to grids on condition of disconnection upon accidents. The nonfarm connection system allows business operators without transmission systems to be connected to grids operating below capacity on condition of disconnection in the event of constraints.