

Electric Power Policy Challenges for 2025

—How will a stable electric power supply be maintained amid increasing demand for electric power?—

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The outlook for Japan's electric power demand, and securing supply capacity

1. It is expected to be possible to secure a reserve margin of the 3% necessary minimum or higher in all areas in the winter of FY2024. Due to the contribution of the secured supply capacity in the capacity market from FY2024, the reserve margin has improved compared to before and provisions for stable electric power supply have been enhanced. However, in securing electric power supply volume (kWh), the stable procurement of fuel will continue to be important in the medium- to long-term. In supply and demand forecasts for FY2025, factors such as progress with suspending or discontinuing power plants and regular inspections and large-scale repairs overlap, so while it is expected to be possible to secure a reserve margin of the 3% necessary minimum or higher, it is not a state of affairs in which leeway exists.
2. From FY2025, a situation in which the suspension or discontinuation of thermal power increases and exceeds new and expanded facilities is anticipated. Furthermore, there is a strong possibility that electric power demand will increase in the future as a result of new and expanded data centers and semiconductor plants, and securing supply capacity, performing system maintenance and implementing demand measures will be necessary. In demand estimates for the coming decade, the most recent estimates anticipate that electric power demand volume nationwide will increase by an average of 0.4% per year from FY2023 to FY2033, which contrasts with the demand estimates of the previous fiscal year, which anticipated a 0.2% reduction on average from FY2022 to FY2032.
3. In Japan, the capacity market was introduced in FY2020 with the goal of securing supply capacity four years ahead. A capacity auction covering the supply capacity for FY2027 was held, and capacity prices in each area rose on the whole. The chief reasons being cited for the rise in capacity prices include that (1) target procurement

amounts for supply capacity increased, and (2) the level of bid prices rose.

The outlook for the U.S.' electric power demand, and securing supply capacity

4. In the U.S., demand for electric power is expected to increase due to the impact of the new information revolution and other factors. In the State of Texas, in particular, there was a peak demand of 85.5GW in 2023, but accompanying growing demand for electric power from trends such as crypto-asset mining, hydrogen production, data centers and electrification, the possibility is being raised that peak demand could double to 152GW in 2030. At PJM in the U.S., capacity prices at capacity auctions for 2025/2026 rose by as much as around nine times compared to the previous fiscal year. Anticipating future electric power demand at PJM, state governments and electricity providers are hurrying to respond toward securing supply capacity. In terms of the moves on the electricity provider side, they are beginning to explore responses that include building new power plants, putting off halting aged power plants and restarting halted power plants. The fact that price signals are clearly pointing to a shortage of supply capacity in the future is important. Although there are limits to short-term responses, whether or not the contribution of supply capacity can take place smoothly is putting the true value of market forces in the capacity market to the test.

Long-Term Decarbonization Power Source Auctions and the Reserve Power Source System

5. A Long-Term Decarbonization Power Source Auction was held in Japan in January 2024 with the goal of improving the predictability of power source investment and promoting new investment in decarbonized power sources. In the initial successful bid results, there were a large number of bids placed for storage batteries, for which the minimum bid capacity was small, while the quantity of bids for repairing existing thermal power was small, and with LNG-burning thermal power, despite competitive bidding all bids were successful. In terms of the outlook for the next and subsequent Long-Term Decarbonization Power Source Auctions, where hydrogen and ammonia thermal power sources are concerned it has become possible to factor fuel costs, including the fixed costs of upstream equipment overseas, into bid prices, but it has also been pointed out that the modified price cap is too low. Important points for further consideration going forward are that (1) because nuclear power sources are constructed over a long period of time, it would be possible to recover costs during the construction period; and (2) because with storage batteries there is a possibility of an orientation toward conservative operation if fixed costs are guaranteed,

conceivably a premise should be the transfer of usage rights to system operators and others.

6. Incidentally, in Europe, as a policy for recovering the cost of nuclear power construction during the construction period, a system known as the Regulated Asset Base (RAB) is being adopted in the UK. Additionally, as a scheme for transferring usage rights for storage batteries to system operators, Italy is employing a system known as the Electricity Storage Capacity Procurement Mechanism (MACSE).
7. Furthermore, in Japan the reserve power source system was introduced to cover FY2025 and FY2026 with the goal of preventing supply capacity shortfalls by operating inactive reserve power sources over a given period when the need has arisen for additional power capacity to be secured, such as when power sources drop out as a result of large-scale disasters or when medium- to long-term demand increases. However, in the first auction in September 2024 there were no bids whatsoever for reserve power sources. Conceivably, the reason for that is that bidders to the reserve power source system concluded they would be unable to obtain economic benefits under the current bidding conditions.

The Direction of the Strategic Energy Plan

8. The recently released draft of the 7th Strategic Energy Plan presented a forecast for the amount of electric power that will be generated in FY2040. That forecast factors in the increase in demand for electric power that will accompany the increased construction of data centers and other facilities. The Plan advocates making maximum use of renewable energies and nuclear power in order to move ahead with the decarbonization of power sources.

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