Japan's Energy Transition: Reinforcing Interconnections and Flexibility for a Decarbonized Future

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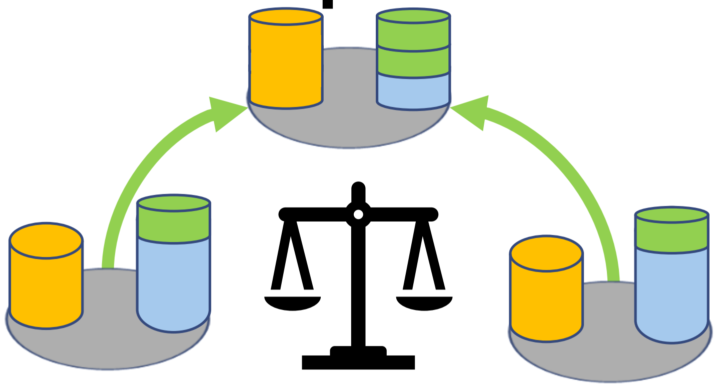
Organization for **C**ross-regional **C**oordination of **T**ransmission **O**perators

- Japan set out to transform the traditional vertically–integrated regional electricity system to the market-based and nationwide electricity system from experience of scheduled power outages after the Great East Japan earthquake in 2011.
- OCCTO was established in 2015 by legislation to lead this reform.

OCCTO contributes to security and efficiency in

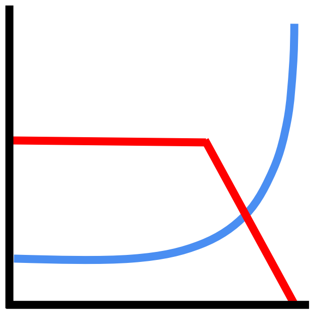
Short-term

By Cross-Regional Grid Operation



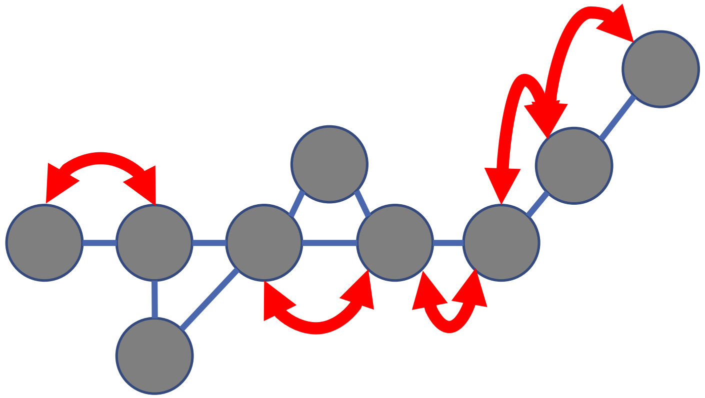
Mid-term

By the Capacity Market

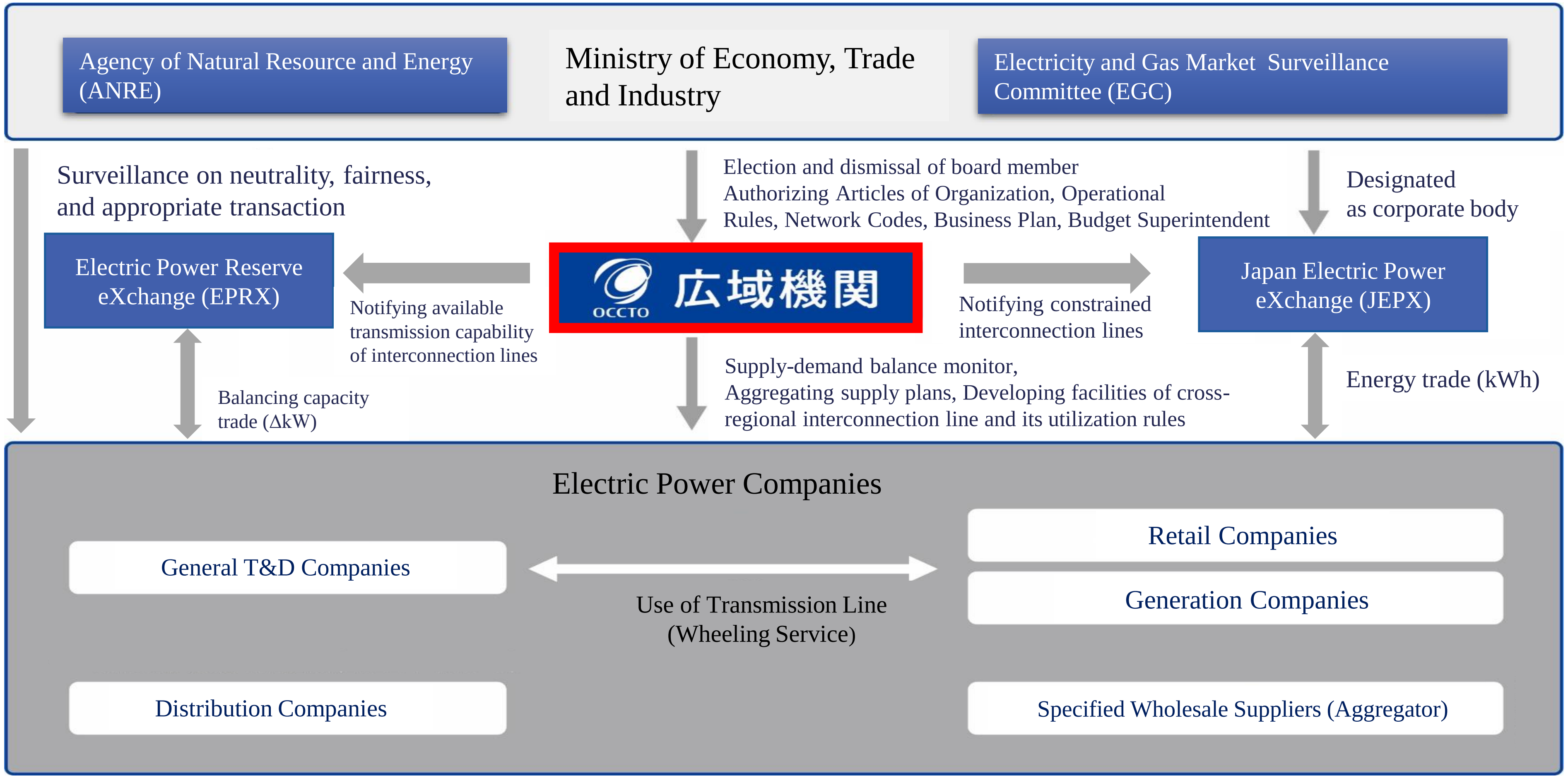


Long-term

By Grid Planning

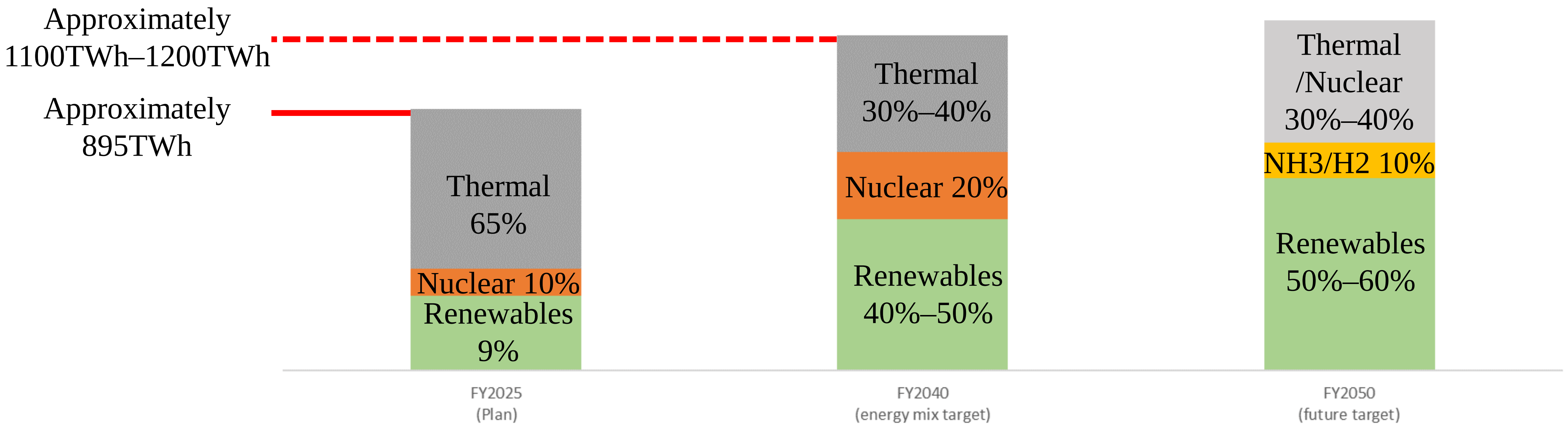


- OCCTO is an independent agency whose objective is to maintain a stable power supply and streamline the power supply system nationwide.



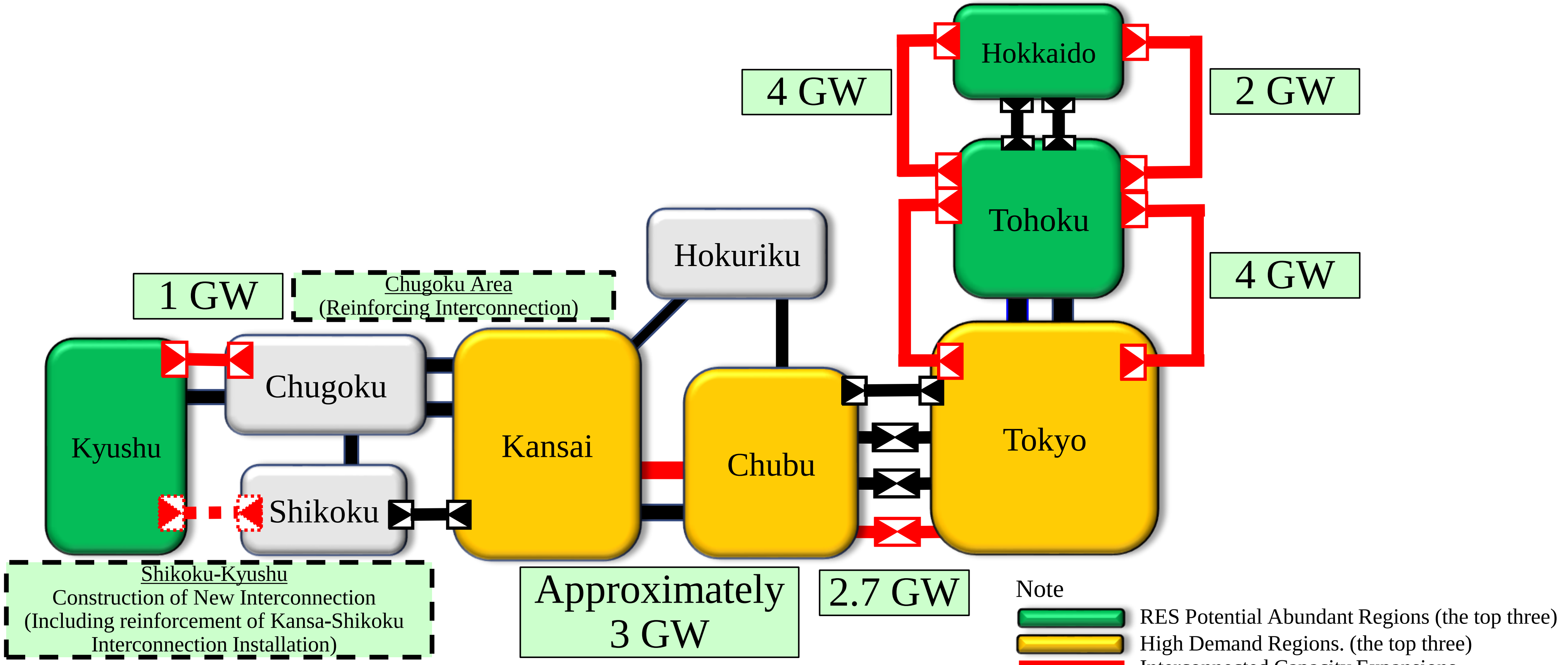
Ref. Profile of OCCTO
https://www.occto.or.jp/en/about_occto/

- Japan declared to achieve Carbon Neutrality towards 2050 based on the S+3E(Safety + Energy Security, Energy Efficiency and Environment) principle.
- For this transition, a large scale integration of RES (Renewable Energy Sources) and securing balancing capacity are indispensable.
- OCCTO is addressing this challenge by planning reinforcement of interconnection lines and procuring dispatchable resources.



Ref. Strategic Energy Plan (February 2025)
https://www.enecho.meti.go.jp/category/others/basic_plan/pdf/2025_strategic_energy_plan.pdf
Ref. Aggregation of Electricity Supply Plans for FY 2025(June 2025)
https://www.occto.or.jp/en/information_disclosure/supply_plan/250630_aggregation_supplyplan.html

- Abundant RES potential in Northern and Western parts of Japan is not fully developed partially due to a lack of sufficient interconnection capacity to demand centers.
- OCCTO plans to iron out the bottlenecks by large scale grid expansions and fosters integration of RES.



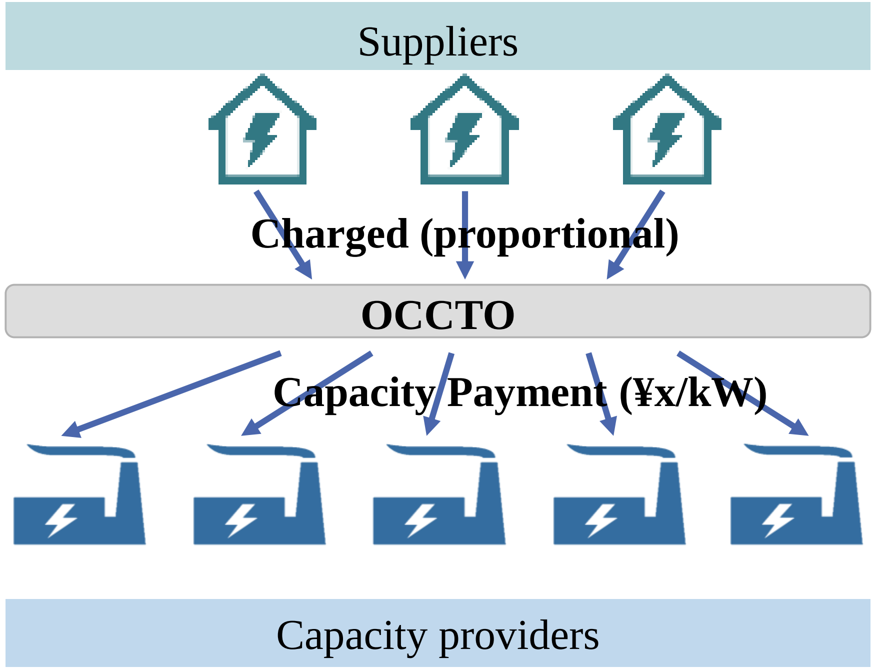
Ref. Related Papers from OCCTO
https://www.occto.or.jp/en/information_disclosure/miscellaneous/presentation_at_cigre_conference_2024.html

- Power resources can recover its fixed costs through the two auctions.
- These mechanisms ensure supply and dispatchable capacity in delivery year and provide predictability in investment.

The Capacity Market

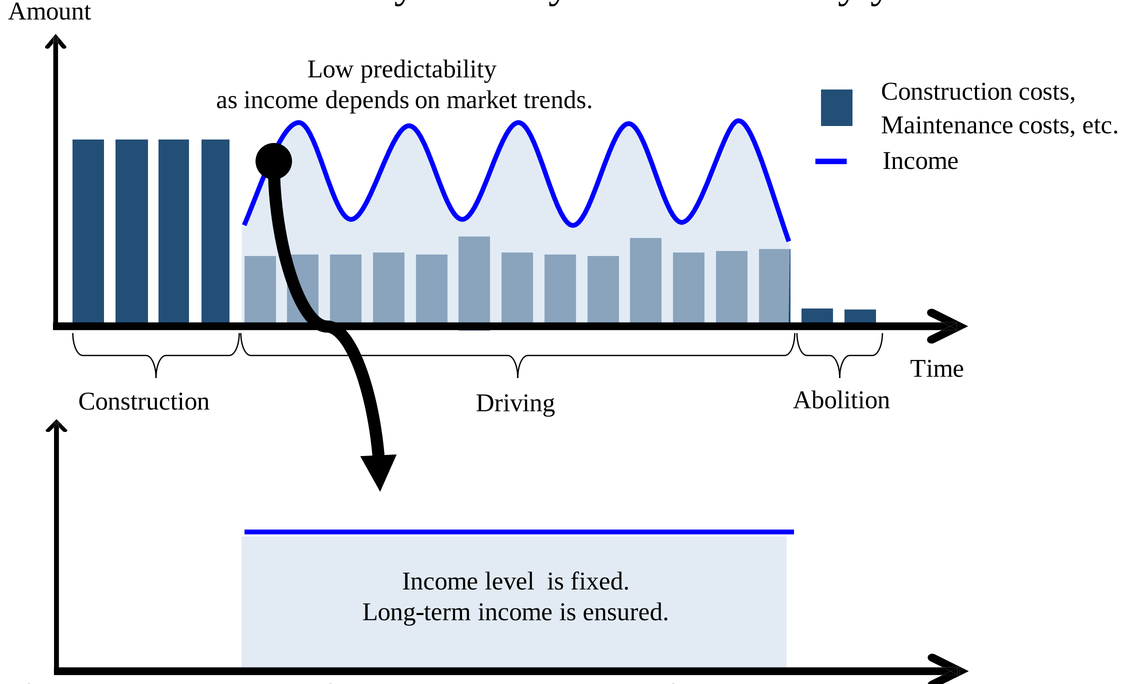
The Main Auction

- ✓ Auction(4 years before delivery year)
- ✓ Payment on delivery year



The Long-term Decarbonized Capacity Auction

- ✓ Decarbonized power providers receive fixed-cost capacity income for 20 years. Payment on delivery year



If total income including from other market exceeds fixed cost and variable cost, approximately 90% of its profit must be refunded.

By reinforcing interconnections and securing capacity with flexibility, OCCTO helps pave the way for a decarbonized Future.

Thank you for listening.

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