

# Paris Session 2022



## Japanese Connect and Manage

C6- Active distribution systems and distributed  
energy resources

PS2/Q2.4

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Group Discussion Meeting

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## p Japanese Connect and Manage ( for Transmission systems)

- ✓ **Question 2.4:** *Are there any actual cases of flexibility utilization, including local flexibility?*
- Currently, **full-scale NF has not been introduced in Japan**, but implemented on a trial basis in some heavily congested transmission systems.
- In the **high-voltage local supply system (154 kV, 66kV)**, applications for PV interconnection had been suspended due to system congestion of reverse power flow in some areas, but with aim of resuming cooperation with PV company as soon as possible, NF within the area covered by **TEPCO was implemented on a trial basis**.
- High-voltage, middle-voltage, and low-voltage customers with an interconnection capacity of 10 kW or more; NF applications have been resumed from April 2021 **on condition that output suppression devices are installed**.
- Since it takes about 10 years and enormous cost to reinforce the transmission system, NF, which can alleviate congestion by suppressing it only for a certain limited time of the year, is also useful from the perspective of expanding the acceptance of renewable energy in transmission system.

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# Overview of non-farm system configuration for transmission systems

## 2 Demand and supply control system

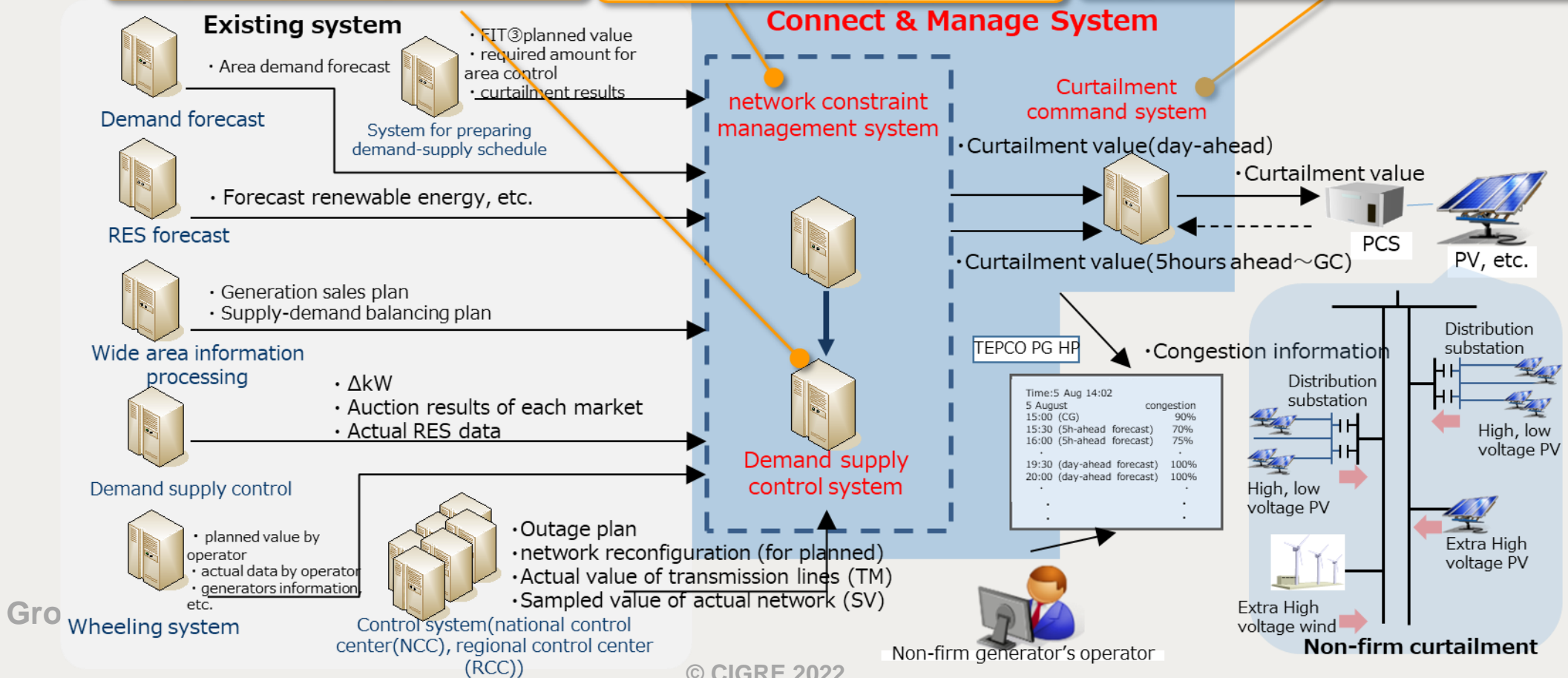
- Determine the amount of curtailment to ease the shortage of curtailment margin
- Determine the amount of curtailment of firm and non-firm generators by coordinating with network control

## 1 Network constraint management system

- Forecast power flow
- Calculate the required amount of curtailment by identifying congestion area
- Determine the amount of curtailment of non-firm generators by coordinating with demand-supply control

## 3 Curtailment command system

- Send the amount of curtailment to firm and non-firm generators
- Conduct online curtailment via the Internet or private lines



## p Japanese Connect and Manage (for Distribution systems)

- On the other hand, as for 6.6kV distribution system; despite a large amount of available capacity, system reinforcement is better than NF application because initial and operational cost is less, operational work is less when system configuration changes. System reinforcement work can be done with a shorter period of time than transmission system (within one year). Merits of system reinforcement is greater. (as described in paper 10595)
- Furthermore, with Expected introduction of RES such as BESS and HP to distribution systems, if curtailment amount of RES can be reduced by fully utilizing flexibility provided by such renewable sources, flexible Connect and Manage in distribution systems can be realized in the future.

