Keidanren Policy & Action

Electricity Policy to Realize Society 5.0 with Carbon Neutral

Second Proposal on Rebuilding Japan's Electricity System (Summary)

March 16, 2021
Japan Business Federation

Background

- The first proposal, "Rebuilding Japan's Electricity System" (April 2019) identified **four crises** in the electricity sector and the **importance of investment**.
- The government has made progress since then, with passing of the **Act for Establishing Energy Supply Resilience**. However, **issues requiring further consideration** have come to light.
- Declaration of the **2050 carbon neutrality goal** presents **a new set of S+3Es challenges** as it seeks to become carbon neutral.

Future vision

Electricity system for achieving carbon neutrality by 2050

- **Government should consider** multiple scenarios **combining long-term fixed power, flexible (load following) power, variable power, and power storage** that take technological trends into account
- **Transmission facilities should be expanded and rebalanced in preparation for massive deployment of renewables** and **distribution facilities built to enable use of distributed resources**
- **Increased electrification is an essential** part of decarbonization (Government estimates increase from 26% in 2018 to 32–38% in 2050 as reference values. Generation at that time will be 1.3–1.5 trillion kWh)
- When decarbonizing, **government should pursue green growth at minimum cost to citizens and at maximum return**
- Government should solve problems (power market design, securing fuel, etc.) revealed by last winter's power market price spikes and **design markets where the creativity of diverse players can be utilized**

Providing enabling conditions to achieve the vision: Issues in specific areas and policy directions

Promote investment in new construction of power sources

Promoting construction of new power sources, including zero-carbon sources, is essential considering the carbon neutrality goal. However, spot market prices have been low, impeding investment decisions.

- Current **capacity market** does not provide enough predictability for investment in new construction ⇒ **Mechanism for securing longer-term capacity income needed**
- **FIP** scheme is effective for ensuring new construction of sources still acquiring price competitiveness ⇒ Use **FIP** as **support to increase predictability for securing appropriate income**

Renewables

Source most desired for achieving carbon neutrality

⇒ **Make major power source through short/medium and long-term measures**

- Short/medium term: Shift basic policy on FIT scheme and accelerate installation focusing on sources expected to be competitive. Meanwhile, conduct regulatory reassessment (e.g., ensuring grid capacity for offshore wind projects by the government)
- Long-term: Develop renewable energy technologies (e.g., next-gen solar cells, floating offshore wind) and technological preparation for introducing at scale (e.g., maintaining grid inertia)

Nuclear

Decarbonized source with established technologies

⇒ **Continuous use on the major premise of ensuring safety**

- Steadily restart and increase capacity factors
- Consider operating 60+ year-old reactors, exempt downtime from age
- Articulate policy on replacement/new/expansion construction, and maintain supply chains
- R&D on new reactor types (e.g., SMR)
- Government-led back-end strategy

Thermal

Flexible, major power source today

⇒ **Aim for smooth transition toward decarbonized thermal**

- Promote innovation in CCUS and single-fueled hydrogen/ammonia to support net-zero carbon
- During transition, increase efficiency with hydrogen co-firing, phasing out inefficient coal, etc.

Storage (pumped, battery)

Key technology for filling time difference in supply/demand as solar and wind ramp up

⇒ **Essential to expand use**

- Clarify policy positioning in legal system, proper considerations related to wheeling charge system
- Develop batteries; regulatory reforms

Distributed resources (rooftop solar, EVs, thermal storage, hydrogen, DR, etc.)

Necessary component for advancing S+3E given decentralization and digitalization trends

⇒ **Harness potential resources and integrate them with electricity system**

- Support increased investment toward cultivating new distributed resources, such as digital technologies (Energy management system and IoT which supports it) and heat sharing infrastructure
- Design market systems to enable participation of resource aggregators
- Develop environment and standards for controlling EV charging/discharging and secondary use of EV batteries

Networks

Need investment in both mass replacement of aging infrastructure and upgrading

- Implement steady and efficient investment in networks based on cost-benefit analysis following the Master Plan
- Promote investment in R&D and new technology rollout by designing wheeling charge system that provides stability and predictability
- Design wheeling charge burden so that burden is commensurate with benefits received, taking changes in power flow into account
- Manage and integrate diverse resources and improve facility maintenance through digitalization. Develop communications infrastructure and data platforms to support digital transformation of the electricity sector

Conclusion: Outlook on future electricity business

- The 2050 carbon neutrality declaration shifted the decarbonization effort to a higher gear. **Decarbonizing electricity** is a precondition to the future vision held by various stakeholders, and public expectations are high. **Robust investment to support the transition of our electricity system** has never been more important.
- In an era of increasing **digitalization and decentralization**, trends meant to accelerate decarbonization, connecting and coordinating diverse resources--and creating value in the process--will form the heart of electricity business. We **must pursue a new vision of electricity business, in which business models are co-created with various stakeholders.**
- The time is now for the government to implement policies for building a new electricity system and business. The business community will spare no effort to achieve this aim.