



Hiroshi Tanae
President of Power Network Company

Mission Statement

To prosper with local communities and continue earning the trust of our customers.

–We ensure safety, a steady supply, and economic efficiency at the same time. We ensure neutrality and fairness and provide the right service for each customer.–

The situation surrounding the power network business currently looks turbulent. More renewable energy sources have been introduced and the legal separation of power transmission/distribution (i.e., separation of the grid division from utility companies) has been determined. Despite all this, we aim to maintain a steady supply of electricity to the six prefectures in the Tohoku region and Niigata Prefecture, as well as continue ensuring neutrality and fairness and providing the right service for each customer, thereby growing and prospering with local communities and earning greater trust from our customers.



Repairs to a steel tower deformed under the weight of snow and emergency high-voltage power supply cars to maintain electricity supply (Yamagata Prefecture, December 2017)

Efforts to Maintain a Steady Supply

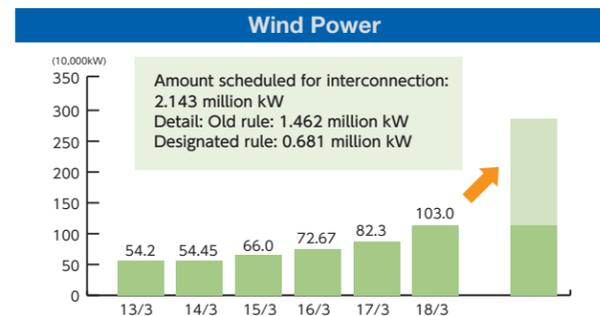
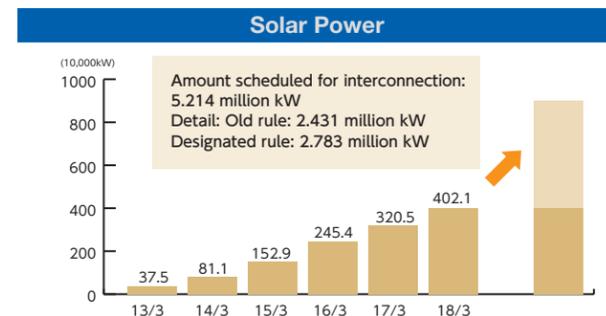
To steadily deliver electricity to our customers, we undertake meticulous maintenance work that includes daily patrols and inspections in power network facilities in order to prevent power failures caused by malfunctions. We also hold various training programs for our employees that are designed to improve their skills needed for action during a power failure due to a major disaster (e.g., an earthquake or typhoon) so that electricity supply will be quickly restored. Moreover, many of our facilities are aging and we are planning renovation and maintenance suitable for these facilities as measures to appropriately manage our aging infrastructure.

Efforts to Use More Renewable Energy Sources

We are handling customers' requests for connection to our power lines for renewable energy (e.g., solar and wind power), which is rapidly increasing in volume. However, the use of renewable energy involves a technical issue, that is, the output varies depending on the weather. Hence, we have installed large storage batteries at the Nishi-Sendai Substation and the Minami-Soma Substation to control fluctuations in frequency and system voltage.



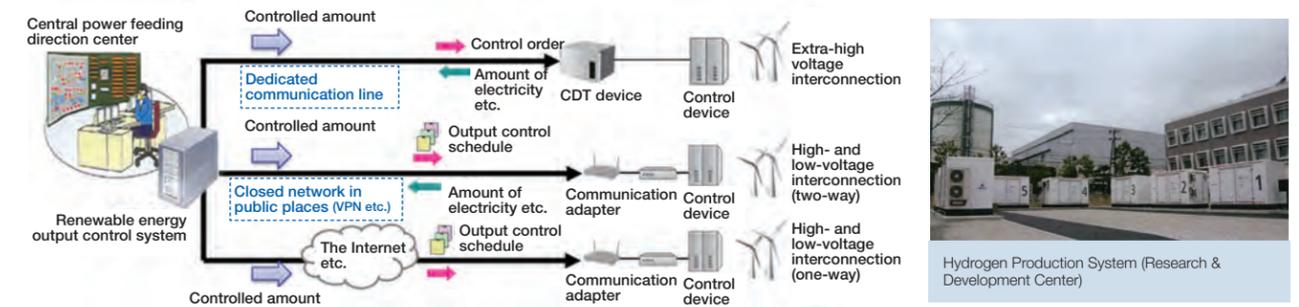
Storage battery system at the Nishi-Sendai Substation (lithium-ion batteries)



The amount of renewable energy that can be interconnected is limited. To increase the amount, we support the development and verification testing of the remote output control system by the research and development project that the New Energy and Industrial Technology Development Organization (NEDO) launched, as well as the advancement of technologies to predict and estimate the output of our solar and wind power

generation facilities. We have also installed a hydrogen production system at our research and development center in Sendai to conduct verification tests on measures to control fluctuations in output. We will continue to ensure good quality electricity and make efforts to further increase the use of renewable energy.

Conceptual Diagram of the Remote Output Control System



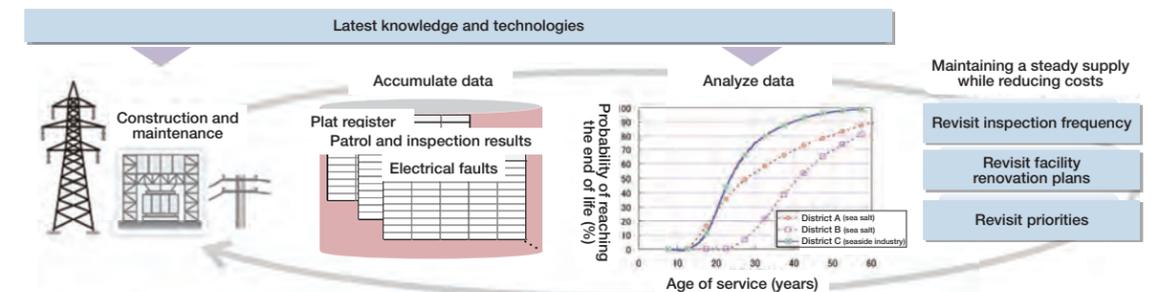
Hydrogen Production System (Research & Development Center)

Efforts to Reduce Costs

We are making efforts to reduce the cost of work on our facilities as well as maintenance done to maintain a steady supply of electricity. These efforts include adopting new technologies, carefully defining the scope of construction, streamlining construction methods and specifications, accepting competitive bids for more projects, and buying materials from affiliates and other business partners at lower rates. Furthermore, we apply the latest knowledge and technologies to remaining life assessment and the advancement of inspection technologies and revisit inspection frequency and facility renovation plans in order to reduce expenses related to capital investment. We will continue to maintain a steady supply while cutting costs through these actions.

Our Major Efforts for Higher Efficiency (Capital Investment-related)

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| Streamline procurement | Enhance the efficiency of order placement | (1) Place orders jointly with external parties to make purchases at lower rates (2) Adopt the Value Engineering (VE) approach to make purchases at lower rates |
| | Generalize/standardize designs and specifications | Standardize the specifications of system protective relays to enhance the efficiency of design and jointly place orders |
| Revisit what exactly construction does | Use new materials and/or methods | (1) Improve the shape of clamp covers to reduce costs of materials (2) Use plastic lumber for embankment materials at temporary roads for power transmission work |
| | Enhance the efficiency of equipment that comprises systems | Change the routes of distribution lines across mountainous areas to hold down lumbering expenses for later years |
| Enhance the efficiency of facility maintenance | Enhance efficiency by extending the time between inspections | Extend the time between inspections to detect faulty suspension-type insulators to reduce inspection expenses |
| | Enhance the efficiency by extending the time between replacement of equipment | Increase reuse of transformers to reduce costs of materials |



Efforts Toward Higher Efficiency Using Drones

We are working on research to develop technologies that use IoT devices and AI, such as drones, wearable devices and smart devices, as part of our efforts toward higher efficiency. The use of drones will help collect information about the local situation quickly and save workers' labor. Hence, we are working on verification tests of drones for information gathering in places made inaccessible by disasters or other emergencies as well as for regular inspections of power network facilities.

