

## Ensuring Stable Supplies

The J-POWER Group produces electricity at 78 facilities throughout Japan, including hydroelectric, coal-fired thermal, and wind power stations, and transmits it through its power transmission and substation facilities, supporting people in their daily lives. Backed by a highly trustworthy technical capability built up over a half-century of development and operations, it will continue to supply electric power in a stable and efficient manner, bringing peace of mind to people's daily lives.

### Contributing to Stable Supply

The J-POWER Group's power generation facilities have the capacity to ensure stable supplies. Its power transmission and substation facilities form part of the system formed by electric power companies nationwide, linking different regions to create broad-ranging cooperation, and thereby helping to ensure stable supplies.

#### Steady Development of Stable Power Sources

J-POWER is Japan's largest wholesale power company with a total output capacity of 16.38 GW within Japan as of March 31, 2007, giving it a market share of approximately 7%. The electric power generated through these facilities, together with power generated within Japan by other Group companies, is delivered to consumers through general electric utilities (regional power companies) throughout the country.

J-POWER is currently constructing the Isogo New No. 2 Thermal Power Station (in Kanagawa Prefecture; 0.6 GW capacity), scheduled to start operations in July 2009. (Please see the feature on page 10.)

In addition, J-POWER is undertaking the construction of its first nuclear power station, the Ohma Nuclear Power Station (in Aomori Prefecture; 1.383 GW capacity). It is due to start operations in March 2012. (Please see page 35.)

Through these two projects designed to develop large-scale, stable sources of power, J-POWER's output capacity will increase by some 2.0 GW. The additional capacity is expected to make a significant contribution to the stability of power supply in Japan. J-POWER will continue with the steady expansion of its power generation plant and equipment and other electric power facilities.

#### Transmission, Substation, and Telecommunications Facilities Linking Electricity in Japan

J-POWER owns and operates transmission lines of approximately 2,400 km and eight substations and converter stations that link disparate regions of Japan together. In this way it plays a major role in the overall operation of Japan's electricity grid. It also operates essential facilities that support the wide-area power transmission in Japan, including extra-high-voltage transmission lines that connect Japan's main island of Honshu with the other main islands of Hokkaido, Shikoku, and Kyushu, and the Sakuma Frequency Converter Station, the first facility in Japan that has made possible the transmission of electricity between the different frequencies of Eastern Japan (50 Hz) and Western Japan (60 Hz).

In addition, J-POWER operates a telecommunications network comprising components such as highly reliable microwave radio circuits and fiber-optic cables, which enables it to conduct the remote monitoring and operation of its electric power facilities. Its usage of sophisticated IT underpins the stable operation of the country's electricity grid.



Power cables are laid across the Seto Ohashi Bridge, creating the Honshu Interconnecting Transmission Line linking Honshu and Shikoku.

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#### Contributing to Power System Stability—Power Frequency Regulation Control

In order to provide stable supplies of electricity to meet demand, suppliers have to adjust the amount of electricity output in a timely manner as demand changes constantly, so as to balance demand and supply.

To cope with short-term abrupt volatility of demand that cannot be handled by nuclear or thermal power stations, large-scale hydroelectric power stations, and pumped-storage power stations automatically adjust output swiftly and contribute to stable supply of electric power through capabilities such as automatic frequency control and online control by electric power companies. It is of particular note that a variable-speed pumped-

storage power generating system is used at the No. 2 unit of the Okukiyotsu No.2 station, and it enables power frequency regulation control even in pump mode during nighttime, when the power system has poor capacity to adjust power generation volume.

These facilities can reach full power generation in a short time after a startup command is given, even when they have been in stand still condition, so they will be able to play a key role in providing emergency supply capacity if problems arise at other stations. By taking advantage of these characteristics, J-POWER pumped-storage power stations such as Okukiyotsu, Shimogo, and Shintoyone, and

large-scale hydropower stations such as Sakuma, Okutadami, Tagokura, and Miboro operate in a way that contributes to the stability of the power system.



Okukiyotsu No. 2 Power Station (Variable-speed pumped-storage generating system)

### Contributing to the Stable Operation of the Power System

To operate J-POWER's power generation and transmission facilities stably and efficiently, the Central Load Dispatching Center works in coordination with the power system operation conducted by related electric power companies. It has a 24-hour operating structure for issuing appropriate operating instructions (load dispatching) to our four regional control centers and thermal power stations.

In addition, beyond this regional structure J-POWER contributes to the stable operation of the entire national power system through the operation of facilities such as the Sakuma Frequency Converter Station and the electric power interconnection facilities that link Honshu and Hokkaido (Hokkaido-Honshu HVDC Link).

### Facilities Maintenance

The J-POWER Group possesses various types of facilities in such fields as power generation, power transmission, transformation of electrical energy, telecommunications, civil engineering, and construction. To ensure stable supplies of power, J-POWER aims for the constant improvement of the high-quality maintenance work that is conducted to maintain the functions of these facilities, prevent malfunctions and accidents before they can occur, and minimize environmental load.

At thermal power stations, the constant emphasis is on the stability of operations. On the hardware side, reliability is ensured through day-to-day control to identify equipment abnormalities promptly and by such means as regular overhaul inspections of operating facilities under the system of "Autonomous Periodic Safety Inspection," while on the software and knowledge side the measures employed include the use of simulators to maintain and enhance operators' operating skills and a variety of drills to prepare for possible natural disasters and accidents. Other steps taken to ensure year-round stable power supplies include the conduct of special patrols every year, particularly during the summer

months when the need for electric power is high.

Hydropower stations are subjected to inspection tours, regular inspections, and repairs. By maintaining and restoring the functioning of plant and equipment through prevention and predictive maintenance based on these activities, the potential for accidents and other problems is avoided. In addition, the four regional control centers monitor equipment round the clock, to ensure that any incidents affecting equipment at any of the 59 hydropower stations nationwide are addressed promptly. Also, at the dams used in hydropower production we monitor information relating to the associated river systems, including rainfall, river-water level, and meteorological data.

Transmission and substation facilities are subjected to harsh natural conditions such as wind, snow, lightning, and sea salt contamination, making it essential to deal appropriately with environmental changes and aging in the affected regions. The state of these facilities is constantly monitored by means of patrols and detailed inspections, and all necessary repairs are effected in order to maintain their functions and ensure stable power supplies.

The equipment-maintenance techniques and technologies built up in each of these fields are provided to employees through hands-on experience and training for the purpose of preventing human error, for human-resource development, and for the maintenance and enhancement of technical capabilities.

### Emergency Response

To be prepared for events of disaster or accident, the J-POWER Group has established information contact routes with the regions in which its power generation and substation facilities and transmission lines are located, and it also operates a mutual assistance structure with all related units. Other measures include the stockpiling of supplies for post-accident recovery and the conduct of training for dealing with accidents.

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### Disaster Prevention Structure and Disaster Prevention Task Force

J-POWER is an electric power supplier with responsibility for the nation's vital lifelines, and it is a designated public corporation under the Disaster Countermeasures Basic Law and the People Protection Law. In view of this, it has long been developing disaster prevention measures, and has aimed to be a company that is resilient to disasters and able to recover quickly.

In-house manuals, including a set of rules on disaster countermeasures and protection measures for the people, have been prepared, and the Company has built a disaster prevention structure that encompasses head office and all Group units systematically.

In addition to the creation of this structure, disaster drills are held regularly in every unit, and practical experience is acquired so as to ensure that appropriate steps are taken when the necessity arises. Also, given the frequent occurrence and growing severity of natural disasters since the

Chuetsu Earthquake in Niigata Prefecture in 2004, steps have been taken to institute comprehensive and effective disaster prevention measures for J-POWER's entire power generation, transmission, and substation system. To that end, a Disaster Prevention Task Force was established in 2005 as a cross-functional organization straddling all related divisions. Taking effective advantage of the Company's knowledge in such spheres as civil engineering technology, assumptions about damage and impact analyses have been made with regard to every unit of J-POWER's plant or equipment, and countermeasures have been studied and implemented.

Specifically, J-POWER has studied all of its locations and implemented countermeasures with regard to potential earthquakes that are particular causes of anxiety, such as the Tokai earthquake, the Tonankai and Nankai earthquakes, and an earthquake directly below the Tokyo metropolitan

area. It also is taking steps to raise the level of disaster prevention capability on a Company-wide basis.

In addition to these activities, J-POWER will continue its vigorous efforts to implement disaster prevention measures. Its aim is to minimize damage in the event a disaster occurs and to fulfill its social responsibilities as an electric power supplier. We are committed to enhancing corporate value by building a corporate fabric that is resilient to disasters.



Disaster Prevention Task Force activity