

A reliable supply of electricity

Kansai EP has developed an extremely stable, dependable system for providing a continuous supply of electricity day after day, month after month, year after year.

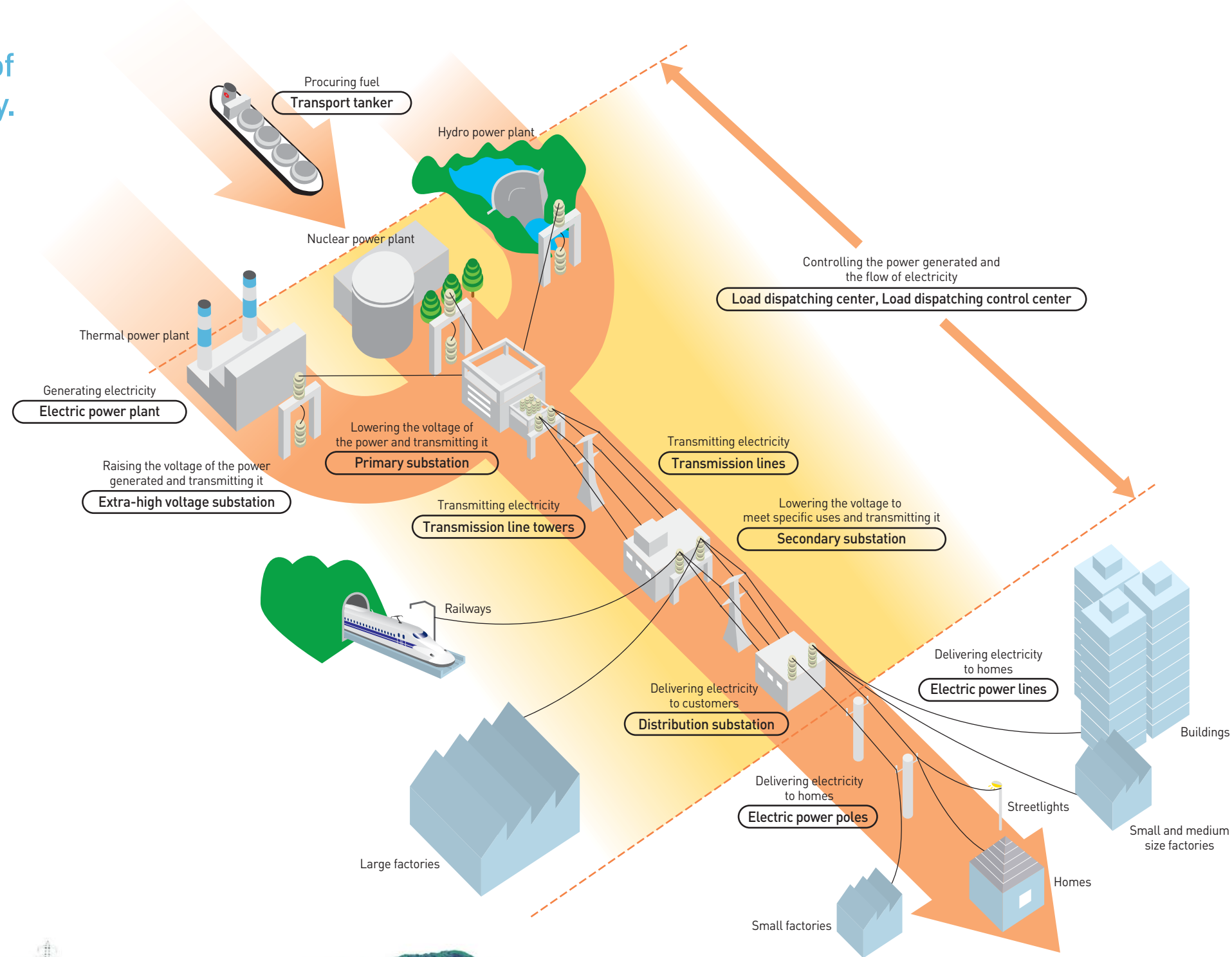
Each and every light brightens somebody's home.
That's what motivates us.



Dependable delivery of high-quality electricity.

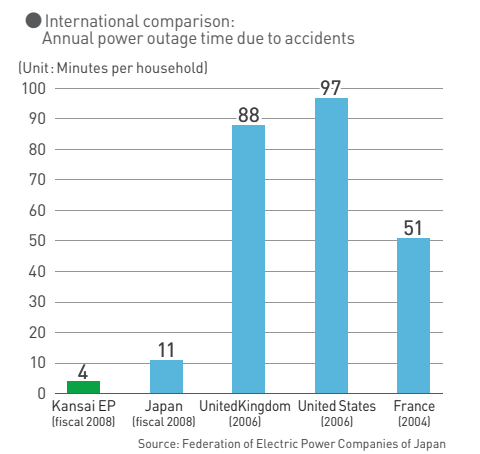
From procuring fuel to supplying homes, we make every effort to assure total reliability.

Supplying electricity to customers in a safe, reliable manner is our unchanging wish. Every employee at Kansai EP is part of a fully integrated system that extends from procuring energy resources to operating power plants to delivering electricity to our customers' homes and businesses. As part of our commitment to society, we follow a long-term approach that makes safety the No. 1 priority in generating and transmitting power. We've set in place rigorous systems for preventing and responding to accidents, so that our energy is as safe as it is dependable. Kansai EP is also continually working to improve energy efficiency, so there's less impact on the environment.



Working 24/7 to deliver a stable supply of high-quality electricity.

Our customers need electricity 24 hours a day, seven days a week. That's why you'll find Kansai EP at work 24/7 maintaining the transmission lines and substations that connect our power plants with our customers' homes and businesses. We continually inspect and maintain our systems and equipment, replace them as needed, and use new technology for grid operation. These 'round-the-clock' efforts to keep our facilities operating at peak condition have helped Kansai EP achieve world-class performance in delivery of electricity.



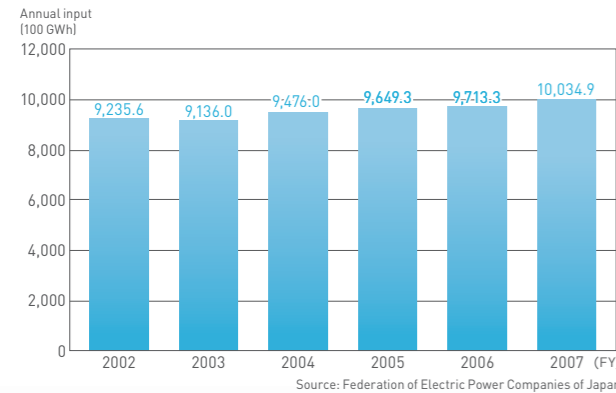
Transmission lines bring our customers electricity. Some 14,000 km of transmission lines help make our steady supply of electricity possible.

Drawing on different sources to meet the growing demand for electricity.

As energy demand grows, energy security becomes even more vital.

In FY 2007, for the fourth year in a row, Japan set record highs in gross system input. This trend is expected to continue. Since Japan produces only 4% of the energy it needs and relies on imports for the rest, securing stable energy resources is an issue of vital national importance.

● Gross system input in Japan

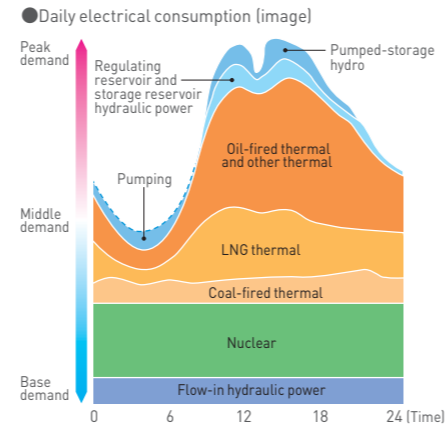


We have devised an "optimal generation mix" that draws on a variety of sources.

Kansai EP aims to secure energy resources that will remain stable regardless of political and economic conditions, whether domestic or international. We have worked to draw on a variety of resources, so we don't depend excessively on any particular one. Our goal is to find a combination that's optimal not only in regard to energy security,

but from a comprehensive viewpoint that includes environmental impact and economic efficiency.

We call this balance of resources the "optimal generation mix." For Kansai EP, the optimal mix is to use nuclear power as the core energy source and supply it with other sources, such as thermal power, to meet demand during peak periods.



A Kansai EP LNG project aims to secure stable, long-term fuel supply.

Demand for energy in developing countries such as China and India is growing fast – and with it, demand for energy resources is booming worldwide. One key resource is LNG, or liquefied natural gas. LNG is used as the main fuel for generating thermal power due to its advantages in supply stability and low environmental impact. To secure a stable, long-term supply of LNG, Kansai EP is taking part in the Pluto LNG Project, located offshore Karratha in Western Australia. The company has also purchased a tanker, the LNG EBISU, for transport. This project, plus a vertically integrated system that extends from gas development to receiving facilities, is helping Kansai EP stay ahead of Japan's rising energy demands.

Providing reliable power begins with procuring stable resources.



● Pluto construction site (Pluto LNG Project)



● West Mynkuduk uranium mines (Kazakhstan)

Uranium mines are developed to procure fuel for nuclear power generation.

Fuel condensed from natural uranium is used in nuclear power plants to generate electricity. Because Japan does not have its own uranium, it is vital to secure a stable source from overseas. This has led Kansai EP to take part in uranium mine development projects in the Republic of Kazakhstan, which holds the world's second largest uranium reserves.



● Press conference about uranium mine development projects



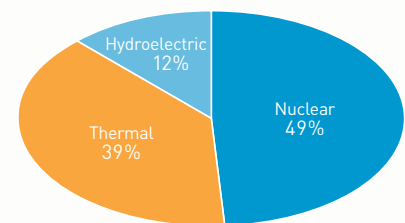
■ The LNG EBISU, Kansai EP's first tanker

About half of the Kansai's electricity comes from nuclear power plants that emit no CO₂ during power generation.

Putting safety first in nuclear power generation.

Kansai EP continues to take to heart lessons learned from the unfortunate 2004 accident at Unit 3 of the Mihama nuclear power station. We are continuing to implement reforms to strengthen our accident prevention and response systems, and we are redoubling efforts to carry out all appropriate measures to ensure the absolute safety of our nuclear power stations. These efforts include measures to carry out construction work to address aging facilities at nuclear plants that have been in operation for more than 30 years, and taking steps to prevent or minimize potential damage from earthquakes.

● Kansai EP power generation

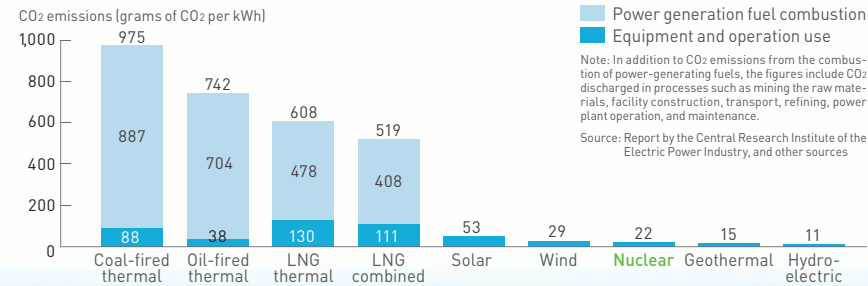


Source: Kansai EP survey (average over the past five years; includes power received from other providers)

Around half of the Kansai's electricity comes from nuclear power.

When the Mihama nuclear power station went on-line in 1970, Kansai EP became Japan's first electric company to operate a nuclear power plant with a pressurized water reactor. Today nearly half of the Kansai's electricity comes from three nuclear power plants – at Mihama, Takahama and Ohi, in Wakasa, Fukui prefecture. Kansai EP considers nuclear power a stable source of high-quality electricity and the core of our optimal generation mix. We are committed to keeping safety the No. 1 priority at all times in the operation of our nuclear power stations.

● CO₂ emissions



Nuclear power means stable, high-quality electricity – and zero CO₂ emissions.

When fossil fuels are burned to produce energy, CO₂ is released. That's not the case with nuclear power. A nuclear power plant uses thermal energy released when uranium undergoes fission – a process that does not emit CO₂. Nor does nuclear fission release sulfur oxides or nitrogen oxides, causes of air pollution. In that sense nuclear power generation has little impact on the environment. Generating electricity from natural energy sources such as hydro, solar and wind power – does no harm to the environment, but there are



● The Central Control Room in a nuclear power plant

other limitations. For example, there are few areas left that can support large-scale hydroelectric power generation. And because solar and wind power generation are greatly affected by weather conditions, and utilization efficiency is still quite low, they are not yet viable means of producing a stable supply of electricity. Accordingly, Kansai EP will continue to use CO₂-emission-free nuclear power to answer the region's needs for a dependable long-term supply of electricity.

Plutermal power—effectively reusing a valuable resource.

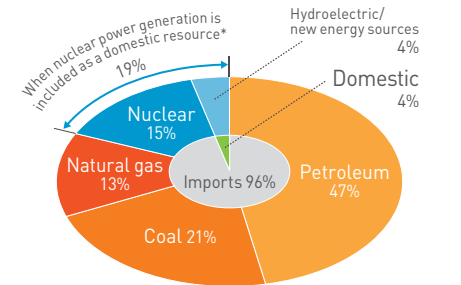
Recycling uranium left over from nuclear power generation.

About 95% of spent uranium fuel from nuclear power plants can be reused. Plutermal refers to the processes of extracting plutonium from spent fuel, mixing it with uranium to produce a recycled fuel (MOX fuel) and reusing it in existing nuclear power plants. For Japan, where energy sources are scarce and the self-sufficiency rate in the energy supply is only 4%, plutermal is vital for ensuring efficient utilization of uranium resources and a stable supply of energy. Kansai EP is promoting a plutermal program at the Takahama Power Plant, with the highest priority on safety.



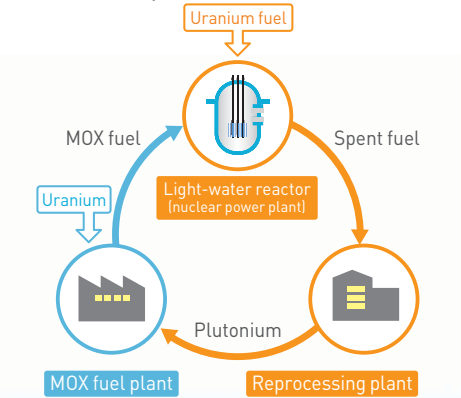
● Takahama Power Plant

● Primary energy in Japan, which relies on imports for energy resources



*Once fuel is inserted into a nuclear reactor, the plant can produce electricity continuously for more than one year without replacing the fuel. Spent fuel can also be recycled. Therefore, nuclear power generation can be regarded as a "quasi-domestic energy source."
Source: Energy Balances of OECD Countries 2004-2005, IEA

● Plutermal cycle



Drawing on a variety of technologies to reduce CO₂ emissions with ecological thermal power generation.

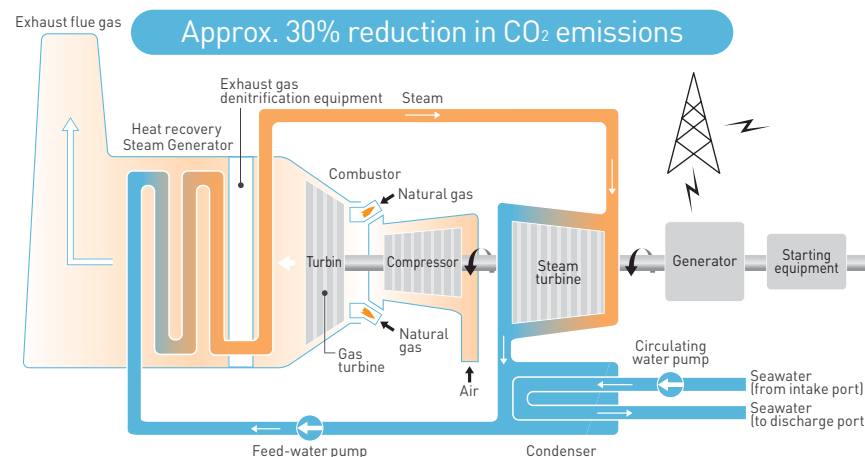
Our ace in the hole: Thermal power lets us respond to fluctuating demand.



● Combined cycle electric power facility (Sakaiko Power Plant)

Thermal power is a key to our ability to respond flexibly to the continually fluctuating demand for power. During peak demand periods, thermal power accounts for 25% to 33% of our total output. When demand is low, generation is halted. While fossil fuels such as oil and coal account for some of the fuel used in thermal power generation, more than 60% of the fuel used is LNG, with its very low CO₂ and nitrogen oxide emissions.

● Combined cycle power generating system



ECO Combined cycle system at Sakaiko Power Plant: Higher efficiency, lower CO₂ emissions.

In spring 2009 Kansai EP will install a state-of-the-art combined cycle power generating system at the Sakaiko Power Plant. Employing both a gas turbine and a steam turbine to drive generators, this advanced new system will significantly boost the plant's power generating efficiency. The combined cycle system burns LNG to produce a high-temperature combustion gas that's used to drive a gas turbine, generating electricity. The high-temperature gas is also used to heat water, producing steam that drives a steam turbine, also generating electricity. Because the combustion gas is used twice, thermal efficiency is extremely high and CO₂ emissions are reduced by around 30% per unit of electricity produced. Kansai EP plans to upgrade all thermal power generating facilities at the Sakaiko Power Plant to the new type of system by autumn 2010.

ECO Mixed combustion of biomass fuel and coal: Reducing CO₂ emissions even further.

In June 2008 Kansai EP began using a biomass fuel called wood pellets at Maizuru Power Plant Unit 1, a coal-fired thermal plant. Using biomass fuel along with the coal means that coal consumption can be decreased. At Maizuru, we expect this mix to reduce CO₂ emissions by some 90,000 tons every year.



● Wood pellets

Putting Japan's own resources to use for natural energy generation.

Japan has abundant water, especially when compared to its other natural resources. Kansai EP puts this vital resource to good use, operating hydroelectric power plants in 148 locations that together account for nearly 10% of all the electricity we generate. Among them is the Kurobegawa No. 4 Power Plant, which can produce up to 335 MW of power. This plant, completed in 1963, was a massive construction project completed after hollowing out bedrock at the foot of the gracefully curved, 186-m-high dam at the Kurobe Gorge. Kansai EP's successful construction of the Kurobe Dam was celebrated as the engineering feat of the century in Japan. An accumulated total

Hydroelectric power generation has harnessed nature's power for more than a half century.

of 10,000,000 workers toiled for seven years on the project, and a host of advanced technologies were employed. One of the challenges was that, during construction of the Kanden Tunnel (or Omachi Tunnel), a key part of the project, a fracture zone discharging large volumes of high-pressure ground water was discovered. These struggles, and the project's hard-won success, were later depicted in a movie. Tackling this immense project was essential for solving the serious power shortage that gripped post-war Japan. Almost half a century later, hydroelectric power from the Kurobegawa plant is still helping Kansai EP meet the nation's energy needs.



● Kanden Tunnel, which runs through a fracture zone

ECO Eighteen years of rehabilitation: Upgrading hydroelectric power plants across Japan.

Upgrading equipment makes it possible to generate more hydroelectric power from the same plant discharge and the same head. In 1988 Kansai EP launched an 18-year rehabilitation project that involved upgrading every hydroelectric power plant we operate in Japan. The project finally came to completion in 2006, with the rehabilitation of the Komaki Power Plant in Toyama Prefecture. Upgrading the facilities not only increased total output by more than 40 MW, it also reduced CO₂ emissions by around 100,000 tons per year. This led to the project's receiving the Minister of Environment's Award for Global Warming Mitigation in FY 2006.

■ The elegantly curved Kurobe Dam stands against the stunning backdrop of Japan's Northern Alps.

From early summer to autumn, the dam discharges a huge volume of water – more than 10 cubic meters per second – and sends up a large plume of spray. Kurobegawa No. 4 Power Plant is located about 10 km downstream, at a level of 200 meters below the dam.

A 24/7 monitoring system and advanced IT technology secure the power distribution system that covers the Kansai area.

Central Load Dispatching Center works to meet fluctuating demand.

Demand for electricity fluctuates by the second. Our Central Load Dispatching Center monitors demand 24 hours a day, 365 days a year, and issues instructions to our nuclear, thermal and hydroelectric power plants. The Center works with local dispatch centers and control centers across the Kansai to adjust voltage and frequency as necessary. Kansai EP also operates an intricate network of power transmission lines throughout the region, monitoring such things as repair activities, equipment failures and lightning, and selecting the most appropriate transmission routes accordingly. These efforts are all part of ensuring that our customers enjoy a stable supply of high-quality electricity.



●Central Load Dispatching Center



●Power transmission lines

High-voltage power transmission network carries bulk power.

Our plants generate electricity at the voltage from several thousand to 20,000 volts. To minimize power loss during transmission, however, the voltage is actually boosted to higher voltage such as 275,000 and 500,000 volts before it's sent out. The electricity is transmitted from our plants to our customers through power lines supported by large steel towers built between mountains. Those transmission lines extend beyond the Kansai, connecting to countrywide networks that span the country from Hokkaido to Kyushu. This vast network of power lines helps ensure reliable delivery of electricity to homes and business.

Before distribution, substations lower the voltage to meet customer needs.



●Primary substation

Power generated at our plants is transmitted over lines to primary substations, which lower the voltage to 154,000 volts or 77,000 volts. For customers who need large amounts of electricity, such as railway companies and large factories, electricity is delivered at this voltage level. Electricity for other customers is sent to secondary substations, which further lower the voltage to 77,000 volts or 22,000 volts. This process of reducing the voltage in stages allows the electricity to be transported more efficiently, minimizing power loss due to transmission over long distances.

Electricity to your home... After a long journey, electricity undergoes final distribution.

Electricity of which the voltage is reduced at secondary substations to 77,000 volts or 22,000 volts is sent to distribution substations. There the voltage is reduced further to 6,600 volts and fed to local distribution lines. Electricity is delivered in this condition to high-rise buildings and medium-size factories. Electricity for home users is sent to electrical poles, where transformers further reduce the voltage to 100 or 200 volts before it reaches our homes.



●Distribution line maintenance

Electricity follows a long, complicated journey from a power plant to your home. But the journey is over in a blink. Because electricity travels at around 300,000 km per second, customers use the electricity a mere instant after it's generated at one of our plants.



●Electrical pole and transformer