Responsibilities Toward Customers

SOCIAL

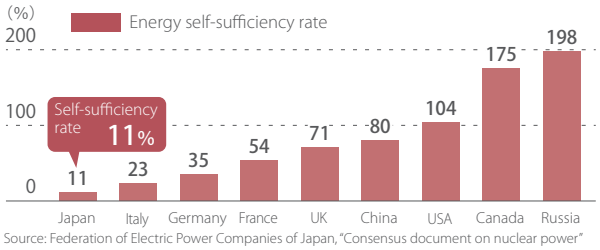
Securing a stable supply of energy

Policy and Concept

Energy risks faced by Japan

Japan's energy self-sufficiency rate is around 11%, including nuclear power generation, which is a very low value compared to major countries in the world. For most of its fossil fuel needs, Japan must rely on imports. Since energy resources on the earth are not inexhaustible, stably securing energy resources is a top-priority issue for Japan. For continued stable supply of energy in the future, it is vital to combine various power generation methods in a well-balanced manner, while not relying on only a single power generation method.

◆Energy self-sufficiency rates of major countries (for 2019, except FY 2020 for Japan)



Source: Federation of Electric Power Companies of Japan, "Consensus document on nuclear power"

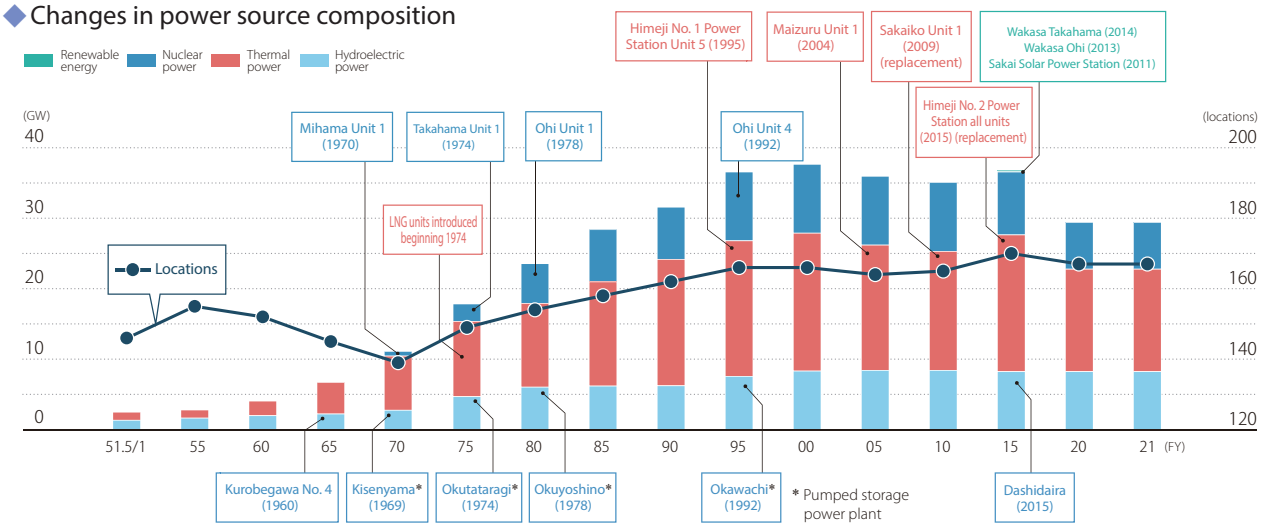
Decarbonization drive

The Japanese government pledged in October 2020 to achieve carbon neutrality by 2050. Moreover, at the climate change summit in April 2021, it announced a greenhouse gas reduction target of 46% below fiscal 2013 levels by fiscal 2030. Taking these targets into account, the 6th Strategic Energy Plan, which was announced in October 2021, sets out energy policies to achieve carbon neutrality by 2050, with a 46% reduction in fiscal 2030.

Facility configuration based on S+3E

With decarbonization movements gaining momentum, energy supply fails to keep up with demand. We therefore give top priority to Safety (S) while seeking an optimum, well-balanced combination of power sources to simultaneously achieve 3E, namely Energy security, Economy, and Environmental conservation. Specific measures include transforming renewable energy into the main power source, leveraging nuclear power to the fullest, achieving zero carbon in thermal power generation and using zero-carbon hydrogen.

◆Changes in power source composition



Goals

The Kansai Electric Power Group is pursuing carbon neutrality by 2050 throughout the entirety of our business activities, including the power generation business, as declared in the Zero Carbon Vision 2050 and the Zero Carbon Roadmap, which outlines a pathway to zero carbon. Giving top priority to "S" (Safety), we are gearing up to achieve zero carbon in all electricity production while optimizing combinations of power sources to simultaneously achieve the 3Es (Energy security including stable supply, Economy, and Environmental conservation).

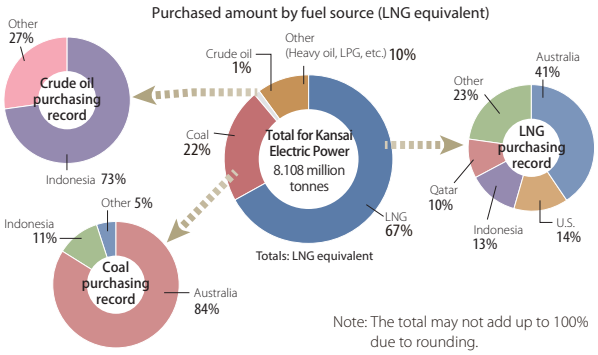
Efforts

Approach for stable fuel procurement

Our ongoing efforts include securing procurement of fuel, improving flexibility in responding to fluctuations in power demand, and further improving the economic efficiency of the operations. Specifically, our efforts involve diversifying suppliers and pricing systems, and taking part in the LNG value chain from production to receiving of LNG, including upstream (interest acquisition) and midstream (transportation, etc.) operations, with various business activities underway.

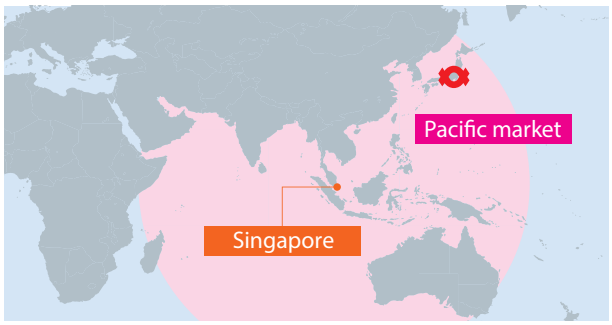
Fuel prices, meanwhile, are soaring along with short supply due to the increasingly tense international situation caused by the war in Ukraine. We will thus continue to focus on international affairs and fuel market trends to secure fuel in a stable and cost-effective manner

Kansai Electric Power purchasing record of fuel for thermal power generation in FY 2021



Note: The total may not add up to 100% due to rounding.

Enhanced spot trading for agile LNG procurement and sale

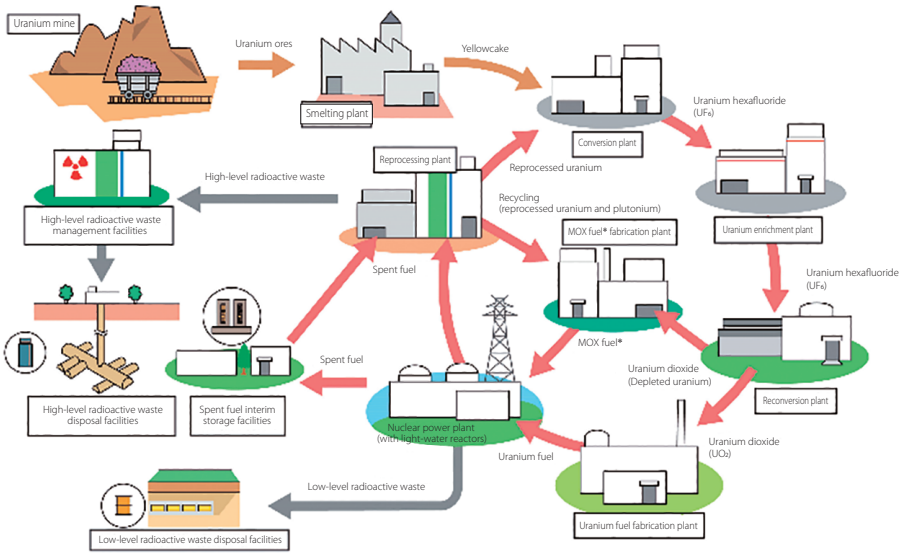


In an effort to deal with power demand fluctuations, KE Fuel Trading Singapore Pte. Ltd., which was established in April 2017 to secure procurement of LNG and expand our sales network, plays a pivotal role in extending our information gathering network based in Singapore, the LNG trading hub in the Asia Pacific region.

The role of KE Fuel Trading Singapore includes timely gathering of information such as spot LNG trading and promotion and improvement of our flexible LNG procurement/sale systems.

Developing a full-scale nuclear fuel cycle

Uranium, a fuel for nuclear power generation, is produced in politically stable nations, which enables a stable supply. It can also be a "semi-domestic energy resource" mainly because a small amount of uranium is required for long-term power generation and spent fuel can be reprocessed and used again as fuel. Promotion of the "nuclear fuel cycle," a cycle of re-using uranium and plutonium out of fuels used at nuclear power plants, is a practical way to effectively use energy resources and secure stable energy for Japan, a resource-poor country.



* MOX (mixed oxide) fuel: Plutonium mixed with depleted uranium Source: "Nuclear Power and Energy Drawings" (Japan Atomic Energy Relations Organization)

Interim storage facility

Spent fuels are stored in a spent fuel pool inside power stations for a certain period of time and then transported to a reprocessing plant. In case the pool is filled to capacity, the power station cannot be operated. For this reason, spent fuels have to be taken out in a planned manner. Installation of an interim storage facility, in which spent fuels are temporarily stored, enables the stable operation of power plants into the future. With the "Plan to promote measures for spent fuel" set up in 2015, we are working on selecting the candidate sites for interim storage facilities outside Fukui Prefecture, to be finalized by the end of 2023 for planned commencement around 2030.

Initiatives prioritizing safety at nuclear power plants

To prevent the lessons of the Mihama Nuclear Power Station Unit 3 accident from fading away

Policy and Concept

On August 9, 2004, an accident involving the rupture of secondary system piping occurred at Mihama Nuclear Power Station Unit 3. Based on the President's Declaration "Ensuring safety is my mission, and the mission of the Company," we have strictly implemented recurrence-prevention measures, with a firm determination that we shall never cause such accidents. The Nuclear Power Division has established Five Basic Principles as preventive measures that form part of our quality policy concerning the operation of nuclear power businesses with safety as the top priority. These measures are revised as necessary for safety improvement purposes. Making every August 9th our "Safety Vow Day," every employee observes a moment of silence. We are working to cultivate a safety culture in order to implement business management with safety as the top priority and prevent the lessons of the Mihama Nuclear Power Station Unit 3 accident from fading.

◆Quality policy concerning the operation of nuclear power businesses with safety as the top priority

1. We will prioritize safety above all.
2. We will positively invest resources for safety purposes.
3. We will fully recognize the characteristics of nuclear power and continue our effort in reducing risks.
4. We will put our endeavor to recover the trust of plant-hosting communities and the whole country by further pushing ahead with the communication with them.
5. We will objectively assess our effort toward safety.

Goals

Give top priority to safety in business operations, based on lessons learned from the accident at Mihama Nuclear Power Station Unit 3.

Efforts

"Safety Vow Day"

- A stone memorial was erected in the premises of the Mihama Nuclear Power Station with a pledge not to repeat similar accidents.
- All employees shall commemorate the victims of the accident with a moment of silence every year on August 9 at 15:22 (the time of the accident) with each individual renewing his/her determination to give top priority to safety.
- The President and others renew vows of safety and observe a moment of silence before the stone memorial every year.
- All employees review their Conduct Cards on which they have written their own safe conduct oaths.

Communication between management and front-line workers

All offices are visited by the president while executives (including those of other divisions) engage in face-to-face discussions with power station staff. It is an opportunity for front-line workers to communicate their opinions to management.

Improved communication with manufacturers and subcontractors

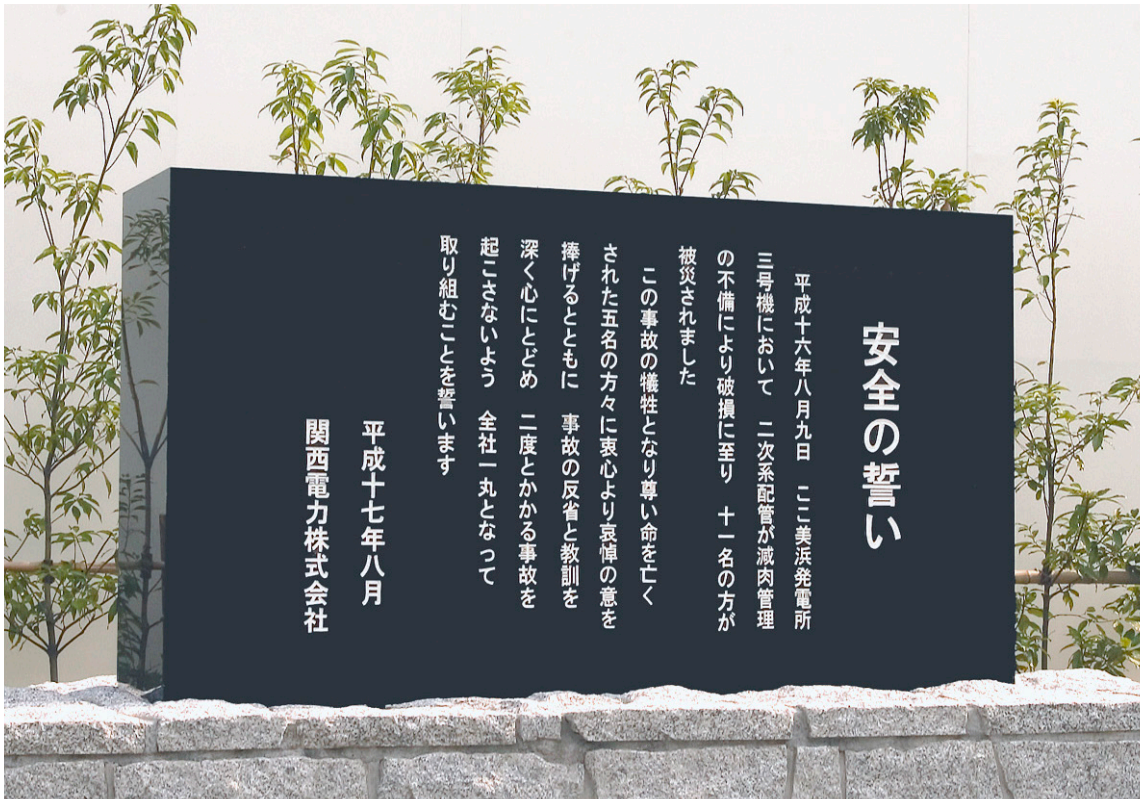
Continuous improvements are made through interactive communication to ensure the safe operation of nuclear power plants as well as strengthening the cooperative relationships we have with manufacturers and subcontractors. Opinions collected through questionnaires contribute to developing our safety culture, identifying unsafe operational practices in nuclear power plants and improving the work environment.

Door-to-door visits with local residents

Our employees, including the Director of the Nuclear Power Division, visit each household in communities where our power plants are located (towns of Mihama, Ohi and Takahama in Fukui Prefecture) to engage in mutual dialogue.

In-house training

Tailor-made training courses are provided to all employees, from new recruits to newly-appointed managers, to brief them on the accident at Mihama Nuclear Power Station Unit 3 and help them learn lessons from it.



Establishment of a company proclamation: Commitment to Enhancing Nuclear Safety

Policy and Concept

In response to the accident at the Tokyo Electric Power Fukushima Daiichi Nuclear Power Station, we established our Commitment to Enhancing Nuclear Safety, which clearly states our ideals about nuclear power safety, as a company proclamation that is one of our most important company rules. The company proclamation underlines our determination to constantly improve safety in nuclear power generation, whereby all executives and employees fully understand the characteristics and risks of nuclear power generation and always remind themselves of the potential magnitude of an accident, with the President playing a leading role in making company-wide efforts to protect local communities, society and environment.

Composition and summary

Preface	Every one of us shall remember the lessons learned from the Fukushima-Daiichi nuclear accident and ceaselessly strive to enhance nuclear safety to protect the people not only in the plant-hosting communities but also the whole country, and to preserve the environment.
Characteristics of nuclear power generation and risk awareness	Nuclear power generation has superior characteristics in terms of energy security, prevention of global warming and economic efficiency, and is an essential power source for the future. On the other hand, nuclear power generation has risks of radiation exposure and environmental contamination. Every one of us shall always bear in mind that once a severe accident happens due to lack of proper management, it could cause enormous damage to the people and the environment.
Continuous removal/ reduction of risk	To enhance nuclear safety, we shall fully understand the characteristics and risks of nuclear power generation and continually remove or reduce such risks while identifying and evaluating them, never believing at any moment that we have reached the goal of ensuring safety. These efforts shall be conducted at each level of the Defense-in-Depth.
Development of safety culture	Safety culture is the basis for continuously removing or reducing risks. Since the accident of Mihama Nuclear Power Station Unit 3, we have been reviewing and improving our safety culture, and we shall develop such safety culture. To this end, we shall always be ready to question anything, learn from others and listen to the voices of society and discuss issues uninhibitedly while respecting diverse opinions with further efforts.
Commitment to enhancing nuclear safety	Enhancing nuclear safety is the overriding priority in the company. It is also important to promote two-way communications with the people in the plant-hosting communities and the whole country, and to share common perceptions on nuclear safety. Under the President's leadership, every one of us shall work together to tirelessly enhance nuclear safety.

Goals

Every one of us shall remember the lessons learned from the Fukushima Daiichi nuclear accident and ceaselessly strive to enhance nuclear safety to protect the people not only in the plant-hosting communities but also the whole country, and to preserve the environment.

Efforts

In-house training

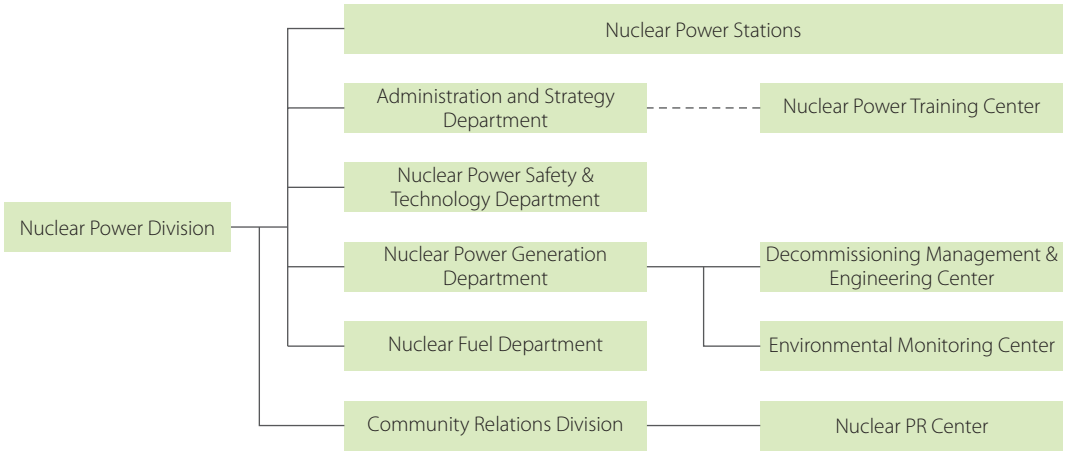
- A series of e-learning training courses are in place to help all employees understand our Commitment to Enhancing Nuclear Safety.
- Each department voluntarily holds group discussions while managers communicate safety messages to raise safety awareness among employees.

Safe and stable operation of power plants

Policy and Concept

Take all possible measures to safely and carefully operate and maintain nuclear power plants, underlining our determination to constantly improve their safety.

System



Goals

Giving top priority and paying the utmost attention to safety, we ensure safe operation and proper maintenance of Units 3 and 4 of the Takahama Nuclear Power Station and the Ohi Nuclear Power Station, and Mihama Nuclear Power Station Unit 3, each of which has resumed operations. Our voluntary efforts to ensure safe and stable operations will continue with the safety of our nuclear power plants improved continuously.

Efforts

Key safety measures

Careful inspection and examination

In an effort to ensure the safe and stable operation of our nuclear power plants, facilities and instrumentation are regularly inspected and shut down in accordance with the relevant laws and regulations, all of which is intended to protect shop-floor employees and maintenance personnel.

- Data on regular inspection results and facility conditions is reviewed to determine the content and frequency of inspections according to the characteristics of each facility. This approach serves as the basis of our inspection and maintenance protocol.

Education and training of plant employees (operators, maintenance personnel, etc.)

Improving the technical skills of shop-floor employees (operators, maintenance personnel, etc.) is key to the safe and stable operation of nuclear power plants. In-house and external training is conducted on a regular basis.

- OJT is conducted through routine practice.
- Operators regularly simulate normal operating procedures and practice troubleshooting.
- Maintenance personnel are trained on inspection work at the Nuclear Power Training Center, using the same instrumentation one would find at a power plant.

Five-layered wall structure to contain radioactive substances

Uranium nuclear fission at nuclear power plants produces radioactive substances, which are contained in a building with a five-layered wall structure (pellets, cladding tubes, pressure vessels, containment vessels and external shielding walls).

In-depth defense system

Nuclear power plants are designed to prevent malfunctions and operational errors when, in the event of failure, reactors are immediately shut down, followed by the cooling and containment of radioactive substances.

Reactor cooling system

Following a shutdown, residual heat removal pumps are activated to operate coolers, which cool the primary system water. In the event of a complete power loss, auxiliary feed pumps powered by steam-driven turbines feed water to steam generators, which cool the primary system water.

Safety measures to deal with various risks

Toward improved safety and confidence

Learning lessons from the accident at the Tokyo Electric Power Fukushima Daiichi Nuclear Power Station, the new regulatory requirements provide measures against earthquakes and tsunamis, with design standards revised to prevent similar accidents; taking into account the risks of natural disasters in Japan, these standards cover various other risks such as volcanic eruptions, tornadoes and forest fires. Complying with these new regulatory requirements, we are renovating our licensed power plants to protect them against severe accidents, earthquakes, tsunamis, tornadoes and fires. At the same time, voluntary efforts are underway to improve plant safety.

Nuclear material protection

Security measures (zoning, barrier installation, patrol, intrusion detection, access control, etc.) are in place in compliance with relevant laws and regulations to protect nuclear materials from theft and those who might attempt to damage or destroy the nuclear facilities. The police and the Japan Coast Guard, moreover, are immediately notified of any emergencies to take concerted action. At the same time, security measures are reviewed mutually by all nuclear power operators to make improvements with other operators through learning.

Improving technical capabilities and systems in the event of a severe accident

Conducting nuclear power disaster response training in collaboration with national and local governments

Disaster response training programs are underway at our nuclear power plants, the Nuclear Power Division and the head office, some of which are conducted in collaboration with national and local government, manufacturers and subcontractors. Specifically, comprehensive training programs are conducted without prior notice to participants, simulating severe conditions, where emergency response capabilities are tested for improvement purposes. This includes the feasibility of post-accident remedial measures using water trucks and alternative portable low-pressure water pumps, which is already part of routine drill exercises at each of our power plants, and the examination of the communication systems in place for each task force.

Education and training tailor-made for each role and responsibility

Supervisors and operators undergo repeated education and training according to their roles and responsibilities, in how to respond to a severe accident. This is to improve their emergency response capabilities and technical skills. Contents and target employees of this education and training were made more diversified than those at the time right after the accident at the Tokyo Electric Power Fukushima Daiichi Nuclear Power Station. In fact, the total number of trainees training on plant behavior during a severe accident has increased significantly, as has the frequency of training on emergency response procedures.

Creating a response system

Improving the out-of-hours response system

Emergency personnel stand by around the clock at Mihama, Takahama, and Ohi Nuclear Power Stations, taking into account findings learned from the accident at the Tokyo Electric Power Fukushima Daiichi Nuclear Power Station. They are in charge of the initial response to an incident, where resources are mobilized within six hours after an accident has been declared.

Improving the Nuclear Emergency Assistance Center

The Nuclear Emergency Assistance Center (at Mihama, Fukui Prefecture) was jointly established by nuclear operators and went into full-scale operation in December 2016. Here remote-controlled equipment and instruments have been upgraded for flexible, advanced disaster response while emergency personnel of respective nuclear operators are trained. In the event of an emergency, equipment and instruments can be transported to a disaster site, with remote-controlled assistance provided to jointly minimize radiation exposure of shop-floor employees.

Cooperation between nuclear operators

Nuclear operators are expanding their cooperative relationship to further improve the safety and reliability of their operations.

- Mutual cooperation agreement between five electric power companies in western Japan
  A mutual cooperation agreement has been signed between our Company, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and Hokuriku Electric Power. This agreement is designed to improve preparedness and emergency responses to nuclear power disasters by providing mutual assistance, equipment, instruments, etc., as well as taking advantage of their geographical proximity. There is also agreement to cooperate in conducting decommissioning in a safe, well-organized manner and setting up special facilities to deal with designated severe accidents, all intended to further improve the safety and reliability of nuclear power generation.

- Technical cooperation agreement between four electric power companies with pressurized water reactors (PWRs)
  A technical cooperation agreement has been signed by four companies (Hokkaido Electric Power, Kansai Electric Power, Shikoku Electric Power, and Kyushu Electric Power) that own the same pressurized water type nuclear power plant. With this agreement in place, the four companies, each of which operates PWRs, exchange their technical knowledge and experience, where they share information on power plant operation management in other countries and examine new technologies to further improve reactor safety.

Supporting municipal evacuation plans

Efforts toward nuclear emergency preparedness

While a variety of safety measures are in place at our nuclear power plants, we cooperate with national and local governments in minimizing impacts on local residents in the event of a nuclear disaster involving the massive release of radioactive substances. These activities are in line with relevant laws including the Disaster Countermeasures Basic Act and the Act on Special Measures Concerning Nuclear Emergency Preparedness. Nuclear operators are and will be making full efforts to ensure nuclear safety and prevent disasters in cooperation with national and local governments.

Communication in the event of a nuclear disaster

In the event of a nuclear disaster, we as nuclear operators shall immediately report to the relevant authorities at all levels; all the parties concerned shall get together at the Offsite Center to share information and determine protective measures for local residents as the situation demands, while the nuclear disaster task force of each municipality communicates the center's decisions to local residents.

Supporting nuclear disaster victims

- Providing transportation for evacuation
  We shall mobilize all resources available to help local residents evacuate; this includes the provision of evacuation supervisors and transportation such as employee shuttle buses, welfare vehicles and contracted helicopters and vessels.
- Assisting and managing testing during an evacuation
  At the request of municipalities, we shall assist and manage testing at the time of evacuation, targeting all those evacuated from the Urgent Protective action planning Zone or UPZ. Inspectors shall be provided along with equipment such as contamination survey meters and Tyvek suits.
- In order to increase the number of inspectors for evacuation (to secure about 3000 inspectors), agreements between nuclear operators were revised in March 2021.
- Providing necessities
  We provide necessities such as food and blankets as well as radiation protection facilities.

Participating in relevant municipal governments' emergency response drills

We cooperate in relevant municipal governments' emergency response drills where we provide buses, welfare vehicles, and staff for testing to support and facilitate evacuation of residents. We will continue this cooperation to help evacuate residents in times of disasters.

Over 40 years of operation

Policy and Concept

Nuclear power, a well-balanced energy source contributing to 3E (Energy security, Economy and Environmental conservation; achieving a zero-carbon society), is essential in resource-poor Japan. As a result, nuclear power generation should be maintained at a certain level to ensure energy security and develop technical/human resources, whereby accident-proof nuclear power plants can be operated for over 40 year-spans. Therefore, we will be making the most of our nuclear power plants, placing a premium on their safe operation.

Goals

We ensure safe and stable operation of the over 40-year-old Mihama Nuclear Power Station Unit 3, which has restarted recently. Takahama Nuclear Power Station Units 1 and 2 are also gearing up for restart, with safety improvement construction completed and activities such as tests, inspections, and drills underway.
In addition, we aim to communicate the importance and safety of operating nuclear power plants for over 40 years to local communities and residents.

Efforts

Our Company has always maintained the durability of our nuclear power plant facilities by continuously implementing maintenance and management, including regular inspections and planned equipment replacements. At the time of our application for an operation period extension for 40 years from the starting month of operation, in accordance with the law, for Takahama Nuclear Power Station Units 1 and 2 and Mihama Nuclear Power Station Unit 3, special inspections were carried out for reactor vessels and other equipment. In addition, technical evaluations of degradation from age were carried out, confirming that the durability of important facilities for safety could be assured even for an operation period of 60 years. After these examinations, we received operation period extension approvals from the Nuclear Regulation Authority for both power stations.
Mihama Nuclear Power Station Unit 3 restarted in June 2021 with the consent of the local communities, and safety improvement construction has been completed at Takahama Nuclear Power Station Units 1 and 2 where inspections, drills, etc. are underway to resume operation.
In addition, we are communicating face-to-face with stakeholders through plant tours, community events and participation in briefing sessions and lectures to help them better understand our nuclear power plants' operation of more than 40 years. We will also continue to proactively communicate with the public as well as communities near the plants.

Mihama Nuclear Power Station Unit 3, back in operation

Online energy seminar as part of external events

Reliable decommissioning processes

Policy and Concept

- We comply with the relevant laws and regulations on decommissioning, while giving top priority to safety in order to minimize exposure, reduce radioactive waste and properly manage security measures.
- We have designed safe decommissioning procedures and processes, incorporating effective decontamination techniques, remote-controlled equipment and measures to prevent the spread of contamination—all intended to minimize the exposure of those engaged in radiation-related work, strictly complying with statutory dose limits. In addition, a safe storage period is set for zones with relatively high radiation levels, taking into account the attenuation of radioactivity.
- We will continue to work on a series of measures for safe decommissioning, environmental conservation and regional development, according to the Agreement on Nuclear Power Plant Decommissioning, which was signed with Fukui Prefecture, Mihama Town and Ohi Town.

Goals

Securing human and environmental safety

With safety prioritized, we will focus on minimizing exposure and radioactive waste as well as properly managing security measures.

Designing safe decommissioning procedures and processes

We will design safe decommissioning procedures and processes, incorporating effective decontamination techniques, remote-controlled equipment and measures to prevent the spread of contamination, as well as operating waste disposal facilities to minimize the exposure of neighborhood residents and those engaged in radiation-related work.

Foolproof system

The Decommissioning Management & Engineering Center cooperates with subcontractors in decommissioning nuclear power plants in a safe and foolproof manner.

Activities according to the Agreement on Nuclear Power Plant Decommissioning

We will continue to work on a series of measures for safe decommissioning, environmental conservation and regional development.

Efforts

Radioactive waste treatment and disposal

Solid radioactive waste treatment

Non-radioactive general waste accounts for about 97% of decommissioning waste while radioactive waste is disposed of at designated facilities prior to completion of decommissioning in accordance with its radioactive level.
Meanwhile, waste that does not need to be treated as radioactive waste (clearance) is recycled as much as possible, following approval by the national government.

Treatment of gaseous and liquid radioactive waste

Gaseous and liquid radioactive waste is properly treated before being released into the environment, with strict monitoring in place.

Decommissioning with safety prioritized

Decommissioning broadly consists of four stages that take about 30 years to complete. Appropriate measures are in place for decommissioning, with the highest priority given to safety. In July 2022, sections in charge of decommissioning work were newly set up in the Mihama Nuclear Power Station and the Ohi Nuclear Power Station, which strengthens our decommissioning system.

Decommissioning at Mihama Nuclear Power Station Units 1 and 2

○ Dismantling of equipment, etc. in the turbine buildings
Dismantling of contamination-free equipment, etc. was carried out at the turbine buildings (items that may serve as obstacles to the dismantling process such as piping, frames, and other small pieces of equipment) in addition to large equipment such as turbines, condensers, and deaerators.
○ Transportation of new fuel
New fuel (unused fuel assembly) kept in the power plants is being shipped in transportation casks for processing at fuel fabrication manufacturer plants at home and abroad.

◆Decommissioning at Ohi Nuclear Power Station Units 1 and 2

○ System decontamination

Using chemicals, we conducted work to remove radioactive substances on the inner surface of equipment and piping, a process to protect workers from radiation exposure and facilitate dismantling.

○ Dismantling of equipment, etc. in the turbine buildings

Dismantling of contamination-free equipment, etc. is underway at the turbine buildings (items that may serve as obstacles to the dismantling process such as piping, frames and other small equipment) in addition to large equipment such as turbines and moisture separator heaters.

● Activities as a pioneer of decommissioning

◆Japan's first decontamination of a pressurized water reactor (PWR) system

The system decontamination procedure underway at Mihama Nuclear Power Station Units 1 and 2 is unprecedented, involving the decommissioning of PWRs, which requires advanced and special techniques. Therefore, any and all literature on system decontamination and plant manufacturer expertise were extensively surveyed from sources both home and overseas from the perspectives of "foolproof decontamination" and "reduction of waste produced by decontamination."

This has led to cooperation with overseas manufacturers with proven track records in decontamination and with domestic manufacturers producing the same equipment as those used in Mihama Nuclear Power Station Units 1 and 2 (and hence well-versed in all aspects of the station). As a result, as originally planned more than 90% of the radiation has been removed, with safety prioritized.

◆Learning from the world

The work at Mihama Nuclear Power Station Units 1 and 2 is expected to pioneer the decommissioning of PWRs while research on decommissioning is underway in partnership with universities and the Wakasa Wan Energy Research Center.

In addition, information sharing agreements are in place with nuclear operators in US, France, Spain, South Korea, etc. on many aspects of nuclear power generation (including decommissioning) to learn from safety improvement measures in these countries.

● Cooperation with nuclear operators in Japan

We signed an agreement with Hokuriku Electric Power, Chugoku Electric Power, Shikoku Electric Power and Kyushu Electric Power on cooperation across nuclear power businesses to facilitate safe decommissioning including reviewing techniques and procurement for large-scale decommissioning, information sharing on decommissioning processes, etc.

◆Review of techniques and procurement for large-scale decommissioning

Measures such as joint material procurement are underway for safety and efficiency improvement purposes, according to the schedule of large-scale decommissioning projects at each power company including the inspection of the reactor interior, etc.

◆Information sharing on decommissioning processes

The status of decommissioning projects at each power company is mutually monitored to facilitate safe decommissioning while information on expertise, best practices and concerns in other countries are shared.

● Local business development and employment promotion

According to the Agreement on Nuclear Power Plant Decommissioning (which was signed with Fukui Prefecture and Mihama Town on February 10, 2016, and with Ohi Town on November 22, 2018), the timing and procedures for decommissioning are being planned and announced, based on coordination with local businesses and employment promotion policies related to the decommissioning work.

◆Information sharing for each decommissioning process

In cooperation with the Wakasa Wan Energy Research Center, contractors and subcontractors share information on decommissioning processes to encourage the participation of local businesses according to their technical capabilities.

○ Information sharing, implemented three times for Mihama Nuclear Power Station Units 1 and 2 (on March 2017, January 2018 and January 2019)

○ Information sharing, implemented three times for Ohi Nuclear Power Station Units 1 and 2 (on March 2020, July 2021 and February 2022)

◆Research with local businesses

Research on decommissioning is underway with local businesses and other stakeholders to address and solve technical challenges, thereby streamlining decommissioning processes and improving their reliability. At the same time, assistance is provided to local businesses committed to developing new techniques to aid with decommissioning.

○ Four techniques were adopted in fiscal 2016, two in fiscal 2017, one in fiscal 2018, two in fiscal 2019, two in fiscal 2020 and one in fiscal 2021.

◆Human resources development for decommissioning

Guidance on decommissioning, lectures on relevant techniques, study tours and first-hand experience programs are provided in cooperation with the Wakasa Wan Energy Research Center.

○ Conducted 28 times between fiscal 2016 and 2021, including 15 in-house programs

◆Supporting the Fukui Prefecture Reinan E Coast Plan

We voluntarily participate in a review task force for the Nuclear Recycling Business initiative to be launched by the Fukui Prefectural Government, with feasibility studies underway.

Voluntary efforts to enhance nuclear safety

Policy and Concept

Learning lessons from the accident at Mihama Nuclear Power Plant Unit 3, we place a premium on nuclear safety. Specifically, the accident at Tokyo Electric Power Fukushima Daiichi Nuclear Power Station made us aware that our understanding and preparedness for risks unique to nuclear power generation were not necessarily sufficient. We, therefore, established a roadmap to "step-up voluntary/continuous efforts to improve nuclear safety," based on which various measures are being implemented.

Goals

Efforts are underway to realize a nuclear safety ideal, which translates into development and implementation of a framework for voluntary/continuous safety improvement measures as well as incorporating external knowledge for further improvement, in accordance with our "Commitment to Enhancing Nuclear Safety."

Efforts

● Communication and standardization of a philosophy, giving top priority to safety

◆ Improving governance for management of nuclear safety

○ The management takes the lead in communicating our philosophy of giving top priority to safety with all employees, paying close attention to their opinions.

- The management leads dialogue with employees as a facilitator and reviews operations to put greater emphasis on listening to on-site issues and discussing solutions.

◆ Fostering safety culture

○ Learning lessons from the accident at Mihama Nuclear Power Station Unit 3, we assess our corporate safety culture while promoting improvement activities.

- Taking into account self-assessment results from each department and the management, we comprehensively analyze the status of all departments involved in nuclear power and identify organizational conditions and challenges through discussion with the management.
- We incorporate resulting remedial measures into next year's priority measures (i.e. improvement of communication, with focus on the mid-level management's role).

● Building safety improvement infrastructure

◆ Strengthening resources (human resource development)

○ We are training and educating "nuclear safety personnel" according to our human resource development plan.

- Communication skill training programs are in place for OJT instructors.
- Participants learn about hands-on instruction through practice, focusing on communication that helps them grow according to the skills of those they communicate with. They also learn not only examples of success but also failure.

● Safety improvement activities

◆ Promoting safety improvement measures

○ Safety improvement construction work has been completed at Takahama Nuclear Power Station Unit 2 for over 40 years of operation.

- Fire prevention construction work has been completed at Takahama Nuclear Power Station Unit 2 in response to stricter design standards, with all relevant facilities installed or replaced*.

* Installation and replacement of facilities approved by the government for safety improvement purposes.

◆ Boosting the accident response capacity

○ Nuclear power comprehensive emergency response drills were conducted in cooperation with the national government and prefectural governments to reinforce nuclear accident response capabilities.

- The drills involved task force operations, accident control, and community evacuation support, assuming loss of plant power due to an earthquake.
- Aid tools were developed to quickly and accurately communicate emergency information to the national government and prefectural governments so that they can decide whether to evacuate local residents. The tools were proved effective through the drills.

○ Efforts are underway to improve emergency response capabilities in preparation for unexpected nuclear disasters.

- "Stress training" programs were conducted for plant task force leaders to help them handle severe accidents where a variety of stressful situations occur simultaneously or in succession.

Developing and improving systems to manage risks, etc.

Continuously improving our risk management system

○ Risk management is in place to prevent accidents and disasters.

- Potential on-site risks are identified through interviews on requests for facility improvements in order to design key safety measures.
- Patrols are conducted by contracted industrial safety consultants.

Developing and improving tools for risk management and assessment

○ We have developed a risk assessment tool (PRA*1 model) and plan to promote its use in plant operations.

- Risk assessments using pre-reconstruction PRA were conducted at Takahama Nuclear Power Station Units 1 and 2, and Mihama Nuclear Power Station Unit 3.
- Gravity assessments were conducted based on Corrective Action Program (CAP) for problems identified at power plants for which PRA is required.
- The results of PRA and stress tests*2 reflecting facilities at Takahama Nuclear Power Station Units 3 and 4, which are vulnerable to designated severe accidents, were made public in the 3rd Safety Improvement Evaluation Report.
- Plant information (e.g. facilities vulnerable to designated severe accidents) and technical findings were reflected in PRA models for Ohi Nuclear Power Station Units 3 and 4.

*1 Probabilistic Risk Assessment: A scenario where events that can take place at facilities such as nuclear power plants develop into serious accidents (core damage, etc.) is systematically and comprehensively considered to quantitatively determine the probability of core damage and other accidents.
*2 Assuming that our nuclear power plants are struck by unexpectedly large earthquakes or tsunami, critical facilities and equipment important to safety are tested for their strength and durability, with the virtual intensity of such natural disasters increased gradually—a method to determine the overall safety margin of each plant.

Designing and improving other management systems

○ Occupational health and safety management systems are continued in operation.

- Occupational health and safety meetings confirmed that appropriate occupational health and safety management systems are securely in operation.

Incorporating objective evaluation and external knowledge

○ Safety measures at our nuclear power plants are monitored and evaluated for improvement purposes.

- Staff from other electric power companies interviewed our employees at the Mihama Nuclear Power Station and observed work procedures to provide us with technical and objective findings and suggestions.

○ The Nuclear Power Division quantitatively evaluates (control index) the safety performance of our nuclear power plants and performs on-site observations for assessment purposes.

- Power plant improvement activities are continuously evaluated according to PI*1, a tool to manage power plant performance. In addition, the Nuclear Power Division managers regularly perform on-site inspections (MO*2) and communicate the PI and MO results within the division on a quarterly basis, followed by discussions at divisional oversight*3 review meetings.

○ Operational information is shared with overseas electric power companies, especially among working-level staff, to incorporate quality practices and knowledge from around the world.

- Operational information was shared with EDF (France) and Iberdrola (Spain) (on five occasions).

○ Peer reviews were conducted with WANO*4 and JANSI*5, with improvement activities implemented.

- We confirmed that action plans responding to suggestions previously made were put into practice. We have developed action plans to respond to recommendations from peer reviews between JANSI and the Ohi Nuclear Power Station. The Takahama Nuclear Power Station incorporated JANSI's review results to make use of overseas knowledge, with action plans being developed according to recommendations made.

*1 Performance Indicator: An index for quantitative management of power plant performance
*2 Management Observation: Power plant observation by the Nuclear Power Division and plant managers
*3 Oversight: An activity where power plant safety measures are overseen and evaluated to make improvements.
*4 World Association of Nuclear Operators
*5 Japan Nuclear Safety Institute

Improving communication

Promote risk communication*

○ Mutual communication is practiced to address questions and concerns from the public and jointly come up with solutions.

- Study tours are offered to the general public where they are briefed on the procedures for over 40-years of operation, the need for and the safety of nuclear power generation at PR facilities with the use of VR and other means.

* A mechanism whereby the risk aspects of nuclear power generation are shared and the public's opinions are incorporated into business management.

Relevant data

	2019/3	2020/3	2021/3	2022/3
Number of participants in training and practice programs for nuclear power disasters	About 5,900	About 5,700	About 5,400	About 5,000
Number of nuclear power disaster drills	—	About 6,100	About 5,200	About 10,700

Efforts for cyber security measures

Policy and Concept

Amid increasing cyber attacks targeted at important infrastructure operators around the world, as an important infrastructure operator in the electric power business, the Group believes that its key commitment to customers and society is to steadily advance cyber security efforts to ensure the safe and stable supply of power. To fulfill this responsibility, we are strengthening cyber security measures in accordance with the relevant laws, regulations and guidelines for cyber security management, along with internal regulations. Moreover, as cyber attack methods are evolving day by day, becoming more complex and sophisticated, we strive to obtain cyber attack information from inside and outside Japan in addition to the latest security information to prepare countermeasures in a timely manner.

System

Director responsible: Makoto Araki [Kansai Electric Power CISO (Executive Vice President)]
Deliberative body: Executive Meeting
Management office: Cyber Security Administration Group, Office of IT Strategy (Information Security Management Office)

Goals

Major information security incidents “0”

Efforts

By quickly recognizing threats such as security incidents and vulnerabilities that occur outside the Company, as well as issues with our Information Technology (IT) systems used in our daily work and all Operational Technology (OT) systems related to the provision of a stable power supply, we are continuously implementing necessary security measures.
Specifically, risk assessments are made for IT and OT systems, necessary technical measures are taken, and monitoring is carried out 24 hours a day, 365 days a year at dedicated IT and OT monitoring centers. In addition to an emergency response system established in preparation for incidents, we are continuing to provide drills for how to respond to cyber attacks as well as relevant training for employees.
We are gathering information about cyber attacks that occur outside the Company and the latest security information inside and outside Japan through, for example, the activities of the Japan Electricity Information Sharing and Analysis Center (JE-ISAC*), an organization that undertakes the sharing and analysis of cyber attack information from electric power businesses. Moreover, countermeasures are reviewed as needed.

* An organization where business operators share and analyze information from the perspective of cyber security in order to ensure the stability of the supply of electricity in Japan.

Company-wide training to respond to cyber attacks

Providing services as a consolidated group

Policy and Concept

Creating a prosperous future with customers

Our Group has been meeting the various demands of our customers and society by offering total solutions that combine our services, including comprehensive energy supply which is mainly offering electricity, as well as telecommunications, daily life and businesses.
While customers and society have increasingly different needs, with social changes triggered by the global decarbonization movement and COVID-19 infection, we are committed to exceeding customers' expectations so that they will continue to select the Kansai Electric Power Group. Specifically, we are addressing head-on the needs and problems of customers and society while expanding and providing valuable service solutions to serve the public, businesses and communities.

Goals

Customer satisfaction survey: Satisfaction index 90% or higher

Efforts

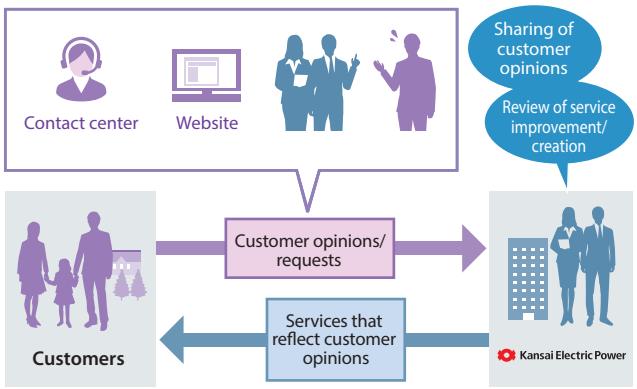
Services for residential customers

We offer a variety of services to help customers live comfortably, conveniently and economically. These include electric bill structures that meet customers' lifestyles, combined price plans for gas and electricity, total electric conversion for a zero-carbon life and integrated plans for energy and electric equipment.
We also have services that are helpful for our customers' daily lives, including a service to dispatch support personnel to customers experiencing problems, such as sudden power outages, as well as opening an EC mall designed to make life more convenient. All these solutions are available, tailormade to the needs and lifestyles of customers.
As a comprehensive energy company, we will continue to promote initiatives for customer satisfaction.

Capturing customers' feedback to create and improve services

We work to create and improve services in response to requests received from customers through our contact centers, website, etc. so we can meet our customers' needs.

Number of services improved and created based on customers' feedback
(2021. 4 – 2022. 3 results)
60



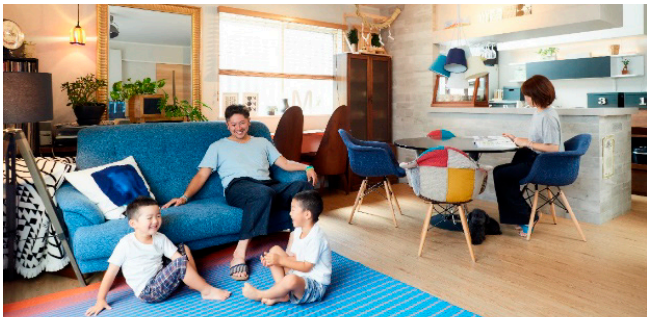
Customer satisfaction survey

We conduct "Customer Satisfaction Surveys" asking our customers to assess how understandable our telephone operators' explanations regarding inquiries such as "The lights in the house went out suddenly." We receive high evaluations from a lot of customers. We will keep working to make our customers more satisfied by utilizing the evaluation results for improvements in services and businesses.

Of customers who asked for advice over the phone,
92.1%
replied that they were satisfied.

Lifestyle services with the confidence of our customers as the foundation

By addressing head-on the needs and problems of customers, we aim to become a corporate group that continues to provide new value to customers; we offer safe, comfortable, and convenient lifestyle services in the areas of home security, communication services, and health management support, at high quality and reasonable prices that will satisfy our customers.



Services for corporate customers

We offer a wide range of services, including energy sales, energy management system services, energy solutions (PV, storage batteries, electrification, etc.), mobility services and business solution services. All these are designed to help customers solve increasingly diversified and complex management and social issues, such as growing environmental needs associated with decarbonization and carbon neutral initiatives, and constantly changing business environments due in part to intensifying natural disasters.

Example of on-site solar power generation services provided

We provided on-site solar power generation services to Trial Company, Inc., where the Super Center Tondabayashi (Osaka Prefecture), a supermarket opened in the spring of 2020, uses green electricity to power the entire store, thereby contributing to environmental conservation.

They plan to continue using the services and opt for solar power generation for captive consumption while looking at combining solar power generation with storage battery solutions as part of its Business Continuity Plan (BCP). We will therefore further strengthen our partnership to help them expand their business.

Trial Company logo and solar panels

Examples of adopting utility services

Since its opening in 1942 as Makita Clinic (Omori, Ota-ku, Tokyo), Makita General Hospital has been providing local medical care for about 80 years. Relocated to a brand-new building in Kamata, Ota-ku in February 2021, this customer has adopted utility services from Kanden Energy Solutions Co., Inc. (hereinafter, Kenes).

Kenes' utility services perfectly corresponded to the customer's needs of CO_2 emission reduction as well as cost-effectiveness in consideration of the large amount of capital required for relocation to the new building. In addition to the cost advantage of installing the latest high-efficiency equipment without initial investment, Kenes' extensive experience in energy management for medical and welfare facilities was a deciding factor in choosing its services, the customer commented.

Kenes has been monitoring and analyzing actual energy consumption since the start of the services to ensure that the hospital environment is comfortable, energy-efficient, and cost-efficient. Kenes is committed to thoroughly ensuring preventive maintenance in a planned manner, pursuing optimal operation and further improvement.

Makita General Hospital

◆ Examples of services for corporate customers

Examples of services for corporate customers	
Enudge® (Kansai Electric Power Co., Inc.)	Next-generation energy platform. In addition to encouraging energy-saving behaviors, this service provides integrated solutions for operational improvement and renovation of store equipment and operational support for individual stores.
Omaka Save-Air® (Kansai Electric Power Co., Inc.)	A new air conditioning control service equipped with our proprietary AI-based auto-tuning function. A control computer installed on the air conditioner used by the customer automatically controls the air conditioner according to the usage situation and thereby achieves "energy saving" while maintaining "comfort."
Solar power generation on-site service (Kansai Electric Power Co., Inc.)	A service in which dispersed power generation equipment such as solar power generation equipment and storage batteries are installed on the customer's premises at our expense for long-term operational use. Customers can reduce their environmental burden by using energy from the equipment we operate.
Kanden comprehensive disaster mitigation service (Kansai Electric Power Co., Inc.)	Utilizing our long-cultivated knowledge about disaster mitigation as a comprehensive energy company, we coordinate and provide products and services necessary for corporate customers to respond to various "unexpected" events (safety confirmation system, emergency fuel delivery service, emergency power generator rental service, etc.).
Utility service (Kanden Energy Solution Co., Inc.)	A service that enables customers to outsource facility management and even makes initial financing unnecessary for them by providing comprehensive services from fund-raising and design to installation and maintenance administration for utility facilities related to energy, including power receiving equipment, air-conditioning and heating equipment and boilers.

The companies that provide the services are indicated inside parentheses.

● Relevant data

	2020/3	2021/3	2022/3
Number of reform cases based on customer feedback (cumulative)	129	140	200
Customer satisfaction (telephone consultation)	92.2%	91.5%	92.1%
Number of Hapi e-Miruden* subscribers	5,522,000	5,912,000	7,254,000

* A web-based service that provides notifications related to electricity and gas charges and usage (a service provided by the Kansai Electric Power Co., Inc. only)

To provide high-quality electric power

Policy and Concept

Our quality policies for the safety of our electric facilities

Ensuring safety **Maintaining high supply reliability**

In order to ensure safety and a reliable supply amid an extremely harsh business environment, we are reviewing the way we do business, which includes checking if there are any oversights in risk management related to supply reliability, and increasing operational efficiency on the premise of not sacrificing safety and quality. While maintaining these efforts, we will carry out the following activities.

- Maintain electric facilities based on ensuring safety.
- Strive to prevent accidents caused by human error.
- Carry out our business in compliance with relevant laws, regulations and internal rules.
- Set and review quality goals in line with our quality policies.
- Confirm that front line workers are familiar with our quality policies.
- Review the appropriateness of the quality policies.

Goals

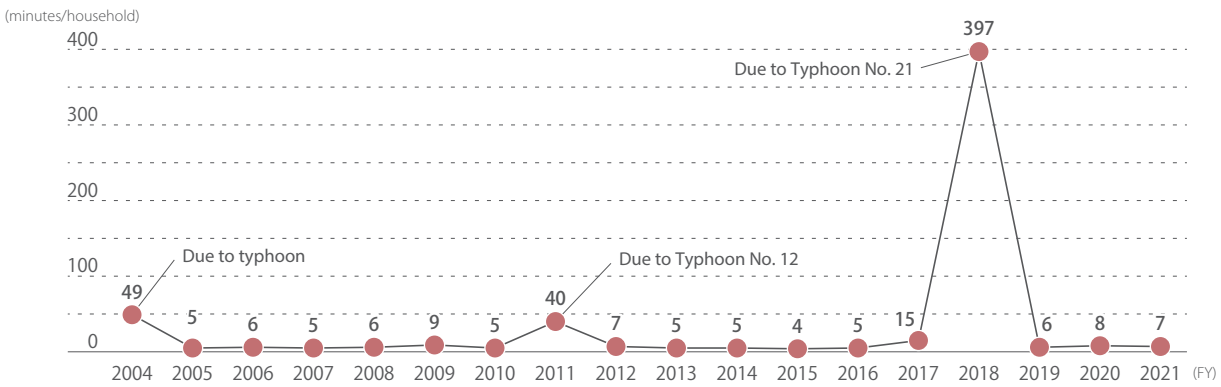
Annual duration of power outage per household	"Maintain the highest standard in the world"

Efforts

Toward a safe and stable supply

Our commitment is to ensure the operation of power grids between power plants and customers, optimize facilities, and prevent and respond quickly to power outages.
As a result of our efforts, with the exception of major natural disasters, we are maintaining one of the world's highest power quality levels in the transmission and distribution business.

◆ Annual duration of power outage per household



Achieving electricity resilience

On September 4, 2018, the powerful Typhoon No. 21 ripped through the Kansai area, causing breakages totaling more than 1,300 utility poles and a power outage affecting roughly 2.2 million households in total. We apologize to our customers for the inconvenience and trouble caused by the extensive and long-term power outage.

With natural disasters intensifying nationwide, the Electricity Resilience Working Group* compiled verification results regarding our response to these emergencies. On July 1, 2020, the Acts for Establishing Resilient and Sustainable Electricity Supply Systems came into force. With the aim of fulfilling our power supply obligations through prompt restoration of the power supply, we have created an inter-business collaboration plan for disaster response and have started its implementation. This plan specifies cooperation with general power transmission and distribution business operators and related organizations (local governments, Self-Defense Forces, etc.). In line with the plan, by addressing issues presented by the Electricity Resilience Working Group and sharing the lessons learned from Typhoon No. 21, we are determined to fulfill our mission of supplying safe and stable electricity and supporting society. To that end, we will develop and introduce new technologies and new construction methods, as well as systematically maintaining or replacing aging equipment, aiming for prevention of accidents and prompt restoration of the power supply. We will continue to step up our efforts for quick recovery in the event of an emergency.

* A joint working group of the Electricity and Gas Basic Policy Subcommittee under the Advisory Committee for Natural Resources and Energy, and the Electric Power Safety Subcommittee under the Industrial Structure Council

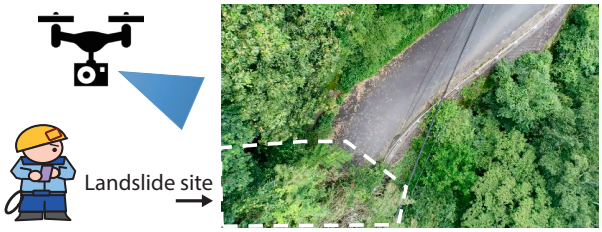
Examples of countermeasures taken following Typhoon No. 21

- Quick information gathering using smartphones
- Understanding the scope of damage using drones; using this information for restoration work
- Trial operations of power outage information collection utilizing smart meter data
- Bolstering a broad support system inside and outside the company
- Timely provision of information to the customer on power outages and restoration work

Understanding the scope of damage using drones; using this information for restoration work

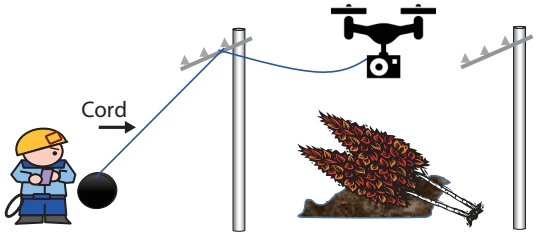
In places that are difficult to access, such as a site following a landslide, we use drones to check the status of equipment so we can quickly grasp the whole picture.

Drones are also expected to be used in restoration work, for example, for overhead wiring of a cord to replace power lines.



Damage investigation by aerial drone video

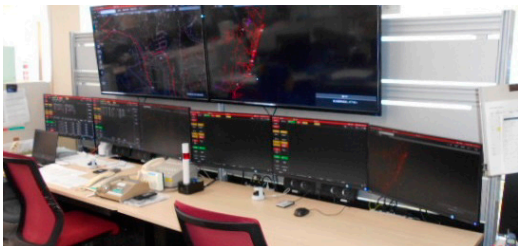
A drone taking off with a cord



Using a drone for overhead wiring of a cord to replace power lines

Introduction of a third-generation automated power distribution system

Twenty years have passed since the introduction of the conventional automated power distribution system. To address technical issues associated with the mass introduction of dispersed power generation equipment, etc., the system was renewed at the replacement timing in May 2021. By consolidating the dispersed systems and making them physically redundant, we can "ensure business continuity in the event of a disaster," "improve security," and "increase efficiency in system maintenance." In addition, central management of system information facilitates understanding of the system status of the entire Kansai region as well as data analysis. We expect that this can be utilized for considering optimal facility configuration and further improving system operation.

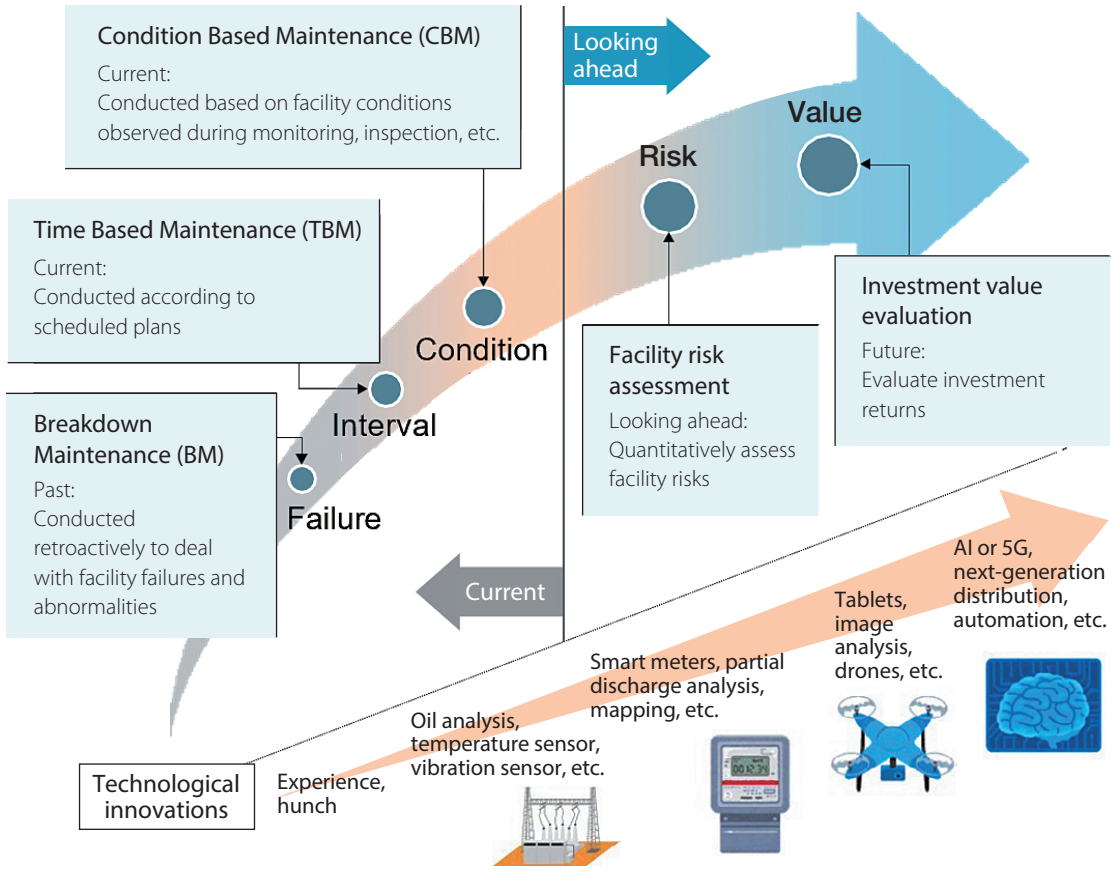


Third-generation automated power distribution system console

Advanced asset management

The number of aging facilities is increasing. These facilities should be systematically refurbished to ensure safe and stable electricity supply. Rational and efficient implementation of refurbishment, however, requires a comprehensive plan that takes into account facility risks, refurbishment costs, construction capabilities, etc.

We at Kansai Transmission and Distribution, Inc. are thus developing a planning system based on investment value evaluation to upgrade our asset management.



Relevant data

	2020/3	2021/3	2022/3
Number and rate of smart meters installed	About 11.53 million / About 88%	About 12.25 million / About 93%	About 12.74 million / About 97%
Specialist technicians with specialized skills	124	132	125
Number of injured ordinary citizens	4	6	8
Transmission and distribution loss rate	4.80%	5.14%	5.34%

SASB-related data System resilience

Code	Index	2020/3	2021/3	2022/3
IF-EU-550a-2	System Average Interruption Duration Index (SAIDI)	6 min	8 min	7 min
	System Average Interruption Frequency Index (SAIFI)	0.11	0.1	0.1
	Customer Average Interruption Duration Index (CAIDI)	54.55	80.00	70.00
IF-EU-000.C	Length of power transmission and distribution lines	Transmission lines: 18,804 km Distribution lines: 132,662 km	Transmission lines: 18,851 km Distribution lines: 132,880 km	Transmission lines: 18,873 km Distribution lines: 133,063 km

To prevent electrical accidents

Policy and Concept

Our quality policies for the safety of our electric facilities

Refer to page 78.

Goals

Goals based on the materiality of the Kansai Electric Power Group

Assuring public security at power facilities	Number of injured ordinary citizens “None”

Efforts

If something approaches, touches or damages electrical facilities of Kansai Transmission and Distribution, Inc., including transmission and distribution equipment, it may lead to not only a power outage but also to possible injury or death from electric shock. To prevent such electrical accidents, we conduct various public relations activities through mass media and on our website as well as on the website of Kansai Transmission and Distribution, Inc. As part of these activities we ask construction companies, when they perform construction work near our transmission and distribution equipment, to attach protective covers to electric wires for sure and not to touch the wires that have been cut.

PR campaign for accident prevention

① Announcements via our website and mass media
- Warning about crane work operation and scaffolding assembly, and introduction of how to attach protective covers
- Warning about touching severed wires, etc.
- Warning about abnormalities in electricity meters and transformers
- Notice of precautions in daily life and in an emergency situation
- Prior to a typhoon, reminders to work on preventing objects from becoming projectiles

② On-site publicity

As part of our PR campaign, if we discover a construction site where any measures to prevent electric shock are not taken, e.g., protective covers are not attached to electric wires, we call the operator’s attention to the dangers of electricity and request that they apply for the protective covers.

③ Featured in *Electricity and Security* published by Kansai Electrical Safety Inspection Association

Our PR campaign for the prevention of accidents related to electricity on construction sites and typhoon countermeasures was published in the July-August 2022 issue.

④ Visiting classes

We visit lectures and skill training classes at various industry associations, such as crane work operation, and introduce electrical hazards as well as examples of electrical accidents and relevant countermeasures.