

Responsibilities Toward Customers

SOCIAL



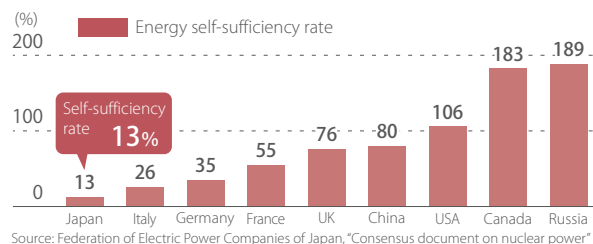
Securing a stable supply of energy

Policy and Concept

Energy risks faced by Japan

Japan's energy self-sufficiency rate is around 13%, 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 2020, except FY 2021 for Japan)



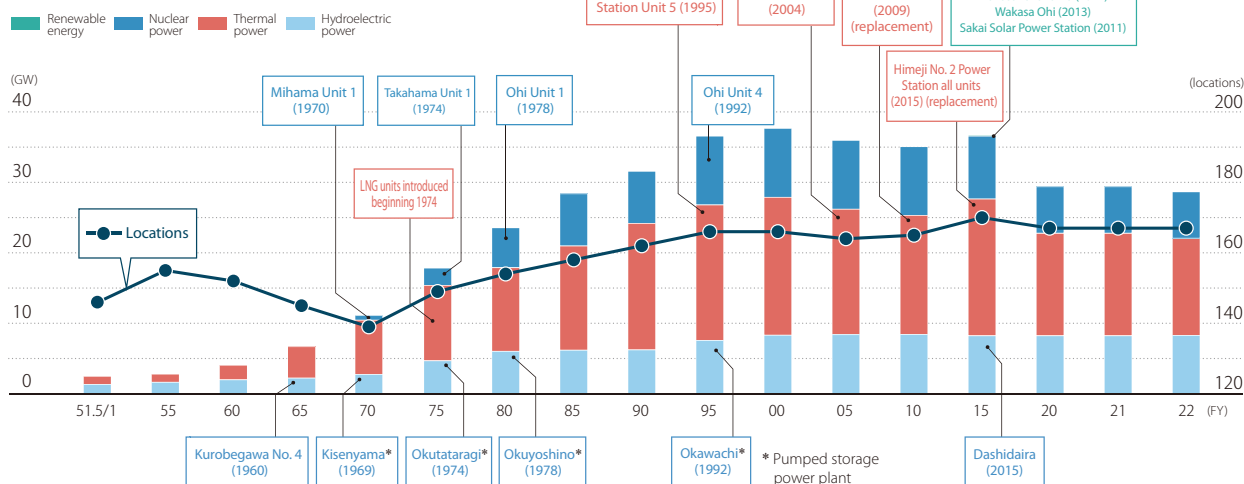
Decarbonization drive

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, 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

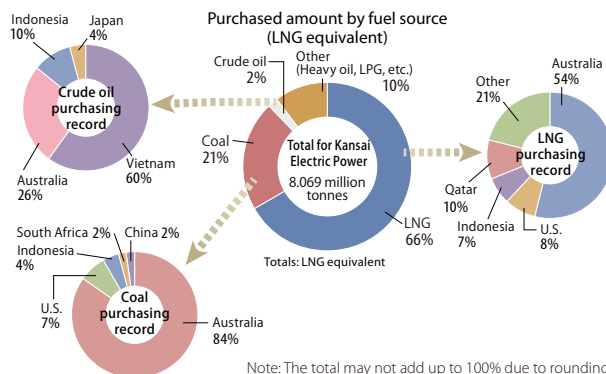
Our ongoing efforts include securing procurement of fuel, improving flexibility in responding to fluctuations in power demand, and further improving the economic efficiency of the operations.

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) operations, with various business activities underway.

Volatility is increasing in the global fuel market, with short supply due to strained international relations in the wake of the Ukraine conflict.

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 2022



Focusing on spot trading* for flexible LNG procurement and distribution



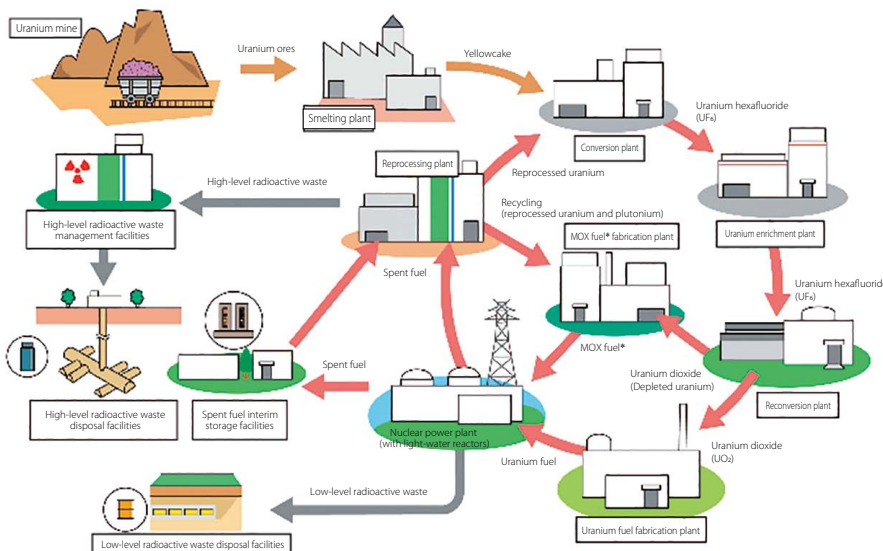
Centering on KE Fuel Trading Singapore Pte. Ltd., established to procure LNG and boost sales, we are building information gathering capability and expertise on flexible fuel trading in Singapore, the LNG hub in the Asia Pacific region, to accommodate changes in power demands, etc.

As the LNG market is expanding in sync with globalization, we have relocated our fuel trading hub from Japan to Singapore, extending our reach into the Atlantic region to improve and shore up LNG procurement and distribution resources.

* Spot trading: Transactions on a spot basis, typically by vessel

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," all executives and employees observe 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 executives and 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 their 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 executives and 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

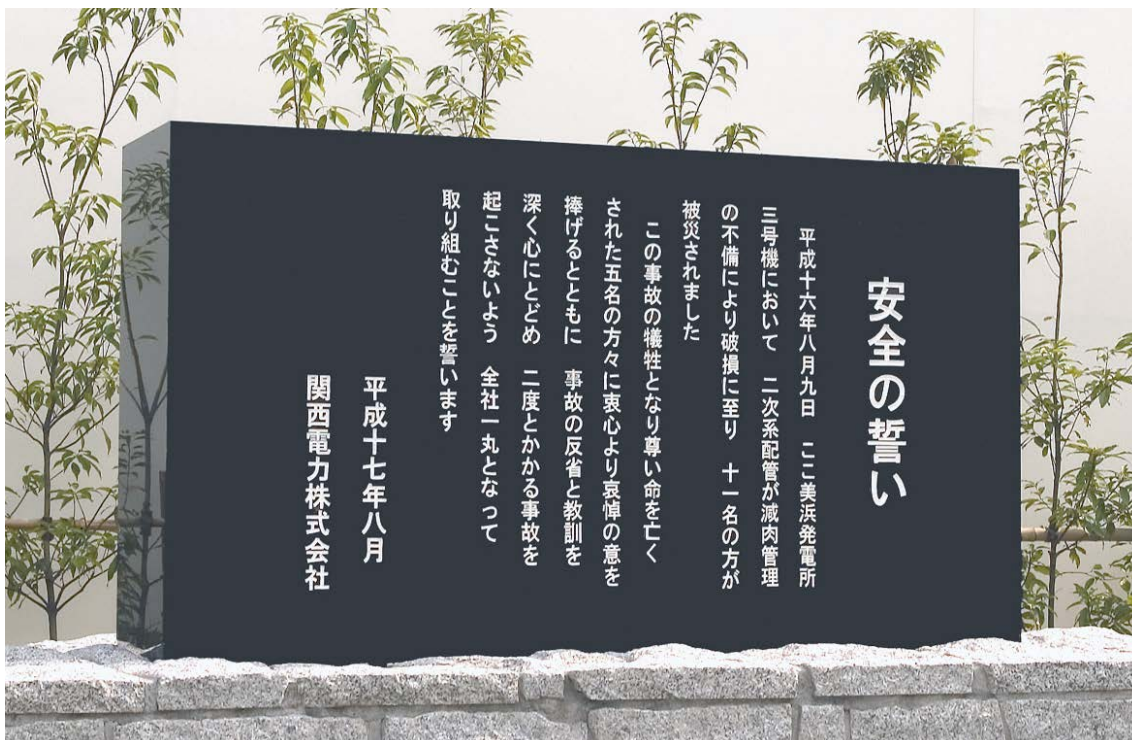
Continuous improvements are made through interactive communication to ensure the safe operation of nuclear power plants as well as strengthening the cooperative relationships we have with manufacturers and subcontractors. Opinions collected through questionnaires contribute to developing our safety culture,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

● Door-to-door visits with local residents

Our executives and 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

Stratified 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.

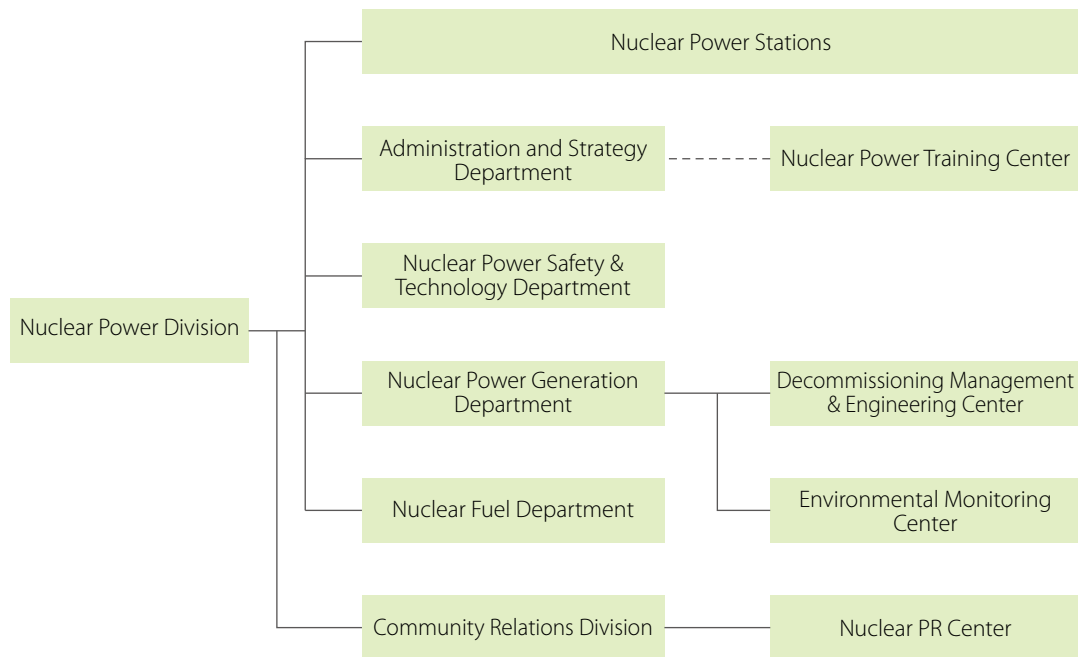


● Safe and stable operation of power plants

▶ 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 the Takahama Nuclear Power Station Units 1, 3, and 4, Ohi Nuclear Power Station Units 3 and 4, 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. We will also take careful, foolproof measures to restart Takahama Nuclear Power Station Unit 2, with top priority given to safety (as of the end of August 2023).

▶ 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.



◆ 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. In addition, various cooling systems are in place to prepare for possible accidents.

◆ 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).

● 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. Special facilities to deal with designated severe accidents are also in place, assuming the possibility of large commercial airliners colliding intentionally with reactor buildings or to protect against terrorism, etc.



Protection against tornadoes



Protection against tsunamis (seawalls)

◆ 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.

◆ Cyber security measures

Our information systems for reactor facilities, nuclear material protection equipment, etc. are designed to block access from outside the company to prevent unauthorized access, including cyberterrorism, through telecommunication circuits. In addition, even in secure areas, physical, logical, and management measures are taken in parallel to prevent unlawful attempts to access information systems for reactor facilities, nuclear material protection equipment, etc.



● 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 governments, 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.



Water cannon installation drill



Training on transportation and connection of Chugoku Electric Power's high-voltage power supply vehicle

◆ 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 before 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.

◆ Cooperation between nuclear operators

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

● 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.

● Mutual cooperation agreement between five electric power companies in western Japan

A mutual cooperation agreement has been signed by five companies: Hokuriku Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and the Company. 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 the Specialized Safety Facility, 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, Shikoku Electric Power, Kyushu Electric Power, and the Company) that own the same pressurized water reactor nuclear power plant.

With this agreement in place, we, as PWR operators, are cooperating in exchanging information to identify safety improvement measures, studying and examining new technology for next-generation light-water reactors.



● 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, including people requiring assistance in evacuation, providing 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.

● Stocking and providing necessities, etc.

We stock necessities such as food and blankets as well as providing 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

As we are committed to realizing green transformation (GX) to achieve carbon neutrality by 2050, we will maximize the use of nuclear power generation and balance the 3Es (Energy security, Economy and Environmental conservation; achieving a zero-carbon society), prioritizing safety. In addition, with the share of nuclear power in the power generation mix maintained at certain levels, we will continue to contribute to preserving Japan's technology and human resources for nuclear safety. Therefore, accident-proof nuclear power plants should be operated for over 40 year-spans, and we will be making the most of our nuclear power plants, placing a premium on their safe operation.

▶ Goals

We will continue to ensure safe, stable operation of Mihama Nuclear Power Station Unit 3 and Takahama Nuclear Power Station Unit 1, both of which were restarted for over 40 years of operation. Takahama Nuclear Power Station Unit 2 is also gearing up for restart, with careful, foolproof measures taken to ensure safety (as of the end of August 2023).

In addition, Takahama Nuclear Power Station Units 3 and 4, for which applications were made for over 40 years of operation, are scheduled to be audited by the Secretariat of the Nuclear Regulation Authority. Local communities around the power station and the public, meanwhile, will be briefed on the operation extension to better understand the need for and the safety of the two units.

▶ Efforts

Our Company always maintains the durability of our nuclear power plant facilities by continuously implementing maintenance and management, including regular inspections and planned equipment replacement. At the same time, in applying for an operation period extension for 40 years from the starting month, in addition to special inspections carried out for reactor vessels and other equipment, we have carried out technical evaluations of degradation from age and confirmed that the durability and safety of important facilities could be assured even over an operation period of 60 years.

Mihama Nuclear Power Station Unit 3 and Takahama Nuclear Power Station Units 1 and 2, meanwhile, were licensed by the Nuclear Regulation Authority for extended operation. Accordingly, Mihama Nuclear Power Station Unit 3 restarted in 2021 under new regulations and the consent of local communities around the station, making it the first nuclear power plant in Japan to restart for over 40 years of operation. Takahama Nuclear Power Station Unit 1 followed suit in August 2023, to be followed by Unit 2 in September of the same year (as of the end of August 2023).

Regarding Takahama Nuclear Power Station Units 3 and 4, we completed the special inspections required for exceeding 40 years of operation and in April 2023 we applied for an operation period extension.

In order to help the public better understand our nuclear power plants' operation of more than 40 years, we conduct various communication activities such as real and virtual plant tours, community events, and participation in briefing sessions and lectures. We will continue to proactively communicate with the public as well as communities near the plants.



Takahama Nuclear Power Station



Event briefing on power plant safety measures



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

● Establishing 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.

▶ Efforts

● Working on reliable decommissioning processes

The Company plans to conduct decommissioning over four major stages taking a total of about 30 years in accordance with nationwide coordination and fund management by the Nuclear Reprocessing Organization of Japan. 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. Other equipment such as generators will also be dismantled.

- Dismantling of equipment peripheral to the reactor

Dismantling is underway for equipment with relatively low radioactive contamination (new fuel storage, etc.), installed in auxiliary reactor buildings in controlled areas.

◆ Decommissioning at Ohi Nuclear Power Station Units 1 and 2

- 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.

- Residual radioactivity survey

Efforts are underway to reduce radiation exposure during dismantling and develop appropriate dismantling techniques.

Specifically, metal and concrete materials are sampled and analyzed for radioactivity to determine pollution levels inside facilities.

● 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.



● Activities as a pioneer of decommissioning

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

System decontamination at Mihama Nuclear Power Station Units 1 and 2 is the first of its kind in Japan, performed simultaneously with PWR decommissioning. Cooperating with foreign manufacturers with proven track records in decontamination and domestic manufacturers with expertise in nuclear power plants, we have significantly reduced radiation dose rates compared to pre-decontamination levels.

◆ Utilizing expertise and overseas examples

We are proceeding with decommissioning at Mihama Nuclear Power Station Units 1 and 2 to pioneer the decommissioning of PWRs, collaborating with partners such as universities and the Wakasa Wan Energy Research Center. In addition, we have information sharing agreements in place with nuclear operators in the US, France, Spain, South Korea, etc. and share information on nuclear power operation, including decommissioning.

● 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 four times for Mihama Nuclear Power Station Units 1 and 2 (on March 2017, January 2018, January 2019, and October 2022)
- 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.

- The program has been conducted every year since fiscal 2016, with 14 techniques adopted so far.

◆ 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.

- The program has been conducted every year since fiscal 2016 on a total of 33 occasions.

◆ Supporting the Fukui Prefecture Reinan E Coast Plan

We 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 Station 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

◆ Sharing the philosophy of giving top priority to safety

- We are working to instill and standardize our philosophy of giving top priority to safety through continued efforts such as providing all employees with e-learning on the company proclamation, “Commitment to Enhancing Nuclear Safety,” and having the management engage in dialogue with front-line workers at power plants and other workplaces.

◆ Improving governance for management of nuclear safety

- The Nuclear Safety Enhancement Committee, composed of executives from all divisions and other members, serves as a platform to discuss means to support and control the Nuclear Power Division, with concerted management efforts underway to improve nuclear power safety.

◆ 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 issues.
 - We are committed to addressing emerging challenges by soliciting opinions and suggestions to allow the management to develop a system and a culture to improve our organization.

● Building safety improvement infrastructure

◆ Strengthening resources (human capital development)

- We are developing human capital to keep up with environmental changes and address emerging challenges flexibly in cultivating an organizational climate of giving top priority to safety and working continuously on voluntary safety improvement programs to ensure safe, stable power supply.
- We are improving our educational programs to raise employees’ safety improvement awareness, utilizing risk information.
 - Educational materials are shared among those concerned incorporating typical examples from each power plant on the use of risk information.
 - Risk assessment procedures and measures based on assessment results are shared among those concerned prior to commencement of construction work. Specifically, these include assessment procedures to quantify risk changes in construction work and examination procedures for risk abatement measures.

● Safety improvement activities

◆ Promoting safety improvement measures

- We are enhancing nuclear power safety and collecting new information from home and abroad to ensure safe, stable operation at our power plants.
 - An external power failure detection system voluntarily installed is in operation to deal with accidents similar to the single phase failure (electrical accident) that occurred in the US.
 - Steam generators at Takahama Nuclear Power Station Units 3 and 4 will be replaced with generators equipped with corrosive-resistant heat exchanger tubes to ensure long-term reliability.

◆ 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.
- Efforts are underway to improve emergency response capabilities in preparation for unexpected nuclear disasters.
 - “Stress training” programs were conducted for plant task force members 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.
 - Meetings are held with subcontractors to improve on-site capabilities, where work procedures, control methods, etc. are discussed, incorporating on-site findings.
 - Discussions are held with subcontractors before commencement of work, where procedures for handling essential equipment and construction work to be performed nearby are reviewed to reinforce their significance.

◆ Developing and improving tools for risk management and assessment

- We have developed a risk assessment tool (PRA* model) and are promoting its use in plant operations.
- Efforts are underway to identify and reduce risks in power plants beyond the framework of existing regulatory requirements.
 - As part of safety improvement assessment procedures, plant safety levels are quantitatively analyzed to identify measures that contribute to further improving safety.

* 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.

◆ Designing and improving other management systems

- Occupational health and safety management systems are continued in operation.
- The Nuclear Power Division quantitatively evaluates plant safety performance (control index) and conducts on-site observations for assessment purposes.
 - Power plant improvement activities are continuously evaluated according to the plant performance index.
 - Nuclear Power Division managers regularly conduct on-site observations.

◆ Incorporating objective evaluation and external knowledge

- Safety measures at our nuclear power plants are monitored and evaluated for improvement purposes.
- Objective observation and evaluation activities (independent oversight activities*1) are conducted incorporating other electric power companies' expertise in nuclear power generation and action plans based on the resulting "suggestions and findings" from these activities are periodically reviewed and followed upon.
- Operational information is shared with overseas electric power companies to incorporate quality practices and knowledge from around the world.
 - A senior management meeting with Iberdrola, based in Spain, was held in October 2022.
 - Operational information was shared with EDF (France), Iberdrola (Spain), and Duke Energy (the US) (on four occasions).
- Peer reviews are conducted with WANO*2 and JANSI*3, 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 Mihama Nuclear Power Station. The Takahama Nuclear Power Station incorporated WANO's peer review results to make use of overseas knowledge, with action plans being developed according to recommendations made.

*1 Oversight: An activity where power plant safety measures are observed and evaluated to make improvements.

*2 World Association of Nuclear Operators

*3 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.
 - We held virtual plant tours, where visitors tour plants and communicate with staff members via computers or smartphones, providing a real feel of plants and their facilities.



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. As for the promotion of economic security, necessary measures will be taken as soon as the details related to the system are finalized.

► 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)

* The CISO, or Chief Information Security Officer, is responsible for the overall information security at a company.

► 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, security levels are evaluated for IT and OT systems based on a global standard framework, necessary 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 through, for example, the activities of the Japan Electricity Information Sharing and Analysis Center (JE-ISAC*), which is an organization that undertakes the sharing and analysis of cyber attack information among 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.



24/7/365 monitoring at our monitoring center



Delivering services that meet customers' needs

▶ 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 in the course of accelerated global decarbonization, we are committed to meeting customers' expectations. Specifically, we are creating and providing service solutions by receiving customer feedback to serve the public, businesses, and communities, ensuring compliance with all laws and regulations to encourage customers to continue selecting the Kansai Electric Power Group.

▶ Efforts

● Services for residential customers

We offer a variety of services to help customers live comfortably, conveniently, and cost-efficiently. These include electric charging plans tailor-made to suit customers' lifestyles, combined price plans for gas and electricity, and a subscription plan (Hapi e Set, Hapi e Set Solareji) for promotion of electrification toward zero carbon, which combines a fixed amount of electricity, the lease of the energy-saving electric hot-water supply system EcoCute, and solar power generation equipment.

We also offer services, such as dispatch of support personnel to customers experiencing problems (sudden power outages, etc.) and operating the Kanden Kurashi Mall for the convenience of customers. These are all designed to help customers live a fulfilling life, with solutions available that are specifically made in response to customers' needs and lifestyles.

As an energy company, we are committed to improving these services for customer satisfaction.

Hapi e Set

The Hapi e Set is an electrification subscription plan comprises a "fixed amount of electricity" and the "lease of electric appliances" (energy-saving electric hot-water supply system EcoCute, etc.), where customers are free to choose an electric charging plan and electric appliances according to their lifestyle needs. It is a 10-year, fixed-rate plan of electrification that ensures a safe, comfortable, and convenient life.

Hapi e Set Solareji

The Hapi e Set Solareji, a new packaged plan comprising a "fixed amount of electricity" and the "lease of equipment" (solar power generation equipment, etc.) is designed for newly built residential housing.

Kanden Kurashi Mall

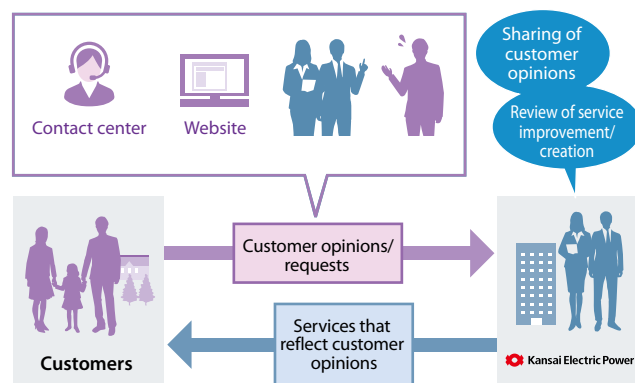
The Kanden Kurashi Mall is an EC mall that helps customers solve problems in their daily lives. It consists of services offering in "real estate and housing," "insurance," "housekeeping support," "life support," and "healthcare and learning," offering wide-ranging services to provide solutions to customers.

◆ 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 (2022. 4 – 2023. 3 results)

53



◆ Call center quality assessment

We conduct a "Call Center Quality Assessment," asking our customers to assess how understandable our telephone operators' explanations are regarding procedures for starting or terminating the use of electricity or gas when moving, etc. We receive high evaluations from a great deal 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 performed the procedure over the phone,

87.1%

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 (solar power generation, 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

Nikken Kosakusho Works, Ltd. came up with the slogan "Machining ECO" in 2009 to provide customers with products that contribute to saving energy and improving efficiency (energy and cost saving). As efforts are underway worldwide to promote decarbonization and achieve SDGs, the company is committed to further pursuing "Machining ECO." As part of its commitment, the company decided to start studying introduction of a solar power generation system. The company emphasized cost-effectiveness as well as energy-saving performance when planning the system. As a result of reviewing our estimation, the company found it sufficiently cost-effective and adopted our "on-site solar power generation services," of solar panels with a total area of 20,000 m² and a capacity of 1,920 kW, which were installed on the rooftop of the company's main plant in January 2022. Storage batteries are also in place to prepare for power outages during disasters, etc., which are estimated to be capable of supplying electricity for lighting fixtures and air-conditioning units at offices, and servers for about five hours. The company think they are effective for emergency response measures as these systems ensure the safety of employees and information securities.



Nikken Kosakusho Works and their solar panels



◆ Example of adopting utility services

In the spring of 2022, the Dai Hanshin Building and Shin Hankyu Building, which were more than 50 years old each, were rebuilt into the Osaka Umeda Twin Towers South in Umeda, Osaka, the largest terminal in western Japan. The Osaka Umeda Twin Towers South utilize utility services from Kanden Energy Solutions Co., Inc. (hereinafter, Kenes).

Kenes' utility services perfectly correspond to customer's needs for high quality environmental performance and CO₂ emission reduction as well as stable energy supply and the resilient BCP required for reconstruction. In addition to support in reducing CO₂ emissions and earning a high evaluation in terms of environmental performance, thorough BCP, and stable electricity supply, reassurance offered by Kenes as a professional company worth entrusting for the entire solution to various issues was the deciding factor in choosing its services, a customer representative commented.

From the time the services started, Kenes has been striving to conserve even more energy through energy management that draws on its unique knowledge in maximizing the performance of its latest facilities. Through operational evaluation and analysis in conjunction with energy conservation consultation to minimize energy cost and environmental impact, Kenes is pursuing a stable energy supply and maintaining a high level of performance.



Osaka Umeda Twin Towers South

◆ 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 distributed 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.
SenaSon (Kansai Electric Power Co., Inc.)	An AI-based solution that optimally controls distributed energy resources. The AI precisely predicts electricity demand and solar power generation in a building and accordingly controls the discharge from storage batteries in an optimal manner, as well as operation of air conditioning equipment, etc. in real-time, thereby helping customers reduce CO ₂ emissions and save costs.
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.
Overseas solution businesses (Vietnam/Thailand)	K-EST and K-ESV serve Japanese customers that have business footholds (plants) in Thailand and Vietnam. They provide overseas solutions for solar power generation systems, co-generation systems, on-site control of water chillers and boilers, I-REC*, energy-saving measures, etc. to support customers in reducing energy use, costs, and CO ₂ emissions. * International Renewable Energy Certification

● Relevant data

	FY 2020	FY 2021	FY 2022
Number of reform cases based on customer feedback	140	60	53
Customer satisfaction (Moving)	84.8%	88.9%	87.1%
Number of Hapi e-Miruden* subscribers	5,912,000	7,254,000	7,953,000

* A web-based service that provides notifications related to electricity and gas charges and usage (a service provided by the Company 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”

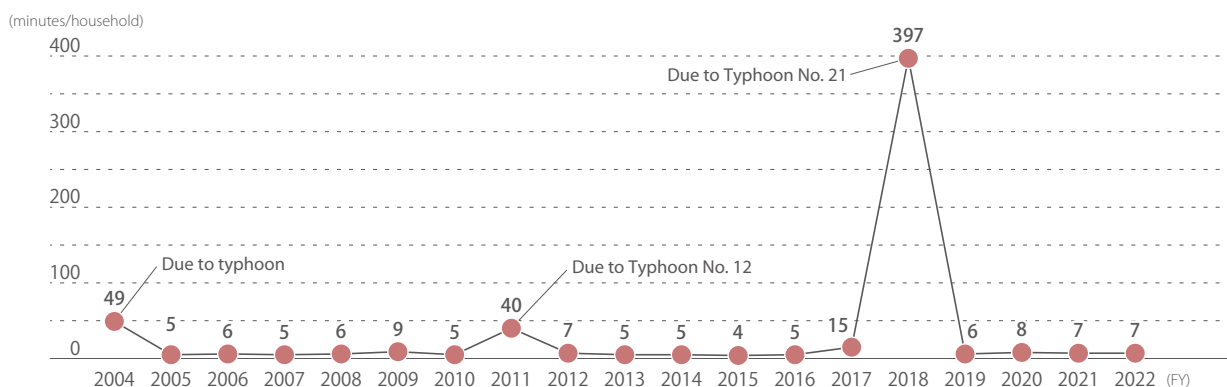
▶ Efforts

● 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

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, we will continue to fulfill our important 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

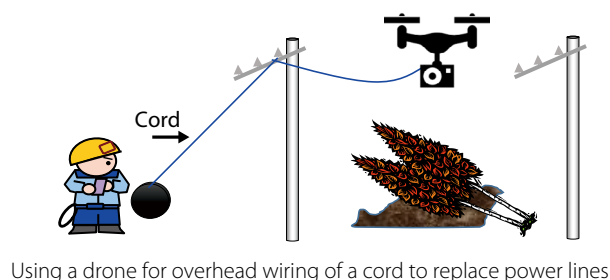
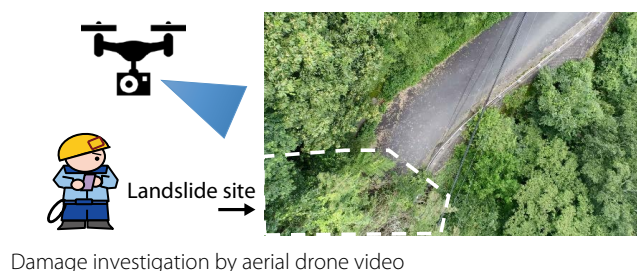
◆ Examples of measures for quick recovery

- 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.



● Relevant data

	FY 2020	FY 2021	FY 2022
Number and rate of smart meters installed	About 12.25 million / About 93%	About 12.74 million / About 97%	About 13.09 million / About 100%
Specialist technicians with specialized skills	132	125	118
Number of injured ordinary citizens	6	8	6
Transmission and distribution loss rate	5.14%	5.34%	5.10%

• Figures representing Kansai Transmission and Distribution, Inc. only

● SASB-related data System resilience

Code	Index	FY 2020	FY 2021	FY 2022
IF-EU-550a-2	System Average Interruption Duration Index (SAIDI)	8 min	7 min	7 min
	System Average Interruption Frequency Index (SAIFI)	0.1	0.1	0.1
	Customer Average Interruption Duration Index (CAIDI)	80.00	70.00	70.00
IF-EU-000.C	Length of power transmission and distribution lines	Transmission lines: 18,851 km Distribution lines: 132,880 km	Transmission lines: 18,873 km Distribution lines: 133,063 km	Transmission lines: 18,781 km Distribution lines: 133,309 km

• Figures representing Kansai Transmission and Distribution, Inc. only



To prevent electrical accidents

▶ Policy and Concept

● Our quality policies for the safety of our electric facilities

Refer to page 86.

▶ 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 featured in the July-August 2023 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.

