Toward Improving the Safety and Reliability of the Hamaoka Nuclear Power Station

Ihara Ichiro
Executive Vice President,
General Manager of Nuclear Power Division and Chief Nuclear Officer (CNO)

MESSAGE

We will work with all our efforts toward the early restart of the Hamaoka Nuclear Power Station, ensuring thorough communication with the local community and prioritizing safety above all else.

With a strong determination never to repeat an accident similar to the one that occurred at the Fukushima Daiichi Nuclear Power Station, we are voluntarily putting in place safety improvement measures at the Hamaoka Nuclear Power Station. Units 3 and 4 are currently undergoing a review to confirm conformance with the new regulatory standards.

In September 2023, the seismic motion required for plant design was determined. We are also making efforts to determine tsunami protocols for plant design and then conduct a plant safety review.

We are also setting up a disaster prevention system and enhancing education and training programs internally while further strengthening the cooperation with national and local governments for constant improvement of our emergency responses including the evacuation of residents.

In order to secure a stable energy supply for the future while responding to such issues as fluctuations in fossil fuel prices and global warming, Chubu Electric Power believes that it is essential to operate nuclear power generation continuously as an important power source.

We will continuously make every effort to ensure early compliance with the new regulatory standards and work diligently to gain the understanding and trust of the local community.

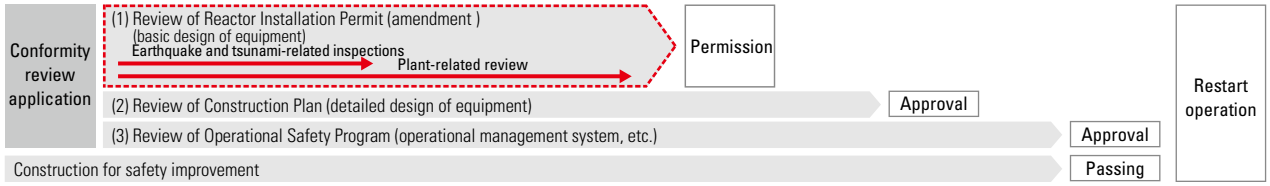
[Responding to reviews for confirming conformity to new regulatory requirements]

Based on reflections and lessons learned from the accident at the Fukushima Daiichi Nuclear Power Station, the Nuclear Regulation Authority was established and new regulatory requirements were enforced (July 2013).

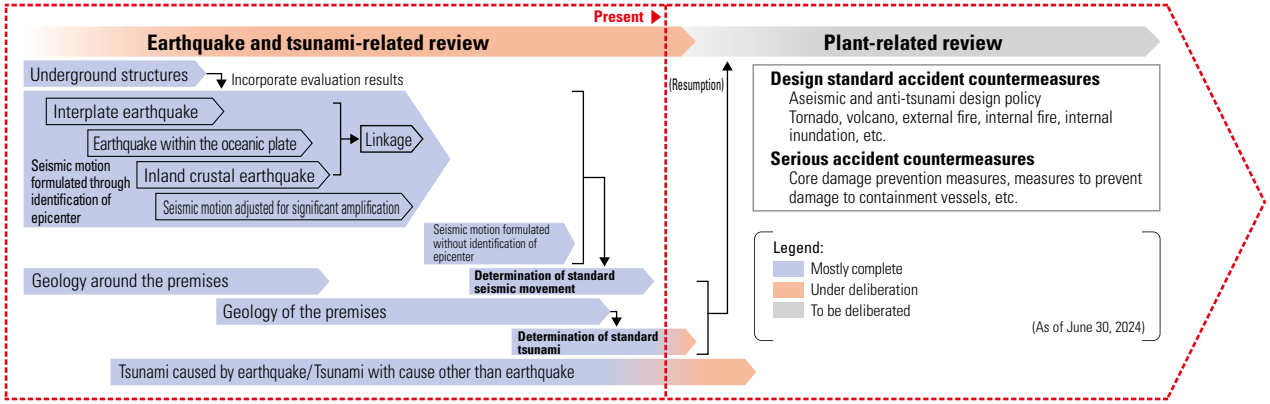
Reviews to confirm conformity to the new regulatory requirements include (1), (2), and (3) shown in the diagram below and the Nuclear Regulation Authority will implement these incrementally after the application is received from the utilities.

After confirming standards of seismic motion and tsunami (those standards will ensure the seismic and tsunami safety for facilities that are crucial in terms of safety) that are generally confirmed during the earthquake and tsunami-related inspections, the Nuclear Regulation Authority moves on to plant-related inspections based on the results of the earthquake and tsunami-related inspections.

●Review flow



Main Review Items and Progress Status of the Reactor Installation Change Permit (for further improvement of safety)

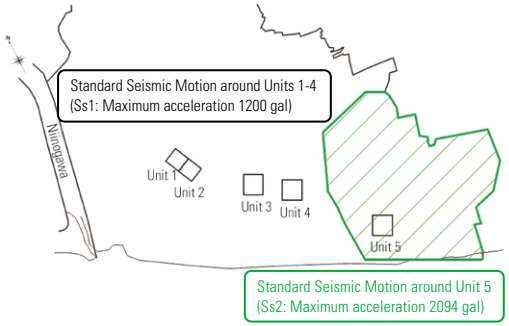


[Standards of Seismic Motion and Tsunami]

After the September 2023 review, it has been confirmed that the standard seismic motion is generally considered appropriate. The evaluation of standard tsunami protocols is nearing completion with assessments concluding that they are generally suitable for earthquake-triggered tsunamis, non-earthquake-related tsunamis, and the combinations that in effect constitute standard tsunamis.

Evaluation Items	Evaluation Results
Standard Seismic Motion	1200 gal / 2094 gal※
Standard Tsunami	25.2 m

※Due to significant amplification observed during the 2009 Suruga Bay Earthquake around Unit 5, individual evaluation was conducted (indicated by the green hatched area in the diagram to the right).

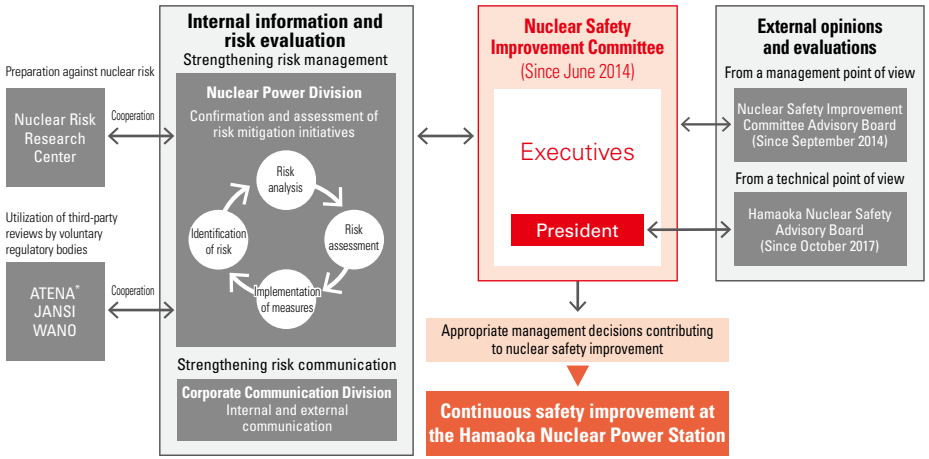


Activities to reduce risks

The Hamaoka Nuclear Power Station has always worked to improve the safety level of its operation by applying the latest knowledge.

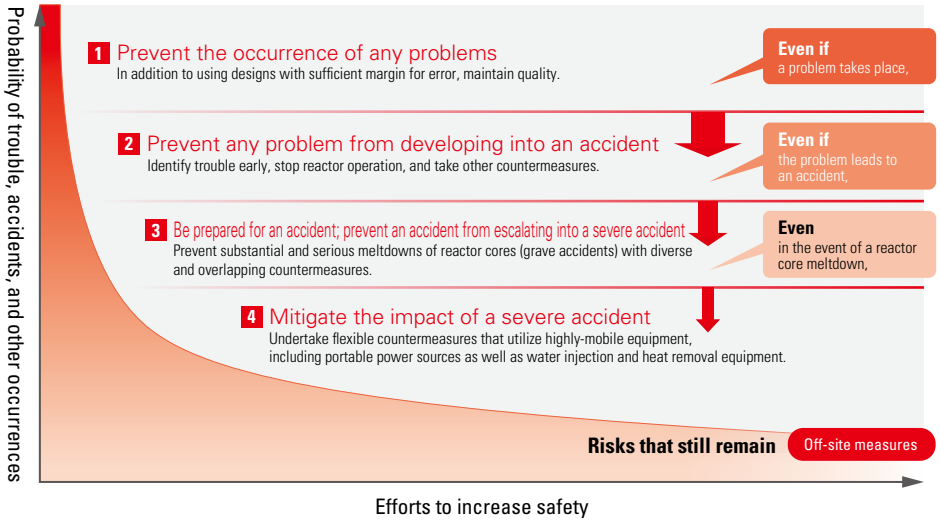
Additionally, since the accident at the Fukushima Daiichi Nuclear Power Station, we will not only ensure compliance with the new regulatory standards but also address risks such as radiation accidents and make efforts to minimize the risks, and promote voluntary and ongoing initiatives to improve safety.

●Governance structure



* ATENA: Atomic Energy Association, JANSI: Japan Nuclear Safety Institute, and WANO: World Association of Nuclear Operators

●(On-site) Initiatives to reduce risk within the power station (image)



[Strengthening governance]

We have established a framework whereby management led by the President analyzes and assesses nuclear safety risks, and monitors and appropriately deliberates the details of the safety measures. We have also established a system under which outside experts provide advice on these initiatives from a management and an on-site technical perspective.

[Strengthening risk management]

Previously, we had addressed problems and human errors that had materialized as risks but we have recently expanded the scope of risk assessment to various information including the status of the equipment at the power stations and observations on the activities in order to initiate improvements before the risks actually materialize, thereby preventing incidents before they occur.

By also utilizing the new examination system introduced from FY2020, which focuses on voluntary safety management, we are improving safety by combining independent initiatives as a nuclear operator with regulatory activities that oversee and assess such initiatives.

We are not only ensuring compliance with the new regulatory standards but also implementing safety improvement measures in order to minimize risks as much as possible.

Present status of reactors at the Hamaoka Nuclear Power Station (As of July 1, 2024)

Unit (Commenced operations)	Output (MW)	Present status
Unit 1 (March 1976)	(540 MW)	●Decommissioning process underway Dismantling of surrounding equipment and the decontamination of the reactor are underway one after another. (Operation discontinued on January 30, 2009)
Unit 2 (November 1978)	(840 MW)	
Unit 3 (August 1987)	**1,100 MW**	●The Nuclear Regulation Authority is currently investigating and confirming compliance with new regulatory standards. ●Safety improvement measures are currently being implemented.
Unit 4 (September 1993)	**1,137 MW**	
Unit 5 (January 2005)	**1,380 MW**	●Preparing applications for investigation and confirmation of compliance with new regulatory standards ●Safety improvement measures are currently being implemented.

[Responses inside the power station]

We are strengthening diverse and overlapping measures for facilities in order to prevent accidents from occurring as well as being prepared when accidents occur and taking measures to strengthen our on-site response capabilities so that the facilities function effectively.

❶ Preventing the flooding of the premises
Installing tsunami protection wall

❷ Preventing the flooding of the buildings
Installing reinforced doors and watertight doors

❸ Securing alternative means of supplying power sources
Installing gas turbine generators for emergencies

❹ Securing alternative means of water injection
Installing emergency fresh water storage tanks

❺ Training
Training in operations involving portable equipment and heavy equipment

❻ Training
Training with simulators

❶ to ❻ are examples of our activities.

[Responses outside the power station]

While we promote initiatives to reduce risks by strengthening governance, risk management, and facility countermeasures/on-site response capabilities, we still assume that risks will not disappear completely. Hence, we have been strengthening cooperation with national and local governments, relevant agencies, and nuclear power business operators to prepare for any nuclear disaster including the release of radioactive materials.

Relationship with the national and local governments and related organizations in an emergency

*1 A local emergency operation center sets up at off-site far away from on-site to implement emergency measures during nuclear emergency situation.
*2 Japan Atomic Energy Agency (JAEA), etc.

Exercise coordinating with national and local governments and related organizations (January 2023)
*Canceled in January 2024 due to the impact of the Noto Peninsula earthquake.

Collaborative drill with Tokyo Electric Power Company Holdings, Inc.(February 2024)

Collaboration and cooperation with Omaezaki City, Makinohara City, Kakegawa City and Kikugawa City

Chubu Electric Power has entered into a three-party agreement of ensuring the safety of persons requiring evacuation assistance* with Omaezaki City and Makinohara City. Chubu Electric Power has also entered into a similar agreement with Kakegawa City and Kikugawa City individually. We have been strengthening mutual cooperation through joint training with local governments.

* Elderly and other persons who cannot evacuate on their own and need assistance

Drill to set up radioprotective air shelters used as a temporary evacuation shelter for persons requiring evacuation assistance in collaboration with Omaezaki City (November 2023)

Radiation measurement training at radioprotective air shelters in collaboration with Kikugawa City (January 2024)

[Strengthening risk communication]

By utilizing various opportunities, we explain our efforts made at the Hamaoka Nuclear Power Station. At the same time, we conduct ongoing activities to listen to the voice of local residents and respond earnestly to their concerns, questions, and opinions.

Power station tours

We host tours of the Hamaoka Nuclear Power Station for local residents and companies in the areas around the power station to explain a mechanism of nuclear power generation and other related topics and provide an opportunity for them to actually see the station's safety improvement measures on-site.

Opinion-exchange meetings and briefings

We hold opinion-exchange meetings with local residents in the areas around the power station to talk about questions and concerns about nuclear power generation and other matters of interest in a group work format to deepen mutual understanding. We also provide briefings on the latest status of the power station at meetings of local residents' associations and other occasions.

Power plant "caravans"

We address questions and concerns about energy and the Hamaoka Nuclear Power Station that visitors may have at locations such as the Hamaoka Nuclear Power Museum, regional commercial facilities, and events.

Animation series "Energy Doctor's Laboratory"

This series of short animations follows the two main characters, Enemi and Rugiko, who work as assistants in a laboratory, learning about energy from a doctor while incorporating humor. It also introduces aspects of Hamaoka Nuclear Power Station, including an overview and daily inspection operations.

* For more details, please visit the YouTube channel

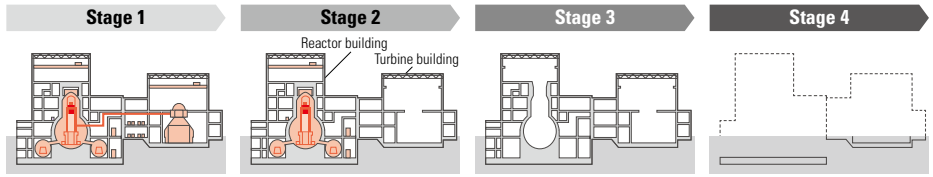
Link Animation series "Energy Doctor's Laboratory" (Japanese version only)

Status of decommissioning of the Hamaoka Nuclear Power Station Units 1 and 2

Starting from fiscal 2024, Units 1 and 2 of the Hamaoka Nuclear Power Station will enter the third stage of decommissioning. In this stage, efforts will focus on dismantling the reactor area, including internal structures and pressure vessels.

Furthermore, efforts will continue to utilize the clearance system to reduce and recycle dismantled waste materials, aiming to minimize environmental impact.

In the future, based on the premise of ensuring safety, Chubu Electric Power will continue to steadily proceed with decommissioning as the front-runner responsible for Japan's first decommissioning of a commercial light water reactor.



TOPICS

Hamaoka Nuclear Power Station's Shippai Ni Manabu Kairo certified as Maintenance Heritage

In June 2023, Shippai ni Manabu Kairo (lit. "Learning from Past Mistakes Gallery") inside the Hamaoka Nuclear Training Center at the Hamaoka Nuclear Power Station was certified as the 10th Maintenance Heritage by the Japan Society of Maintenology.

The Maintenance Heritage aims to promote the advancement, dissemination, and societal contribution of maintenance studies. It recognizes equipment, technical materials, and exhibits in museums as artifacts acknowledged as both maintenance-related heritage that endures in history and as cultural heritage of humanity.

Shippai ni Manabu Kairo has been recognized and certified as a Maintenance Heritage for its "historical value" in preserving lessons learned from past accidents and incidents, as well as for its role in passing down accumulated expertise without allowing it to fade away.

Renewable Energy Business

Development and popularization of renewable energy and power generation business based on renewable energy sources

Strengths

- **Connections with diverse stakeholders cultivated over long years of power source development and power generation businesses**
- **Strong technological and project development capabilities for providing value in renewable energy including Group companies**

Risks

- Competition with other power producers
- Intensification of natural disasters
- Increase in maintenance cost for existing power sources

Opportunities

- Growing importance of decarbonization and energy security worldwide
- Accelerating moves toward achieving carbon neutrality and making renewable energy into the mainstay power source in 2050 with the enactment of the GX (Green Transformation) Promotion Act and GX Decarbonized Power Source Act
- Rising customer needs for renewable electricity such as RE100

Efforts

Accelerated development of renewable energy power sources

- Development and expansion of ownership of offshore wind power, onshore wind power, biomass, hydropower, solar power, and geothermal power
- Update, reinforce, conduct Kaizen activities and DX promotion for existing power supplies to increase output, increase power, and operate efficiently

Ongoing expansion of renewable energy together with our customers

- Construction and maintenance of equipment by Group companies
- Provide decarbonization services suited for customers' issues

Targets

Expansion of renewable energy*

- Expansion of 3,200 MW (8 billion kWh) or more by around 2030
- Strategically invest around 400 billion yen mainly in renewable energy businesses

* Provision of value in renewable energy, including ownership, construction, and maintenance

Ensuring the development of new power sources

Major development locations (planned fiscal year for commencement of operation)

- FY2024 Abekawa Hydro Power (Shizuoka), Yatsushiro Biomass (Kumamoto)
- FY2025 Tahara Biomass (Aichi), Fukuyama Biomass (Hiroshima)
- FY2026 Sakaiminato Biomass (Tottori)

Expansion of renewable energy together with our customers

- Over 400 customers to utilize our on-site PPA service by FY2024





Left: Seinaiji Hydro Power, Upper Middle: Wind farm Toyotomi, Lower Middle: Shizugin Solar Park, Upper Right: Tahara Biomass, Lower Right: Abekawa Hydro Power

We will contribute to raising Japan's energy self-sufficiency rate and to realizing a decarbonized society by expanding the use of renewable energy that we will promote together with society and customers.

Nakahata Tadashi
Senior Managing Executive Officer
President
Renewable Energy Company

The Chubu Electric Power Group has set a goal of expanding renewable energy to 3,200 MW (8 billion kWh) or more by around 2030. To achieve this goal, we are leveraging the project development capabilities we have cultivated over many years in the power generation business to actively pursue development initiatives in collaboration with local communities and our customers.

In fiscal 2023, Chubu Electric Power began operations at the Seinaiji Hydro Power Station, marking the 200th hydroelectric power plant for the company. Additionally, with the acquisition of JENEX GROUP as a wholly-owned subsidiary, we are accelerating the development of new solar power stations and other ventures to meet the needs of customers for non-fossil values.

In existing hydroelectric power plants, we are promoting Kaizen activities and digital transformation (DX) to strengthen equipment, improve maintenance efficiency, and increase power generation.

We will continue to work on power source development and the effective utilization of existing power sources nationwide, while gaining understanding from local communities, to contribute to the realization of a decarbonized society.

Vision

Mission

- Work in unison as a group in developing 3,200 MW or more by around 2030
- Contribute to improving the non-fossil fuel ratio and making renewable energy sources the mainstay of energy sources
- Realize stable and inexpensive power generation

Initiatives

- Steady development and promotion of renewable energy projects
- All measures such as strategic investment
- Maximize the use of existing facilities

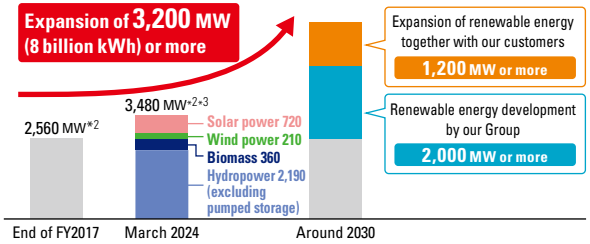
Protect the earth.
Change the future.
Renewable energy

Contribute to the realization of a decarbonized society

Mamoru the Forest Green Tree Frog

Efforts to expand renewable energy

By accelerating the development of renewable energy sources and expanding renewable energy together with customers, we aim to achieve 3,200 MW (8 billion kWh) or more*1 in renewable energy by around 2030. Regarding the state of progress as of the end of FY2023, the Group's overall renewable power generation capacity was approximately 920 MW*1, about 29% of the target.*2, *3



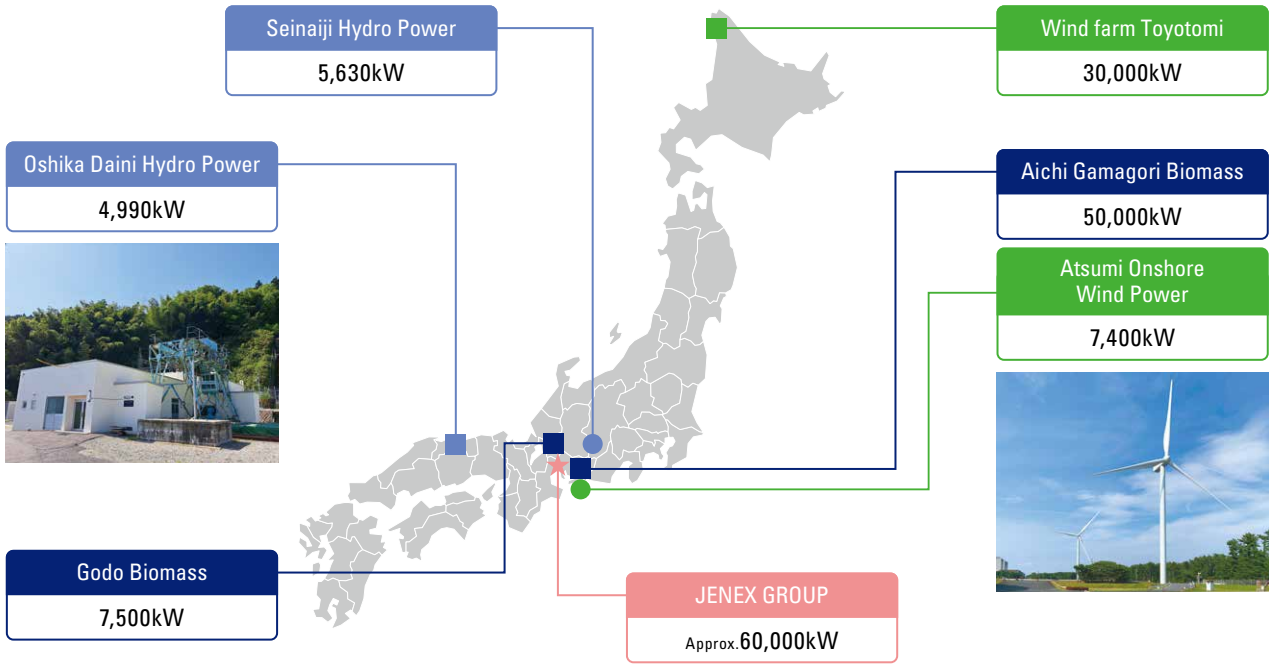
*1 Locations that started operations or a decision on development has been made in FY2018 or later
*2 Includes projects for which a decision on development has already been made but operations have not started
*3 Capacity includes Group companies

Participation in PFI Project for Hydroelectric Power Facilities

Utilizing our expertise in hydropower, we have been participating since 2020 in Japan's first concession-method*4 PFI (Private Finance Initiative) endeavor for hydropower facilities*5. This project involves the redevelopment and operational management of four hydroelectric power plants owned by the Tottori Prefecture Public Enterprise Bureau. In fiscal 2023, we completed the redevelopment and started operating the Oshika Daini Power Station, the second site to go online. Redevelopment of the remaining two power plants is ongoing, with plans to begin operations in fiscal 2024.

*4. A method in which a public entity transfers the right to operate a facility to a private business, while maintaining ownership of the facility
*5. A public works project approach that uses private-sector funds as well as capabilities as to management and technology (know-how) to design, construct, repair, update, maintain and manage, and operate public facilities

Main development sites in FY2023



Effective use of forest resources and contribution to regional economic circulation

We are focusing on the development of biomass power plants that utilize various types of domestic timber as fuel. This includes unused materials generated from forestry thinning, offcuts from sawmilling, pruning branches from street trees, and recycled wood from construction waste. By using wood that was traditionally discarded or incinerated as fuel for biomass power generation, we contribute to the effective use of forest resources. Moreover, we are collaborating with local forestry and agriculture to promote regional economic circulation.

Aridagawa Biomass Power Plant (Aridagawa, Arida-gun, Wakayama Prefecture)

Chubu Electric Power Grid Co., Inc.

Providing power transmission/distribution business and electric power network services

Strengths

- **Contributing to a stable supply of electricity within the Chubu region and nationwide through initiatives for decarbonization as well as for promoting a next-generation power network and increasing the level of sophistication of the network's operation**
- **Achieving efficient and economical facility investment and operation, and low transmission fees, through digital technology and data analysis**

Risks

- Intensification of natural disasters
- Sluggish electricity demand due to declining population, slowdown in economic growth, and other factors
- Complex flow of electricity as a result of the mass connection of renewable energy
- Increase in power quality maintenance cost

Opportunities

- Increasing needs for renewable energy to realize a carbon-free society
- Emergence of a new supply model where local production and consumption of electricity will occur with small-scale distributed power supplies
- Diversifying needs in relation to energy as a result of digitalization

Efforts

- Ensuring stable supply and public safety at a higher level
- Preparation of the environment to accommodate the introduction of renewable energy
- Realizing low wheeling charges through efficient and well-planned capital investment
- Reasonable facility formation that is matched with changes in demand–supply structure
- Reduction of environmental load throughout business operation
- Improving reliability and reducing costs through the promotion of digitalization of equipment and smart security

Targets

Stable supply

- Reduction of power outages
  Reduce the amounts of power outages* for low-voltage lighting customers to below the actual values for the past five years (FY2017–2021)
  * Excludes highly exogenous events such as natural disasters

Promotion of a next-generation power network and enhancement of regional services

- Expansion of application of Connect & Manage toward expanding introduction of renewable energy
- Establishment of technologies for realizing distributed grids
- Formulation and reliable implementation of plan for introducing next-generation smart meters

To achieve decarbonization, we will fulfill our mission of providing safe, affordable, and stable electricity through the next-generation development and advanced operation of the power network, as well as the utilization of digital technology.

Shimizu Ryuichi
President & Director
Chubu Electric Power Grid Co., Inc.

Chubu Electric Power Grid is advancing the next-generation development and sophisticated operation of the power network, coupled with various research and demonstration projects, to meet the diverse electricity supply and demand in each region through the expanded adoption of renewable energy for decarbonization. Additionally, we are developing a new central load dispatching office system aimed at achieving optimal economic operation and ensuring resilience on a nationwide scale. We are also enhancing facilities to expand inter-regional power transactions.

Furthermore, by combining digital technologies such as sensors and AI with customized data analysis for each region and facility, we strive to achieve efficient facility investment and development, lower maintenance costs, and improve electricity quality and resilience. Through consistent equipment maintenance and systematic operation, we are dedicated to ensuring a secure, affordable, and reliable electricity supply.

Looking ahead, we will steadily advance initiatives to realize the Chubu Electric Power Grid Vision by 2050 through our business activities.

Vision

Deliver safety and security through the stable supply of electricity to local customers

The ideal energy platform we are working to create

- Establishment of a high-quality grid that is disaster-resilient and efficiently provides electricity
- Visualization of value and construction of a base for the value exchange related to electricity

Our ideal contribution to the realization of future local communities

- Contribution to the achievement of livable local communities that ensure safety and security through services based on both owned and external resources

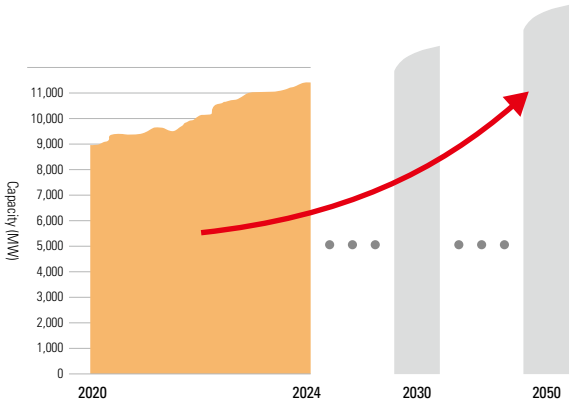
Expansion of Renewable Energy Deployment and Challenges

The nationwide deployment of renewable energy is expected to continue expanding in the future as part of efforts to achieve carbon neutrality by 2050.

However, there are challenges to this expansion, such as the curtailment of energy output. Maintaining electricity quality requires a balance between supply and demand. During peak demand periods such as Golden Week, adjustments are made by prioritizing power supply rules, which may include reducing output from thermal power generation and utilizing pumped-storage hydroelectric power. If supply exceeds demand, curtailment of renewable energy output is implemented to maintain electricity quality.

Chubu Electric Power Grid aims to enhance the expansion of renewable energy by addressing output curtailment challenges. This initiative supports our goal of achieving carbon neutrality while ensuring a stable electricity supply.

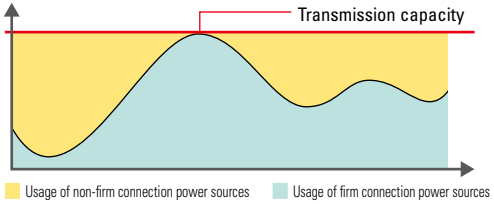
●Current Solar Power Generation Capacity in Our Network and Future Outlook



Examples of Initiatives Aimed at Expanding the Introduction of Renewable Energy

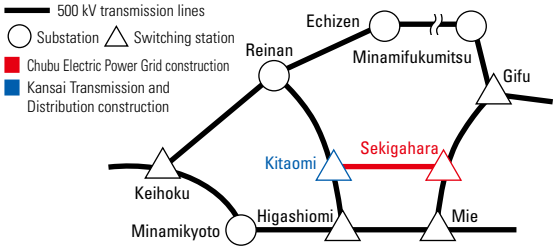
Non-firm connection

We are transitioning from the traditional method of connection (firm connection), which required facility expansion as needed, to a new method (non-firm connection) that connects new power sources using available capacity in transmission lines and other means, without the need for facility expansion. This change shortens the time from the operator's connection application to the start of operation.



Enhancement of Interregional Transmission Lines

Enhancing interregional transmission lines between general electricity distributors revitalizes electricity trading between regions, which is expected to reduce the curtailment of renewable energy output. Chubu Electric Power Grid aims to bolster supply reliability and support the expansion of renewable energy adoption by reinforcing interconnections between the Chubu and Kansai regions.

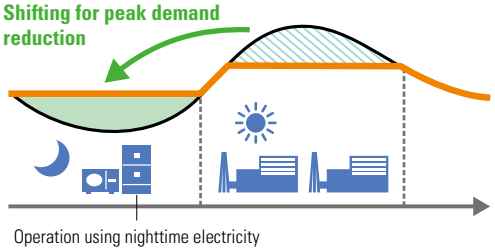


Verification Aimed at Expanding Utilization of Eco Cute Systems and Storage Batteries

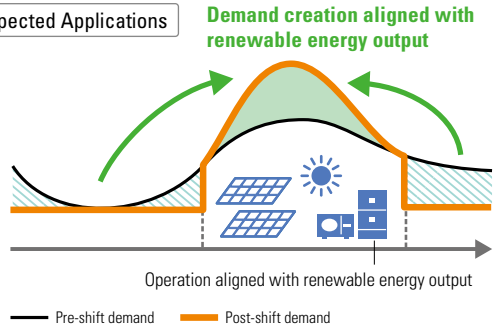
We are advancing studies and verification related to the control of Eco Cute systems, storage batteries, and other technologies that are expected to be utilized in the future.

Generally, Eco Cute systems are used to reduce peak electricity demand during the day by consuming electricity during nighttime (peak shifting). In contrast, this verification aims to operate Eco Cute systems during the daytime in alignment with renewable energy outputs to stimulate demand. The results obtained from this verification will be utilized to reduce the curtailment of renewable energy outputs.

Current Applications



Expected Applications



Chubu Electric Power Miraiz Co., Inc.

Wholesaling of electricity/gas and providing various services

Strengths

- **High technical expertise and proposal capabilities, leveraging years of experience in energy utilization and decarbonization**
- **Extensive customer contact points and strong customer trust**

Risks

- Sluggish electricity demand due to declining population, slowdown in economic growth, and other factors
- Intensification of competition with other power supply
- Significant fluctuations in profit structure due to major changes in the market price for fuel

Opportunities

- Increased electricity demand due to the advancement of digital transformation (DX)
- Acceleration of efforts toward customers' decarbonization
- Changing customer needs

Efforts

- Expansion of energy sales (electricity and gas)
- Development and provision of services to achieve a decarbonized society
- Offering new services that enrich the lives of customers and solve business issues through data analysis and digital technologies

Targets

Ordinary income

[FY2025] **40~50** billion yen

Energy sold

Electrical energy sold (entire Group)

[FY2023] **111.1** Twh

[FY2030] **130.0** Twh per year

Gas and LNG sold (entire Group)

[FY2023] **1,560** thousand tons

[FY2030] **3,000** thousand tons per year

Creating new value and services

Establishing a revenue pillar alongside traditional energy sales by FY2030

Miraiz Shop (AEON MALL Nagoya Dome Mae 3F) introduces optimal energy solutions for households

Based on the connections with customers, Chubu Electric Power Miraiz will provide new value that will "enrich the lives of the customers" and "solve business issues."

The environment surrounding our customers and society is radically changing as DX advances and momentum increases toward the realization of a carbon-free society, with the pace of these changes accelerating. At Chubu Electric Power Miraiz, we view these changes as opportunities. Building on the connections we have established with our customers, we anticipate their needs and propose better services. By doing so, we aim to "enrich the lives of the customers" and "solve business issues," thereby providing new value.

Additionally, by providing services that support our customers' efforts toward decarbonization, we will advance together with them to realize a carbon-free society.

Kamiya Hironori
President & Director
Chubu Electric Power Miraiz Co., Inc.

Vision

Business policy for achieving our vision

- **Expand the value chain through business model transformation**
- **Contribute to realizing a carbon-free society through our businesses and services**

Enrich the lives of customers

"Good Things for Life Campaign"

暮らしにイイコト

For our valued customers who have supported Chubu Electric Power Miraiz, we are conducting the **"Good Things for Life Campaign" with the aim of providing benefits for both present and future aspects of life.**

Through this campaign, we will continue to deliver positive outcomes for our customers, such as initiatives to reduce electricity and gas expenses.

Provide life services tailored to each life stage

Mainly through Chubu Electric Power Miraiz Connect, we offer services that cater to a variety of needs in our customers' daily lives and life events, leveraging data and digital technology.

Examples of services provided	TSUNAGU table —食卓と地域をつなぐ—	テラシテR
	A service that helps to reduce food loss with a great bargain and lots of fun	A monitoring service for residents using electricity consumption data

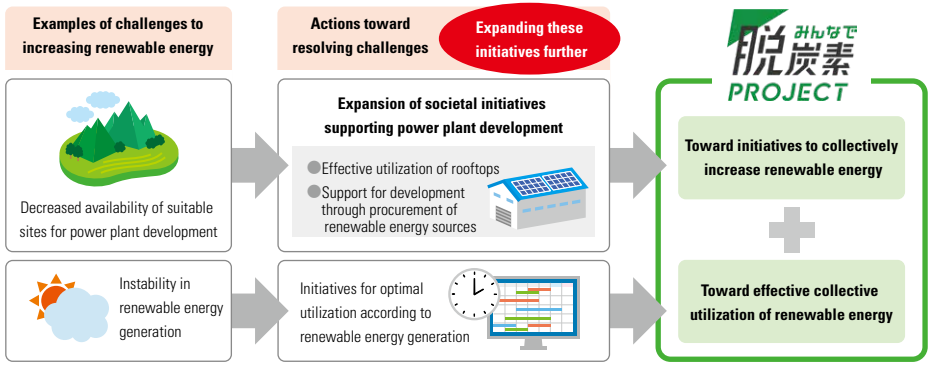
Opening of the Directly Managed Store Miraiz Shop (April 23, 2024)

Chubu Electric Power Miraiz staff, as energy professionals, will think together and collaborate with each individual to create energy-smart homes closely matched to his/her needs, supporting the realization of comfortable and secure living.

Solve Business Issues

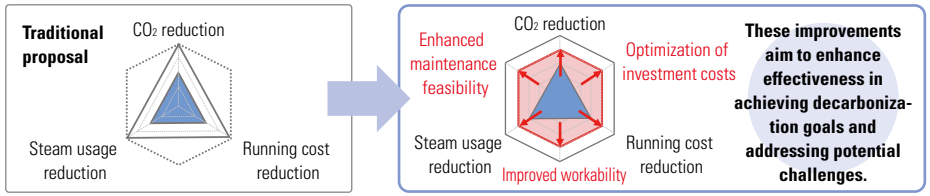
Community Decarbonization Project

Initiatives that unite electricity providers and users



Green Transformation (GX) consulting service

This service involves planning energy conservation and decarbonization initiatives together with customers, contributing to the reliable achievement of their environmental goals.



Collaborative initiative addressing social issues with local government

Case Study Comprehensive collaboration agreement on carbon neutrality (Kota Town)

Kota Town and Chubu Electric Power Miraiz have entered into a mutual cooperation agreement aimed at resolving local issues in Kota Town while promoting initiatives leading to decarbonization, thus achieving a sustainable society. This agreement aims to transform Kota Town into a zero-carbon city through initiatives such as introducing EV charging service "treev" and conducting SDGs education programs.

Case Study Collaboration agreement for promoting co-creation to achieve a carbon-free society (Nakatsugawa City)

This agreement involves Nakatsugawa City, Nakatsugawa Chamber of Commerce & Industry, Nakatsugawa-kita Chamber of Commerce, and Chubu Electric Power Miraiz, aiming to expand the introduction and effective utilization of renewable energy. Through infrastructure initiatives such as installing solar power generation facilities and promoting EV charging stations, the agreement aims to contribute to achieving a carbon-free society while actively revitalizing the local economy.

Global Business

Investment, overseas consulting, etc.

Geothermal project in Geretsried, Germany

We will expand our energy business glocally* to contribute to the sustainable development of humankind.

Sato Hiroki
Senior Managing Executive Officer
General Manager of Global Business Division

Chubu Electric Power has positioned the global business as one of our new growth fields in our Management Vision 2.0. We established the Global Business Division in April 2022 and have been expanding our business on a steady basis.

Going ahead, to contribute to the realization of a decarbonized society, we will continue to expand our investments in global businesses that lead to decarbonization, mainly in Europe, the Middle East and the Asia-Pacific region, strengthen our earnings base and increase profits.

Also, in our overseas consulting, we aim to provide various energy-related solutions and create business opportunities through undertaking projects from the Japan International Cooperation Agency (JICA) etc., mainly in Asia and Africa, where economic growth is expected.

We will promote the development of decarbonization and community services and leverage our knowledge in these areas to increase synergies with our domestic business.

* A portmanteau word combining "global," which means global scale, and "local," which means each country and region.

Strengths

- **Investments in diverse businesses related to "decarbonization" mainly in Europe and the Aisa-Pacific region**
- **Able to approach from the demand side by connecting directly with customers within and outside of Japan, leveraging strengths including technological capabilities and customer base nurtured through the domestic power business**

Risks

- Intensifying competition due to limited investment projects
- Overseas political and economic instability, independent regulations
- Development, construction, operation of investment projects

Opportunities

- Rising global interest in renewable energy projects for the realization of a decarbonized society
- Growing interest in SDGs
- Advance of new technology areas in decarbonization and renewable energy businesses

Efforts

Expanding investment in businesses that lead to "decarbonization"

- Position Eneco in the Netherlands as a strategic platform in Europe and develop business
- Develop social problem-solving businesses that meet the needs of Asian countries through renewable energy and power distribution businesses

Contributing to solving SDGs issues through overseas consulting

- Power infrastructure consulting business in Mozambique, Uganda, Jordan, Ecuador and Bangladesh commissioned by the Japan International Cooperation Agency (JICA)

Targets

Strategic investment

- Around 400 billion yen from FY2021 to FY2030

Consolidated ordinary income

- About 20 billion yen in FY2030

Profitability

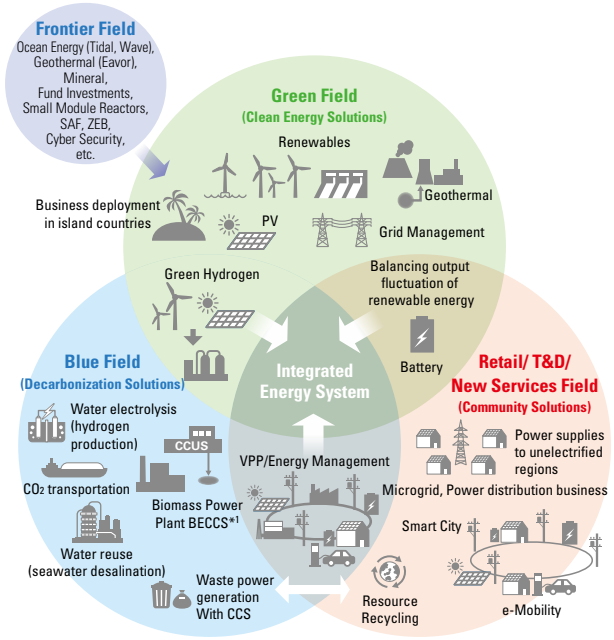
- ROA in the high 3% range in FY2030

Vision

- **In fiscal 2030, we will build an optimal portfolio that combines the segments of Green Field, Blue Field, Retail/Transmission & Distribution (T&D)/New Services, and Frontier Field.**

Position and strategy

Combining the four segments (Green, Blue, Retail/Transmission & Distribution (T&D)/New Services, and Frontier Fields), we aim to form an optimal portfolio and achieve the goal of over 400 billion yen in cumulative investments and over 20 billion yen in profits in FY2030.

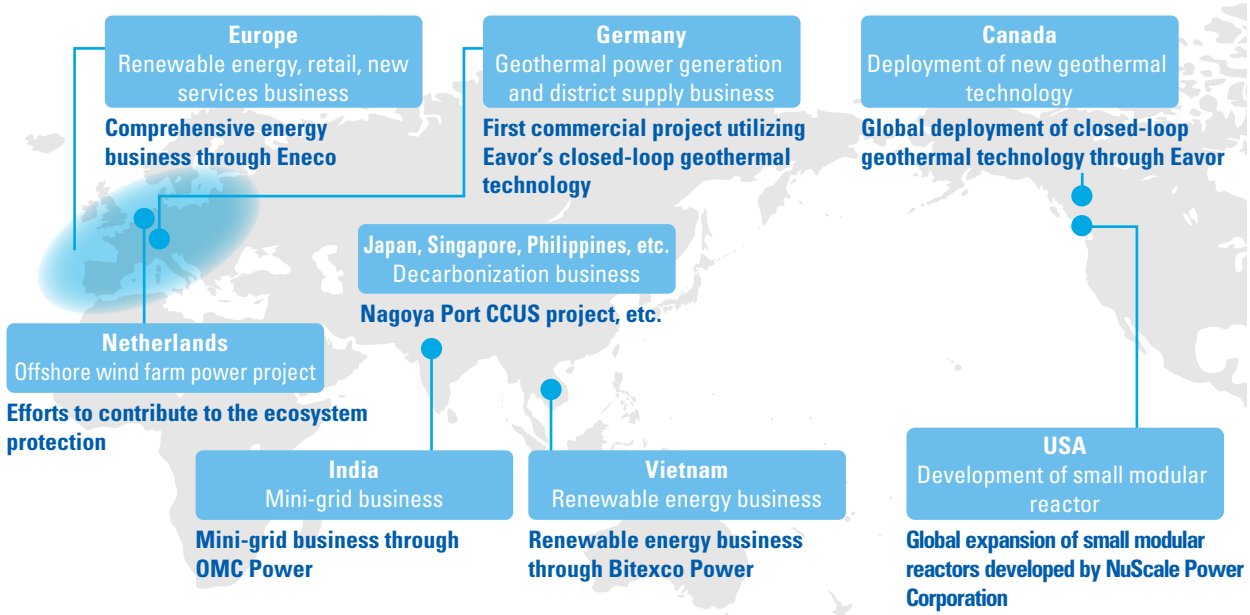


Note: The above are examples of our businesses *1 Bioenergy with Carbon Capture and Storage

Strategic investment	●Cumulative investments of over 400 billion yen in FY2030
Human Resources	●Expand mid-career hires including specialist employees
Organization	●Expand functions of overseas offices

Toward becoming a decarbonized energy company, mainly in Europe and the Asia-Pacific region

Following the major transition from fossil fuels to renewable energy, as a Japanese utility company, we will contribute to the realization of a decarbonized society, mainly in Europe and Asia, while working to further expand earnings.



Participation in offshore wind farm power project

[The Group's first direct investment in an overseas offshore wind power generation project]

We are gaining know-how on offshore wind power generation from the early construction stage through to the operational stage as well as insight into efforts for ecosystem protection.

Project outline

- Grid capacity: 760 MW
- Schedule: Construction to start in 2024 and commercial operation in 2026
- Sponsors: Shell (60%), Chubu Electric Power (30%), Eneco (10%)

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Closed-loop geothermal technology through Eavor

[The Group's first investment in an overseas geothermal-related company]

A Canadian global start-up company that leads the world in R&D of closed-loop geothermal technology with the aim of full commercialization.

- Geothermal technology to extract heat efficiently through circulating water in a closed loop underground
- Participation in the first commercial project using this technology in Bayern, Germany.

New Growth Fields

Creation of a "new form of community"

Quick EV charging stands installed in the Hamamatsu Service Area (on the outbound roadside)

Link e-Mobility Power (Japanese version only)

Strengths

- Technological capabilities, customer base and relationships of trust cultivated in the domestic energy business
- Maximized synergies through swift collaboration with other companies
- Synergies in the real estate business by making ES-CON JAPAN a consolidated subsidiary

Risks	Opportunities
● Intensifying competition with competitors	● Rising needs for community problem solving ● Changes in lifecycles and social conditions

Efforts

- **Medical care**: Become deeply rooted among people and in local communities through providing medical care support such as digital health services and serve as a link to medical care
- **Food and agriculture**: Support the affluence of people without interrupting the blessings of food by pursuing innovation and advancing toward a sustainable and resilient food infrastructure
- **Real estate and lifestyle related**: Fuse DX into local characteristics and build a community environment, in which people want to stay and continue living
- **Energy peripheral areas**: Become a trailblazer in DX and GX in the energy and transportation businesses and provide light and connections to people and society in a sustainable format
- **Data platform**: Provide new services by combining a variety of data

Targets

- Provision of a "new form of community" that utilizes information networks and the latest technologies
- FY2022–FY2025 cumulative total
  Strategic investment including new growth of around 100 billion yen

The Business Development Division creates and provides sustainable businesses and services that contribute to resolving social issues faced by various communities and will establish a new earnings pillar.

Ootani Shinya
Senior Managing Executive Officer,
General Manager of Business
Development Division

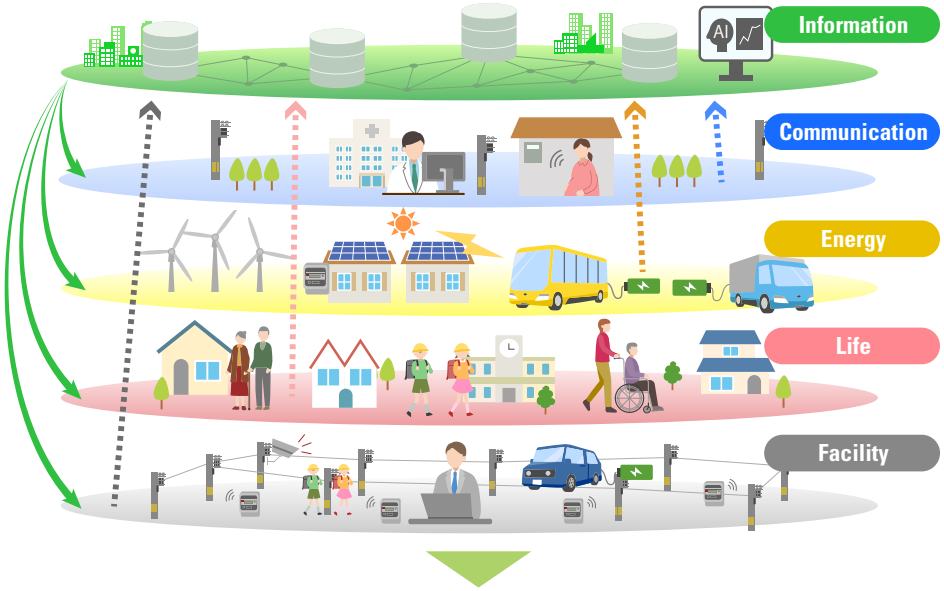
The Business Development Division was launched in 2019 to establish the growth fields prescribed in our Management Vision. It aims to provide new solutions that contribute to resolving various social issues in contemporary communities that are becoming increasingly diluted. To date, we have worked to develop new businesses in fields having an affinity to our electricity business and also in other, promising fields. At the same time, we have examined ways to leverage the data accumulated through the existing operations and forged ahead with the building of a data platform.

Looking ahead, we will solve social issues through our DX, and by doing so, will promote the realization of a decarbonized society and recycling-oriented society while seeking to create communities in which people can continue to live with peace of mind. Additionally, we will contribute to the resolution of local issues and revitalization of local communities and accelerate our efforts, jointly with our business partners, to provide services that enrich customers' lives.

Vision

By 2030, we will realize a Community Support Infrastructure that supports sustainable local communities by working together with local communities and by getting close to each individual to **"create a community where everyone can continuously live safely and securely"**.

Creation of a "new form of community"



Sublimate into a service that solves every issue such as those related to living, industry, and communities and create a "new form of community."

Healthcare

- Frailty detection service
- Develop services such as online medical examinations

Link e-Frailty Navi (Japanese version only)

Food and agriculture

- Operate a lettuce factory that solely uses artificial light
- Develop grains and other primary production businesses

Link TSUNAGU Community Farm (Japanese version only)

EV

- Support introduction of EV buses and trucks
- Enhance EV charging infrastructure
- "OPCAT" energy management system for chargers

Link e-Mobility Power (Japanese version only)

Link OPCAT (Japanese version only)

Community

- Community information service
- Kizuna Net
- Child care support

Link Kizuna Net (Japanese version only)

Infrastructure

- Automated meter reading for gas and water
- Mimamori-pole

Link Automated meter reading service for gas and water (Japanese version only)

Link Mimamori-pole service (Japanese version only)

Won a Screening Committee's Special Award in the Sixth Japan Open Innovation Prize

Chubu Electric Power applied for the Sixth Japan Open Innovation Prize hosted by the Cabinet Office, jointly with necolico LLC, Japan Data Science Consortium Co., Ltd., the local government of Toin Town, Mie Prefecture, and a graduate school of The University of Tokyo, and our project, "Using Electricity Data and AI to Detect Frailty – Industry-Government-Academia Collaboration to Counter the Issue of an Aging Society," won a Screening Committee's Special Award under the program.

The project was highly regarded as an open innovation project for its availability nationwide, without the need for additional equipment, such as a sensor, which allows everyone to be aware of frailty and work to prevent it in daily lives. The project's technical platform and business plan were also recognized.

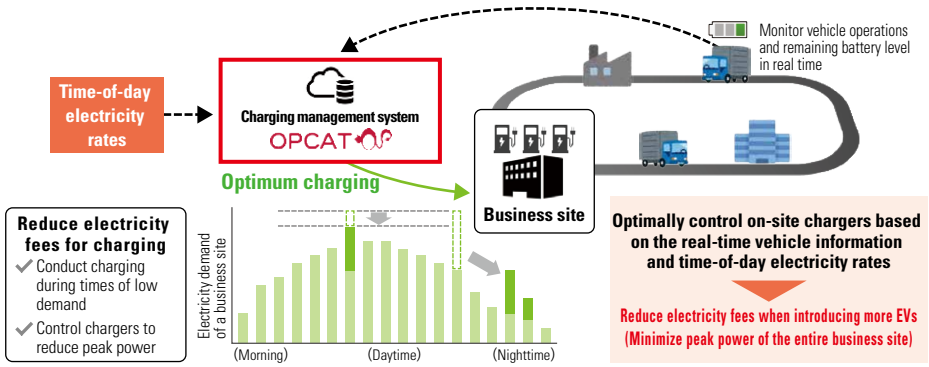
The second from the left is Mr. Kimata, the representative of necolico LLC (Chubu Electric Power Group) and the fourth is Mr. Yamamoto, Unit Head of Power Business Development Division, Chubu Electric Power Company

Initiated the service of "OPCAT" optimum charging management system for commercial EVs

Jointly with Aakel Technologies Inc., Chubu Electric Power has developed OPCAT*, a charging management system for commercial electric vehicles (EVs), including fixed route buses and transportation trucks. The system enables the efficient charging of EVs, as AI automatically generates a charging schedule by combining the time-of-day electricity rates and EV operation plans.

Through the OPCAT service, we will solve issues and create a required environment toward more widespread use of commercial EVs and contribute to the realization of a decarbonized society together with communities and customers.

*Short for Optimization of Charging and Transportation



JERA Co., Inc.

(Affiliate accounted for under the equity method)

From upstream fuel business and procurement through power generation and wholesaling of electricity and gas

JERA

TEPCO Fuel & Power — 50% investment

CHUBU Electric Power — 50% investment

Transport ship SHINSHU MARU for marine transportation of LNG

Strengths

- Extensive value chain, from fuel upstream activities to power generation and sales.
- Credibility from having been selected by partners from around the world seeking a company engaged in large-scale business development.
- Competitive and flexible procurement portfolio
- One of the world's largest LNG transaction volumes

Risks	Opportunities
●Increased geopolitical risk ●Fluctuations in resource prices	●Expansion of competition in electricity and gas sales, and new customer needs ●Global trend toward decarbonization ●Achieve zero CO_2 emissions

Efforts

- Establish a foundation for stable energy supply (one of the world's largest LNG transaction volumes, development of plants to replace thermal power plants in Japan, stable fuel procurement)
- Introduce and expand the use of renewable energy
- Achieve low carbon emissions in thermal power generation and fuel supply chains (promote demonstration testing on ammonia substitution in an actual power plant; promote efforts to conduct demonstration testing on hydrogen substitution in an actual power plant; procure fuel ammonia globally)

Levels aimed for by FY2035

[Profitability] ●Net profit*: 350 billion yen ●EBITDA*: 700 billion yen
[Capital efficiency] ●ROIC-WACC spread*: 150 bps or higher
[Growth potential] ●Investing cash flow: FY2024–FY2035 total = 5,000 billion yen
[Financial health] ●Net DER: 0.5x or lower ●Net Debt/EBITDA*: 2 years or less

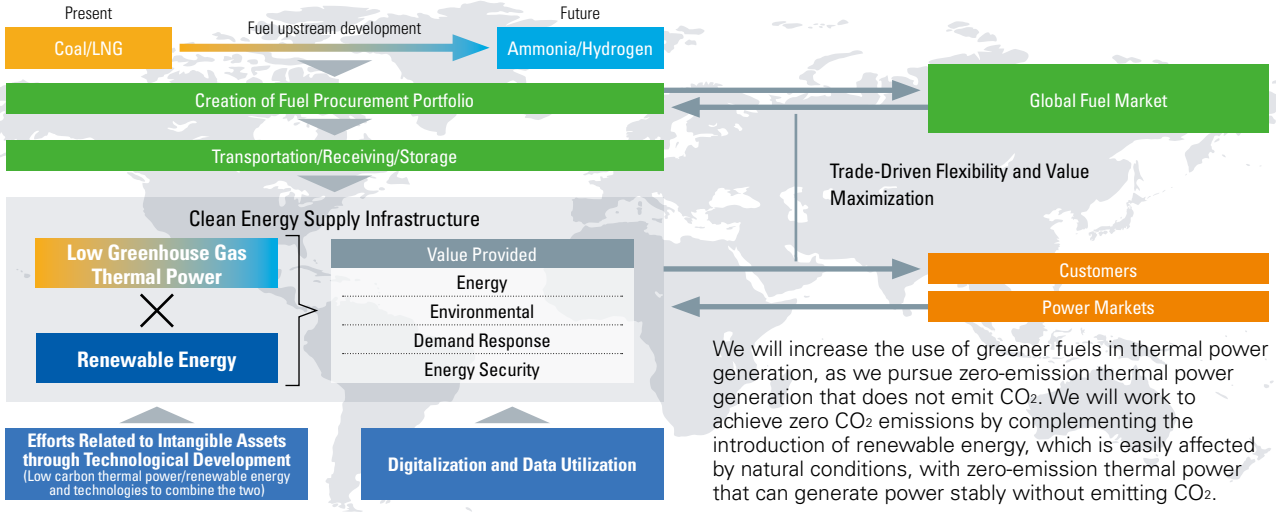
*Excluding the time-lag impact on fuel cost adjustments

By providing the world with a foundation for achieving both a stable supply and decarbonization, we aim to contribute to the healthy growth and development of the world and maximize our corporate value.

Mission To provide cutting-edge solutions to the world's energy issues

New Corporate Vision for 2035 To scale up its clean energy platform of renewables and low greenhouse gas thermal power, sparking sustainable development in Asia and around the world

JERA's business activities aimed at sustainable corporate value growth and contributing to the creation of a sustainable society



We will increase the use of greener fuels in thermal power generation, as we pursue zero-emission thermal power generation that does not emit CO_2. We will work to achieve zero CO_2 emissions by complementing the introduction of renewable energy, which is easily affected by natural conditions, with zero-emission thermal power that can generate power stably without emitting CO_2.

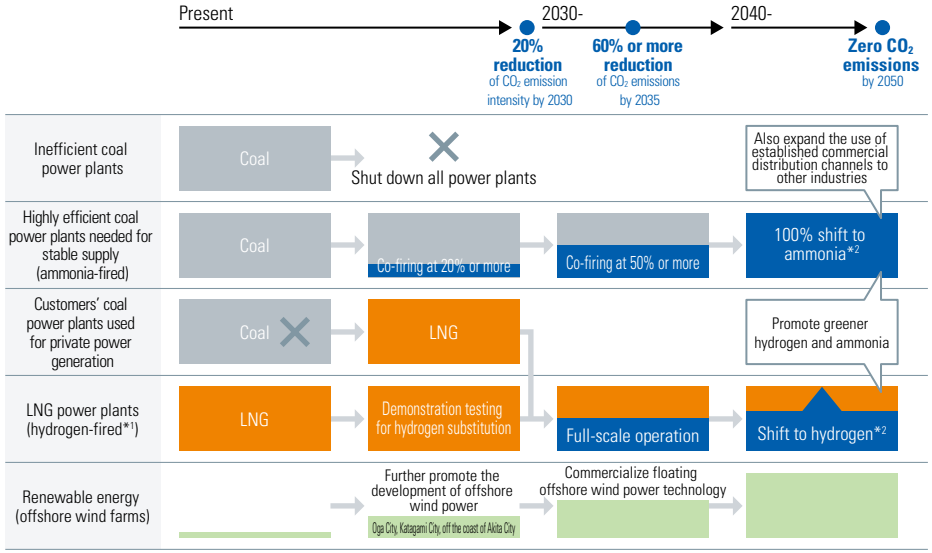
JERA Zero CO_2 Emissions 2050: Committed to Achieving Zero CO_2 Emissions across Domestic and Overseas Operations

JERA Zero CO_2 Emissions 2050

- JERA is taking up the challenge of achieving zero CO_2 emissions from its domestic and overseas operations by 2050.
- JERA will promote the introduction of renewable energy and green fuels to realize zero-emission thermal power generation, which does not emit CO_2, for the ultimate goal of achieving zero CO_2 emissions.

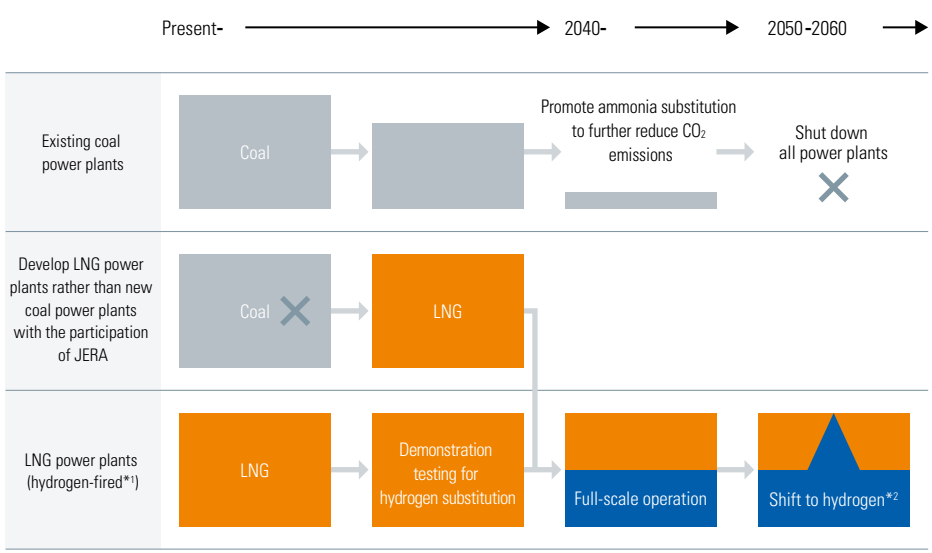
[JERA Zero CO_2 Emissions 2050 Roadmap for its Business in Japan]

We will promote the achievement of zero CO_2 emissions from thermal power generation by shutting down all inefficient coal power plants and promoting ammonia substitution for coal-fired power and hydrogen substitution for LNG-fired power. Capturing technological development trends, we also retain options to utilize CCS and CCUS technologies. As for renewable energy, we will promote the development centered on offshore wind power.



[Efforts Planned in Asia]

As a first step, we will develop LNG power plants instead of new coal power plants in order to suppress an increase in CO_2 emissions resulting from the growing demand for electricity. In parallel, we plan to promote the introduction of distributed renewable energy power sources and ammonia substitution at the existing coal power plants.



Note: This initiative will be gradually developed in greater detail based on relevant conditions such as government policies and will be subject to revision if there is a significant change in any of these conditions.
*1 The use of CO_2-free LNG is also being considered. *2 Utilize green/blue hydrogen and ammonia.

[Efforts for ammonia substitution at the Hekinan Thermal Power Station]

We initiated the world's first demonstration testing of 20% ammonia substitution at an actual large-scale commercial coal power plant on April 1, 2024 and reached the 20% co-firing rate on April 10, 2024. The testing was done as part of the project entitled "Development of Technologies for Carbon Recycling and Next-Generation Thermal Power Generation – R&D and Demonstrations on Technologies for Ammonia Co-firing Power Generation" (a grant project of the New Energy and Industrial Technology Development Organization (NEDO) conducted by JERA and IHI Corporation). Compared to the conditions before substituting ammonia, we have achieved good results. For example, the level of NOx, which affects ecosystems, was equivalent or below, while there was about a 20% reduction in SOx. We did not confirm the generation of N2O, which has higher greenhouse effects, below the detection limit. The final evaluation will be conducted separately.

Photo courtesy: JERA Co., Inc.

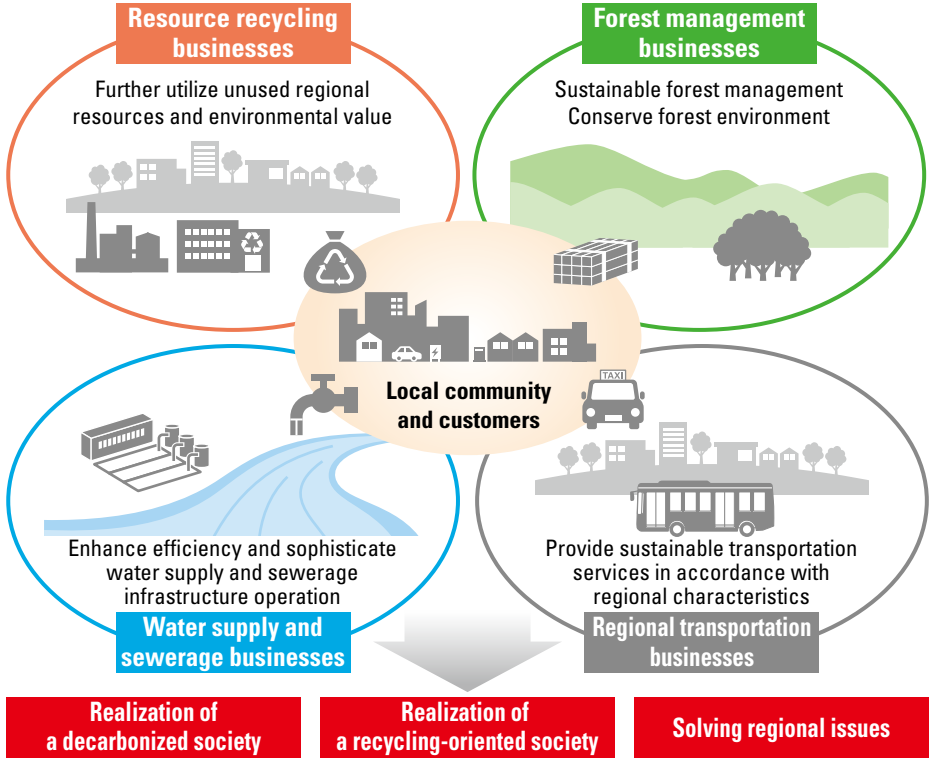
Undertaking Regional Infrastructure Business

Promotion of Regional Infrastructure Business

As a company that supports society and the local community, we will work with our various partners to develop regional infrastructure businesses that help strengthen regional foundations, such as resource recycling, water supply and sewerage, regional transportation, and forest management businesses, as we contribute to the rationalization of infrastructure and to solving regional issues as a multi-utility.

In striving to provide a "new form of community" as set forth in Management Vision 2.0, we promote considerations of businesses that leverage our ties with communities and customers and our know-how in operating infrastructure facilities with the overarching aim of establishing sustainable infrastructure services.

Areas of regional infrastructure business initiatives and the value we seek to provide



TOPICS

Chubu Electric Power and ECOMMIT Conclude Agreement on Business Collaboration for Realization of Resource-Recycling Community Development

In March 2024, the two companies commenced initiatives that leverage their strengths and existing services as one of the "infrastructures supporting a resource-recycling lifestyle" in the Chubu area.

[Outline of Initiatives]

1. Installation of unwanted item collection boxes of PASSTO, a resource-recycling service provided by ECOMMIT, at Chubu Electric Power Group-related facilities and provision of proposals to people in the Chubu area.
2. Collection of unwanted items from members of "TSUNAGU table" operated by Chubu Electric Power Miraiz Connect.
3. Proposal for reused item collection service for municipalities in the Chubu area.

Installation of unwanted item collection boxes KatEne Shop.

TOPICS

Capital alliance for promoting plant resources-recycling business

Chubu Electric Power has formed a capital alliance with GREEN EARTH CO., LTD. (GREEN EARTH) to promote a plant resources-recycling business. GREEN EARTH operates a plant resources-recycling business, mainly in Chiba Prefecture, under the slogan Green TENKAI (developing and expanding green.) In the future, by mutually combining Chubu Electric Power Group's knowledge and wide network in the energy field with GREEN EARTH's abundant track record and knowledge in plant resources recycling, the two companies will further promote efforts to realize optimal energy and resource recycling.

CHUBU Electric Power × Green Earth
We provide green landscape management and recycled wooden chips.