



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

## MESSAGE



### Ihara Ichiro

Director & Senior Managing Executive Officer, General Manager of Nuclear Power Division and Chief Nuclear Officer

Based on the premise of ensuring safety, Chubu Electric Power will promote close communication with residents of the local community and make best efforts to restart the Hamaoka Nuclear Power Station for the stable energy supply.

With a strong determination never to repeat an accident similar to 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, and we are making steady progress toward confirming standard seismic motion and the tsunami standard. 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 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, which does not emit CO<sub>2</sub> when generating electricity and which uses fuels from politically stable regions.

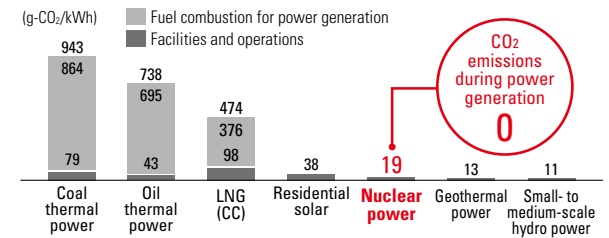
We will make our utmost effort to receive early confirmation on our compliance with the new regulatory standards and commit ourselves to gaining an even greater understanding and trust from members of local communities and society.

### [Power generation method known for its stable supply and superior environmental qualities]

Recently, there are many problems to be solved such as worldwide energy market turbulence caused by Russian aggression in Ukraine, the tight supply-demand balance in Japan, and accelerations for carbon-free society. In order to live up to social expectations, it is important to secure a sustainable and stable supply by combining various power sources in a well-balanced manner.

Nuclear power generation uses uranium, known for its stable supply, as a primary fuel. It is also an environmentally excellent power source in regard to decarbonization as it does not emit CO<sub>2</sub> when generating electricity.

### ● Lifecycle CO<sub>2</sub> emission amount for various power sources



Source: Central Research Institute of Electric Power Industry, "Comprehensive evaluation of lifecycle CO<sub>2</sub> emissions for power generation technologies in Japan" (July 2016)

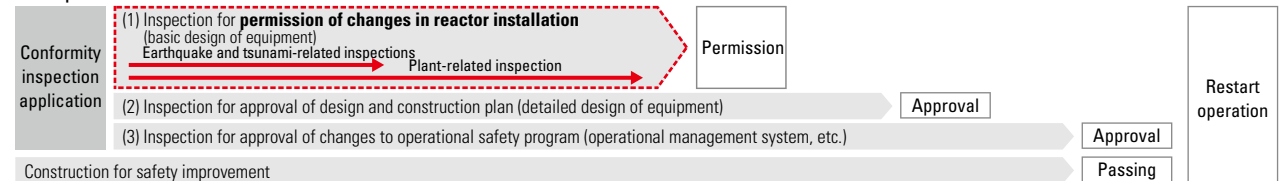
### [Responding to inspections for confirming conformity to new regulatory requirements]

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).

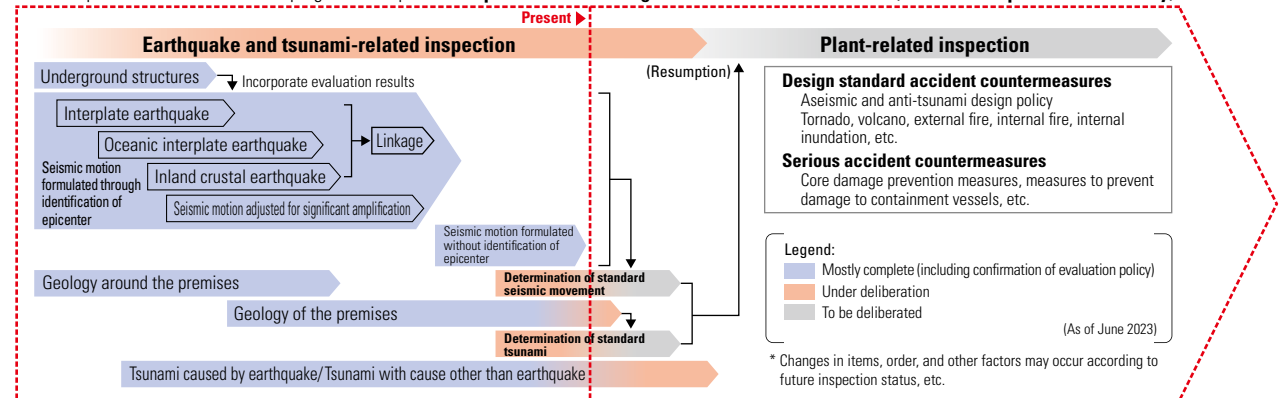
Inspections to confirm conformity to the new regulatory requirements include (1), (2), and (3) shown in the diagram below and the Nuclear Regulation Authority will implement these incrementally after the application is received from the utilities.

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.

### ● Inspection flow



### Main inspection items and status of progress of inspection for permission to change nuclear reactor installation (for further improvement of safety)





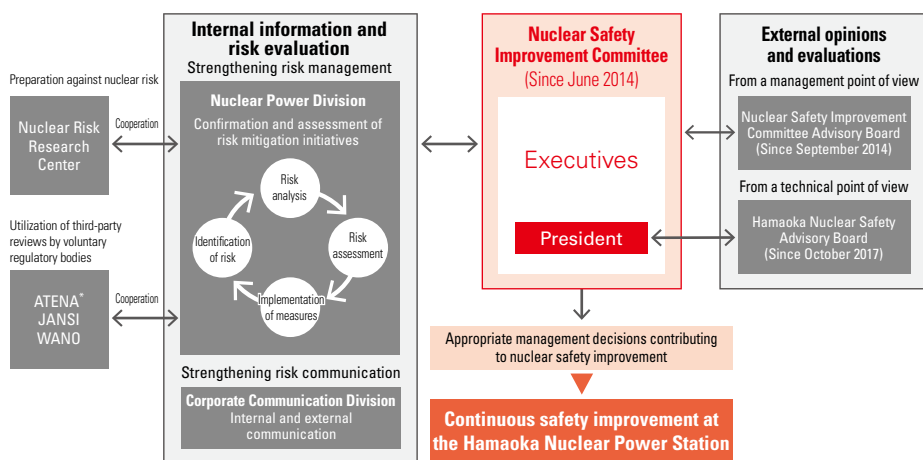
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## Activities to reduce risks

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

### [Strengthening governance]

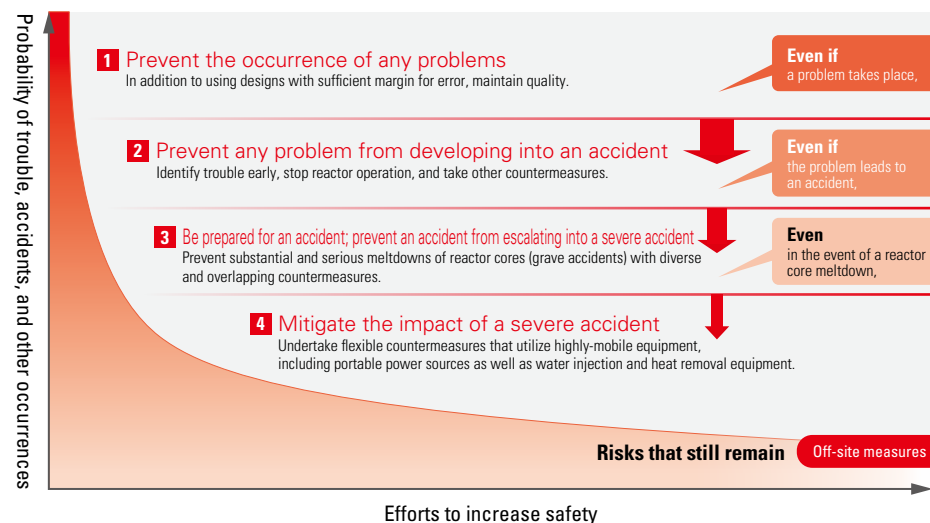
We have established a framework whereby management led by the President analyzes and assesses nuclear safety risks, and monitors and appropriately deliberates the details of the safety measures. We have also established a system under which outside experts provide advice on these initiatives from a management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

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



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, 2023)

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)	●The Nuclear Regulation Authority is currently investigating and confirming compliance with new regulatory standards.
Unit 3 (August 1987)	<b>1,100 MW</b>	●Safety improvement measures are currently being implemented.
Unit 4 (September 1993)	<b>1,137 MW</b>	●Preparing applications for investigation and confirmation of compliance with new regulatory standards
Unit 5 (January 2005)	<b>1,380 MW</b>	●Safety improvement measures are currently being implemented.



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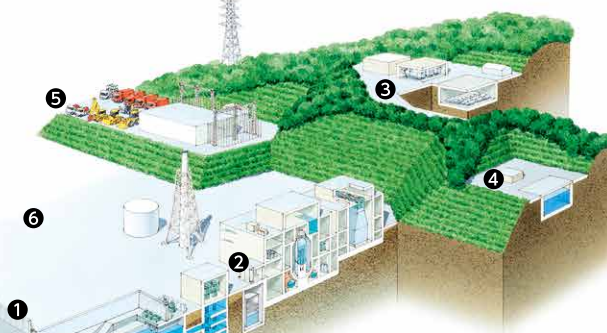
**[Responses inside the power station]**

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.

- ① Preventing the flooding of the premises  
Installing tsunami protection wall
- ② Preventing the flooding of the buildings  
Installing reinforced doors and watertight doors
- ③ Securing alternative means of supplying power sources  
Installing gas turbine generators for emergencies



- ④ Securing alternative means of water injection  
Installing emergency fresh water storage tanks



- ⑤ Training  
Training in operations involving portable equipment and heavy equipment



- ⑥ Training  
Training with simulators



① to ⑥ 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**



Exercise coordinating with national and local governments and related organizations (January 2023)



Collaborative drill with Tokyo Electric Power Company Holdings, Inc. and Hokuriku Electric Power Company (February 2023)

\*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.

**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 (February 2023)



Drill to transport persons who need evacuation assistance by welfare vehicles in collaboration with Makinohara City (January 2023)





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

### [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 hold briefing sessions in shopping centers and at local events held in the areas around the power station for the purpose of providing explanations to local residents about the need for nuclear power generation and the measures of safety improvement at the power station and hearing opinions of them.

### "REAL! – What's Taking Place at the Hamaoka Nuclear Power Station"

REAL! is a series of videos showing what is taking place at the Hamaoka Nuclear Power Station now, such as emergency drills and routine inspection conducted at the power station.

The REAL! also includes videos such as dismantling of Unit 1, inside of a containment vessel, and other places that can not see normally.

\* For details, please visit our website.



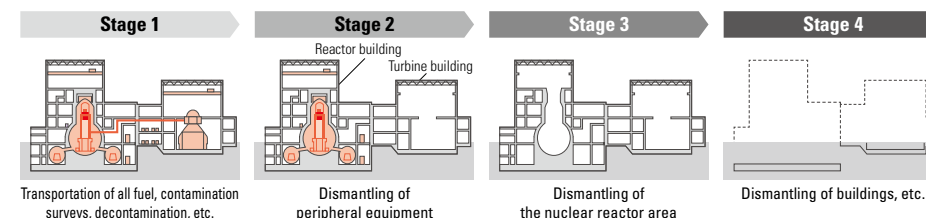
[Link](#) "REAL! – What's Taking Place at the Hamaoka Nuclear Power Station" (Japanese version only)



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

At Units 1 and 2 of the Hamaoka Nuclear Power Station, dismantling of peripheral equipment is underway in the second stage of decommissioning and this consists mainly of dismantling equipment in the turbine building.

In the future as well, 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

#### Initiative to maintain and pass down technical skills from generation to generation

An extended Hamaoka Nuclear Power Station shutdown has caused the lack of employees' experience of running and maintaining the nuclear power station. To improve the situation, we have been implementing several measures to maintain and pass down technical skills for the sake of future generations.

We have been conducting some measures such as operator technical contests, technical exchange with other electric power companies, dispatch of employees to operating power plants including overseas, and on-site education using Units 1 and 2 which are on the decommissioning process. In order to enhance employees' technical capabilities more effectively, we additionally introduced a new training method as a trial in March 2023 and aim for full operation in July 2024.

The new training method is based on more detailed analysis of operations and subdivided list of knowledge and skills needed for each operation. With this new training method, we are able to understand precisely not only what knowledge and skills have been acquired by employees but also the degree of accomplishment of employees.

We are also striving to boost the morale and motivation of employees by fostering a mindset to praise others and making opportunity to have discussions with other employees in the same generation. We are also making our efforts to create a working environment where every employee can actively preserve and pass down their skills for the sake of future generations.



Operator technical contest



Demolition training



Discussion with employees in the same generation



# 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 and DX 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) \*by Group companies

- FY2023 Seinaiji Hydro Power (Nagano), \*Nakagiri Hydro Power (Gifu), Atsumi on-land wind power (Aichi), Gamagori Biomass (Aichi), Minokamo Biomass (Gifu)
- FY2024 Abekawa Hydro Power (Shizuoka), Wind farm Toyotomi onshore wind power (Hokkaido) and Yatsushiro Biomass (Kumamoto)
- FY2025 Tahara Division 1 Biomass (Aichi), Fukuyama Biomass (Hiroshima)

### Expansion of renewable energy together with our customers

- Over 150 customers to utilize our on-site PPA service by FY2023



Seinaiji Hydro Power under construction in Achi Village, Shimoina-gun, Nagano Prefecture

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.



Suzuki Hideya

President  
Renewable Energy Company

To achieve its renewable energy expansion target of 3,200 MW (8 billion kWh) or more by around 2030, the Chubu Electric Power Group will make full use of its project development capabilities cultivated over long years of power source development and will boldly tackle the challenge of expanding renewable energy across the entire group together with local communities and customers.

The Renewable Energy Company achieved steady progress in developing new power sources. Specifically, in FY 2022 this included the decision to develop the Shizugin Solar Park (Shizuoka Prefecture) for the implementation of off-site PPA services to meet customer needs and the commencement of operations of the Godo Biomass Power Plant (Gifu Prefecture) that effectively utilizes domestic unused thinned wood as fuel. Meanwhile, at existing hydroelectric power plants as well, we refurbished and strengthened equipment while promoting Kaizen activities and DX, which led to an increase in the amount of power generated.

Furthermore, we will continue to contribute to the realization of a decarbonized society on the premise of assuring public safety while working to communicate with local residents to gain their understanding.

## 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



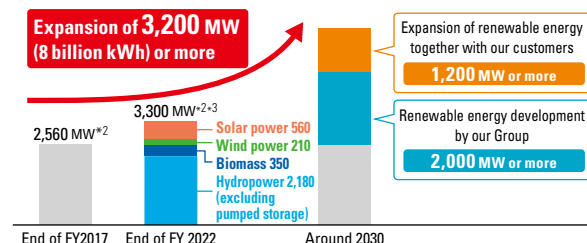
Mamoru the Forest Green Tree Frog





### 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\*<sup>1</sup> in renewable energy by around 2030. Regarding the state of progress as of the end of FY2022, the Group's overall renewable power generation capacity was approximately 740 MW\*<sup>1</sup>, about 23% of the target.\*<sup>2</sup>, \*<sup>3</sup>

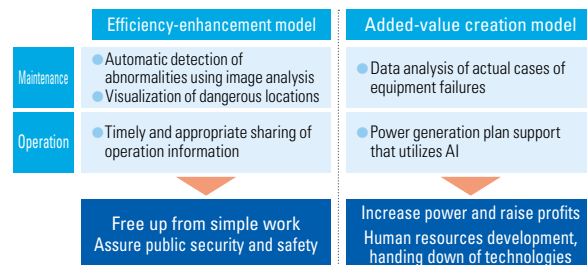


\*<sup>1</sup> Locations which started operations or a decision on development has been made in FY2018 or later  
 \*<sup>2</sup> Includes projects for which a decision on development has already been made but operations have not started  
 \*<sup>3</sup> Capacity includes Group companies

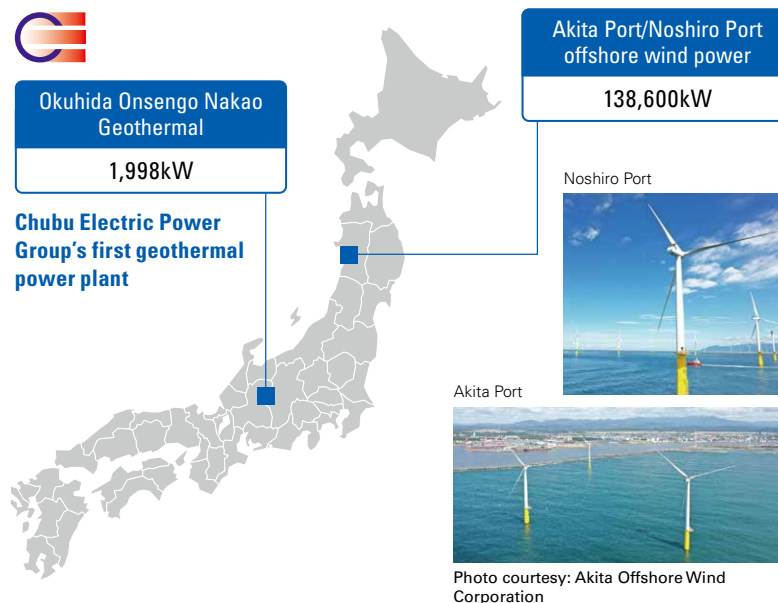
### Promotion of Kaizen and DX in hydropower

In the hydropower business, we are keenly aware of the competitive environment in which we operate and are thus promoting Kaizen activities aimed at reducing our power generation costs while promoting DX initiatives from the dual aspects of "efficiency-enhancement model" and "added-value creation model."

#### DX promotion in hydropower (representative example)



### Main development sites in FY2022



Through the special purpose company, Akita Offshore Wind Power Co., Ltd. (AOW), we have been promoting Japan's first large-scale commercially based offshore wind power generation project at Akita Port and Noshiro Port, Akita Prefecture.

The Noshiro Port Offshore Wind Farm (4,200 kW x 20 units) started commercial operation on December 22, 2022, and the Akita Port Offshore Wind Farm (4,200 kW x 13 units) on January 31, 2023.

Over the next 20 years, AOW will operate and manage these power plants under an operational and maintenance system based in Noshiro Port.

### TOPICS

#### Chubu Electric Power Group's first geothermal power plant

The Okuhida Onsengo Nakao Geothermal Power Plant (output: 1,998 kW), the first geothermal power plant in the Chubu Electric Power Group, utilizes the abundant geothermal resources of the Shinhodaka Hot Spring/Nakao area, which uses Mt. Yakedake for its heat source. Utilizing steam extracted from deep underground to drive turbines, geothermal power offers the benefit of 24x7 power generation regardless of weather conditions, thereby enabling stable volumes of power.

C Energy Co., Inc. a member of the Chubu Electric Power Group, commenced commercial operations on December 1, 2022 at Nakao Geothermal Power Generation Corporation, in which we have a joint investment with Toshiba Energy Systems & Solutions Corporation.

We will build a system that separates the geothermal fluid that is emitted underground into steam and hot water and that supplies this steam for geothermal power generation and the entire amount of hot water to the local Nakao Hot Spring. By doing so, we are cultivating a new model case of coexistence and co-prosperity between local hot spring culture and geothermal power generation.

In the future, Chubu Electric Power Group will continue to contribute to the realization of a low-carbon society, meet the trust and expectations of customers and society, and aim to be "A Total Energy Service Corporate Group that is one step ahead" and that is continuously chosen.





# Chubu Electric Power Grid Co., Inc.

Providing 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
- Realizing the lowest wheeling charges in Japan through efficient and economic capital investment and facility operation

### 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
- Building a business operation structure capable of autonomously implementing measures matched to local characteristics

## 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



We will fulfill our mission of providing electricity in a safe, affordable and stable manner by steadily implementing initiatives for decarbonization as well as for promoting a next-generation power network and increasing the level of sophistication of the network's operation and by adapting to changes in the external environment.



## Shimizu Ryuichi

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

Chubu Electric Power Grid will fulfill its mission of providing a stable supply of electricity in the Chubu region and nationwide by adequately responding to changes in the external environment, including the expanding introduction of renewable energy, and by stepping up its initiatives for decarbonization as well as for promoting a next-generation power network and increasing the level of sophistication of the network's operation. At the same time, we will proactively roll out services closely matched to the needs of local customers.

We revised our wheeling charges upon the launch of Japan's new wheeling charge system in April 2023. As efforts to realize low wheeling charges, we will make necessary investment in an efficient and well-planned manner and constantly strive for even higher efficiency by utilizing digital technology, such as drones, robots and smart meters, in streamlining our facility operation and maintenance.

Through its business activities, Chubu Electric Power Grid will steadily implement initiatives for achieving the Chubu Electric Power Grid Vision, which sets out our vision for 2050.

## 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 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



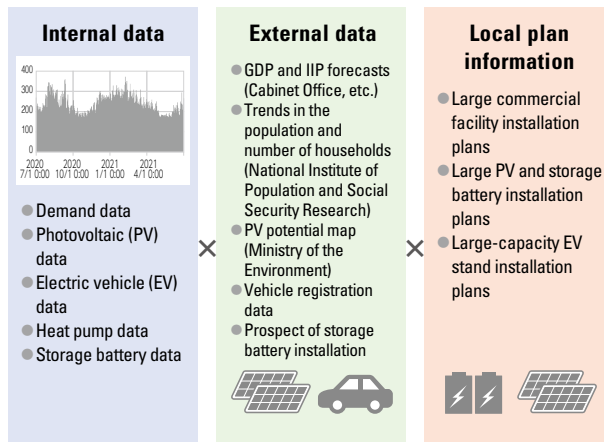
### Development of a region-specific demand forecast system

We are working to maximize the use of distributed energy resources (DER) and optimize the supporting power transmission and distribution facilities by developing and utilizing a region-specific demand forecast system. The system makes highly detailed forecasts of electricity demand and power flow per distribution line based on such data as the population, economic indicators and prospect of DER installation of each region.

#### Creating forecast data of future demand and DER

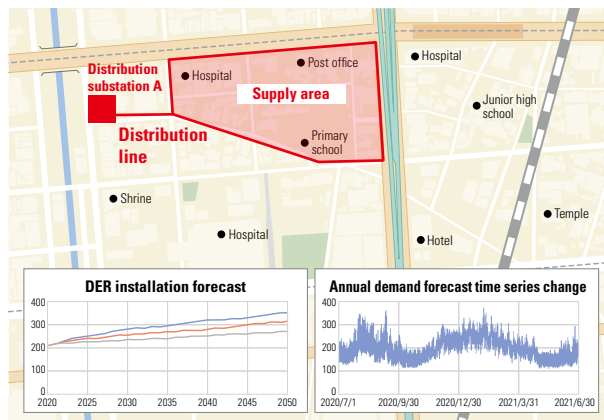
- Make a demand forecast based on the past demand data and taking into consideration the detailed growth rate of each business category
- Make a forecast of DER to be installed in the future and a flow forecast based on the government plans and past installation data

\* Flow forecasts per distribution line and per hour (8,760 points a year) until 2050



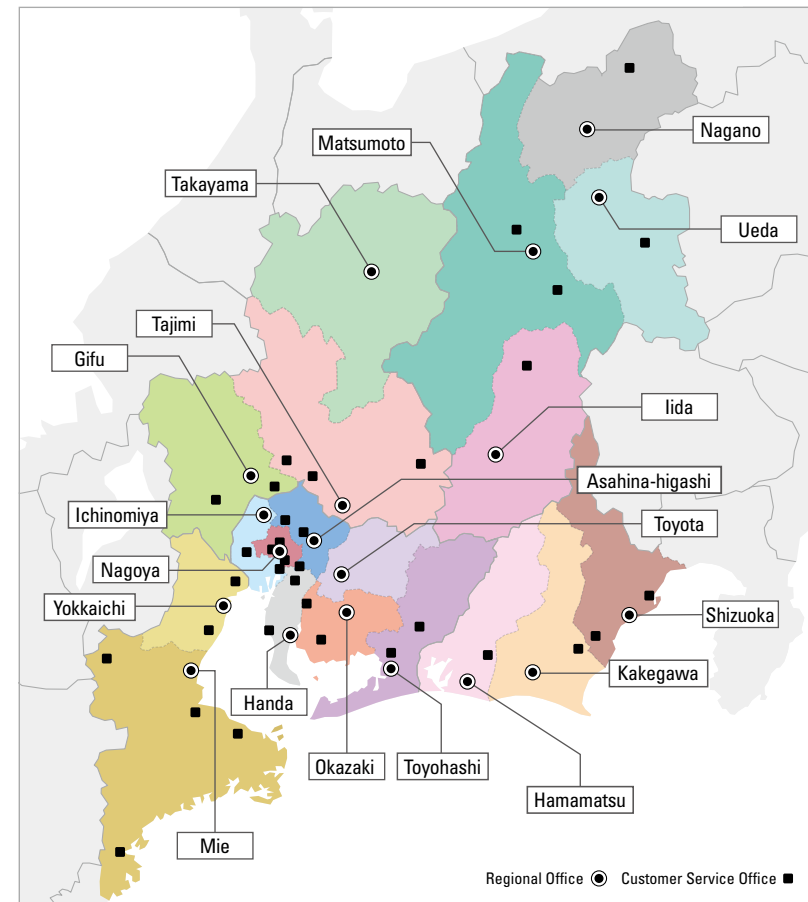
#### Visualizing future demand and future DER flow per distribution line

- Visualize the trends in local demand and DER flow based on various output data
- Create a demand estimate based on the government targets and private-sector indicators and use these estimates in formulating power transmission and distribution facility plans



### Building a business operation structure that autonomously implements measures matched to local characteristics

With a view to quickly and appropriately responding to diversifying energy demand and supply as well as needs of customers and the local government in each region, we made updates to our organization in FY2023, including establishment of 19 Regional Offices. We are promoting autonomous business operation, in which each Regional Office having thorough knowledge on local conditions, services required by customers and the configuration and operation of power network facilities, explores medium- to long-term measures by utilizing local information and data and implements these measures with technical support of the Engineering Center.







# Chubu Electric Power Miraiz Co., Inc.

Provide various services along with energy

## Strengths

- A wealth of data acquired through diverse contact points with customers and a well-established framework for leveraging this data
- Profound expertise in energy utilization accumulated over the years and specialists well-versed in various fields

### Risks

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

### Opportunities

- Rising customer needs for a wide variety of services
- Strong social demand for a carbon-free society
- Further advancement of digital transformation (DX) driven by the increasing level of technological expertise

## Efforts

- Acceleration of energy sales (electricity and gas)
- Provision of new services that will enrich the lives of the customers and solve business issues based on data analysis
- Delivering three forms of support for achieving decarbonization together with our customers, including decarbonization consulting

## Targets

### Ordinary income

[FY2025] +20~30 billion yen

### Energy sold

Electrical energy sold (entire Group)  
[FY2022] 113.0 Twt

Gas and LNG sold (entire Group)  
[FY2022] 1,490 thousand tons

[FY2030] 130.0 Twt per year

[FY2030] 3,000 thousand tons per year

### Creating new value and services

Establishing a revenue pillar alongside traditional energy sales by FY2030



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.”



## Ootani Shinya

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

The environment surrounding customers and society is radically changing as DX advances, and momentum increases towards the realization of a carbon-free society. As Chubu Electric Power Miraiz, we value the connections we have established with our customers amid these changes and are committed to delivering reliable electricity and gas that can be used with peace of mind.

Moreover, to meet the diverse needs of our customers, we will provide new value that will “enrich the lives of customers” and “solve business issues.” With the key message, “Why didn’t I think of that? Decarbonization! (Various Solutions for Decarbonization)”, Chubu Electric Power Miraiz will move ahead and work together with its customers to realize a carbon-free society by providing the three services of “energy saving”, “energy creation” and “energy activation” through decarbonization consulting.

## Vision



Realize a “comprehensive service company” that delivers “new value” in people’s daily lives and business





Chubu Electric Power  
Miraiz Co., Inc.

Enrich the lives of customers

**Initiated the Family Time Project**

The Family Time Project was started as a way to stand by families and collaborate in envisioning a brighter future for their lives and society.

As part of this endeavor, we have invited participation in events centered around energy efficiency, environmental consciousness, distinctive experiences, and community. We have also provided recommendations for captivating digital content tailored for family entertainment. Going forward, we remain committed to supporting of family connection and togetherness.

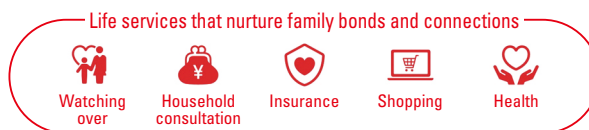
**Case Study** Opening event held at Chubu Electric Power MIRAI TOWER

We organized activities such as turning off illuminations and experiential events for children, providing families with a fun way to think about energy efficiency and the environment.



**Provide life services tailored to each life stage**

Mainly through Chubu Electric 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** (as of March 31, 2023)

- Solving all of your money worries “**Life design service**”
- Reduce food loss with a great bargain and fun “**TSUNAGU table**”
- “**Terashite**” service analyzing changes in electricity use for the wellbeing of elderly customers

Implementation of measures for reducing electricity cost burden and supporting daily life

Amid persistent uncertainty in the Group's business environment, current fuel prices are trending at a low level compared with when we reviewed and considered the standard rate menu and based on management initiatives undertaken by the entire Chubu Electric Power Group, we have decided to implement a reduction plan for electricity bills amounting to 66 billion yen starting from May 2023.

\* This initiative follows the recalibration of standard rate menus for high-voltage and extra-high-voltage customers, which took effect in April 2023.

Subject	Content
High-voltage and extra-high-voltage customers	<ul style="list-style-type: none"> <li>● Discount of 2.09 yen/kWh (including tax) from the monthly fuel cost adjustment unit price</li> </ul>
Low Voltage Customers	<ul style="list-style-type: none"> <li>● 2,000 yen worth of special benefits</li> <li>● Six months of basic gas fees for free</li> <li>● Special campaigns that contribute to daily life</li> <li>● Energy-saving challenges</li> <li>● Energy-efficient appliance exchange campaign</li> <li>● Campaign promoting adoption of solar power generation facilities and storage batteries</li> </ul>

Providing three forms of support to achieve decarbonization together with our customers

**Energy saving**

Examples of initiatives

- Engaging in production processes and proposing efficient energy usage
- Supporting the replacement and upgrading of energy-saving equipment

**Energy creation**

Examples of initiatives

- Contributing to “additionality” by installing solar power generation facilities on vacant land, buildings, and premises owned by customers

**Energy activation**

Examples of initiatives

- Promoting the development of local renewable energy sources through the sale of locally produced CO<sub>2</sub>-free electricity
- Supporting the utilization of renewable energy through demand response services

**Case Study**

**Demand response (DR) service, “NACHARGE”**



Taking into account the current status of renewable energy generation and overall electricity supply and demand, we introduced the “NACHARGE” Demand Response (DR) service. Through this initiative, we communicate with customers to request actions such as “power conservation” or “adjust electricity usage times”. Customers who respond to these requests will be rewarded with incentives such as “Kate-ene points” that can be exchanged for various benefits. This service aims to not only encourage customers to actively participate in electricity conservation during peak demand periods, but also to devise ways to use electricity that cannot be stored in order to increase the use of renewable energy.

**Case Study**

**Karuizawa Commongrounds**



We have entered into a comprehensive collaboration agreement with Culture Convenience Club Co., Ltd. to foster the concept of “nurturing bonds through electricity” within local communities. Through this partnership, we have implemented an integrated energy management system that connects solar power generation and electric vehicles within the community.

By locally generating electricity and utilizing electric vehicles with charging and discharging capabilities for car-sharing, we are striving to achieve the dual goals of creating sustainable communities and promoting a local consumption model for renewable energy.



# Global Business

Investment, overseas consulting, etc.

## Strengths

- Investments in diverse businesses related to “decarbonization” mainly in Europe and the Asia-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 and Jordan 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



Eneco Lutcherduinen Wind Farm in the Netherlands

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



## Sato Hiroki

Senior Managing Executive Officer  
General Manager of Global Business Division

In April 2022, Chubu Electric Power established the “Global Business Division” with the aim of strengthening and expanding our global business, which is one of our new growth areas, as well as establishing a flexible business execution system that clarifies responsibilities and authority while announcing our presence both internally and externally.

To contribute to the realization of a decarbonized society, we are expanding our investments in global businesses that lead to decarbonization, mainly in Europe and the Asia-Pacific region, and strengthening our earnings base and increasing 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.

## Vision

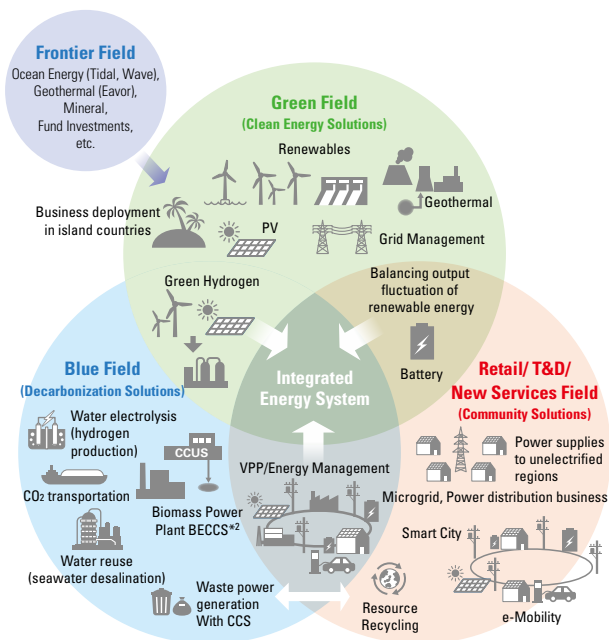
- In fiscal 2030, we will build an optimal portfolio that combines the segments of Green Field, Blue Field, Retail/Transmission & Distribution (T&D)/New Services, and Frontier Field.





**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.

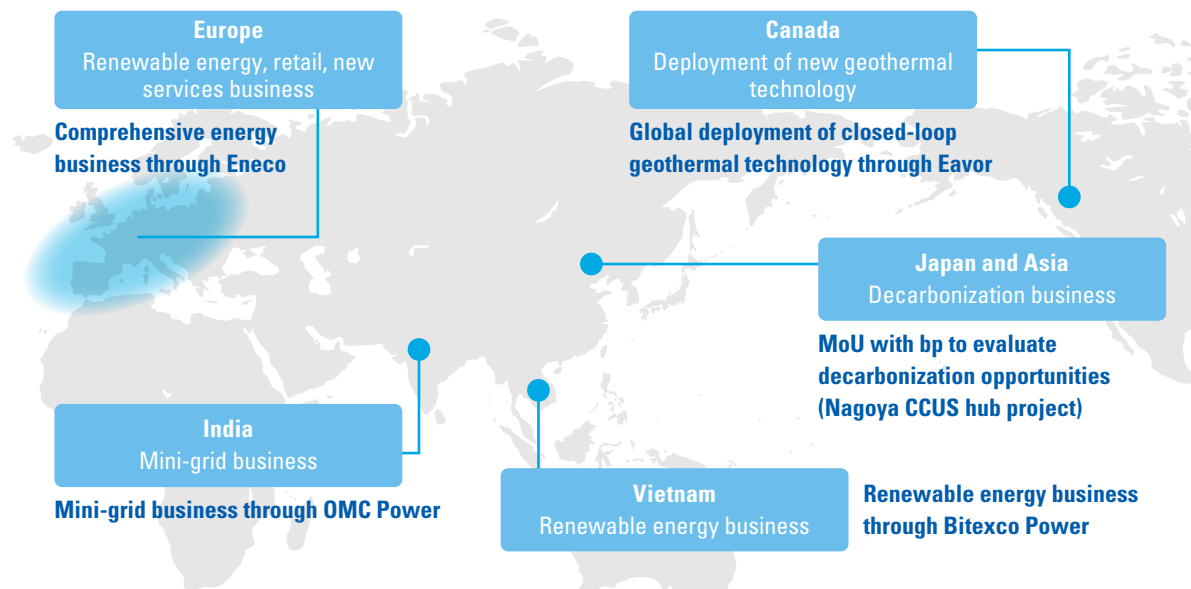


\*1 BioEnergy with Carbon Capture and Storage \*2 The above are examples of our businesses

<b>Strategic investment</b>	● Cumulative investments of over 400 billion yen in FY2030
<b>Human Resources</b>	● Expand mid-career hires including specialist employees
<b>Organization</b>	● Expand functions of overseas offices ● Expand the Tokyo Office

**Toward becoming a decarbonized energy company, mainly in Europe and Asia**

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.



**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 involves circulating water in a closed loop underground to extract heat efficiently.
- Eavor holds numerous patents related to excavation design needed for demonstrating this technology.



**MoU to evaluate decarbonization opportunities in Japan and the Asia region**

[Support decarbonization around Nagoya Port]

In working toward the realization of CCUS, we have begun surveys related to CO<sub>2</sub> capture/aggregation and effective utilization as well as transport to overseas CO<sub>2</sub> storage sites.

**[Characteristics of Nagoya Port]**

- Japan's largest port in terms of cargo volume
- Accounts for 3% of total CO<sub>2</sub> emissions in Japan





# New Growth Fields

Creation of a “new form of community”

## Strengths

- **Technological capabilities, customer base and relationships of trust cultivated in the domestic energy business.**
- **Synergies in the real estate business by making ES-CON JAPAN a consolidated subsidiary.**

### Risks

- Intensifying competition with competitors

### Opportunities

- Rising needs for community problem solving
- Changes in lifecycles and social conditions
- Synergies in sales and technology through collaboration with other companies

## 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:** Utilize the characteristics of communities to support the creation of communities where “people can be themselves” and “communities are genuine communities.”
- **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.
- **Platform:** Build a storage location to 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



Automated lettuce production plant with full artificial lighting aims to commence production in January 2024



Techno Farm Fukuroi  
(Japanese version only)

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



**Noda Hidetomo**

Senior Managing Executive Officer,  
General Manager of Business  
Development Division

The Business Development Division was launched in 2019 to establish the growth areas 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 the present, it has promoted initiatives for community medical care, initiatives for child-rearing generations, and promoting new services that utilize our assets.

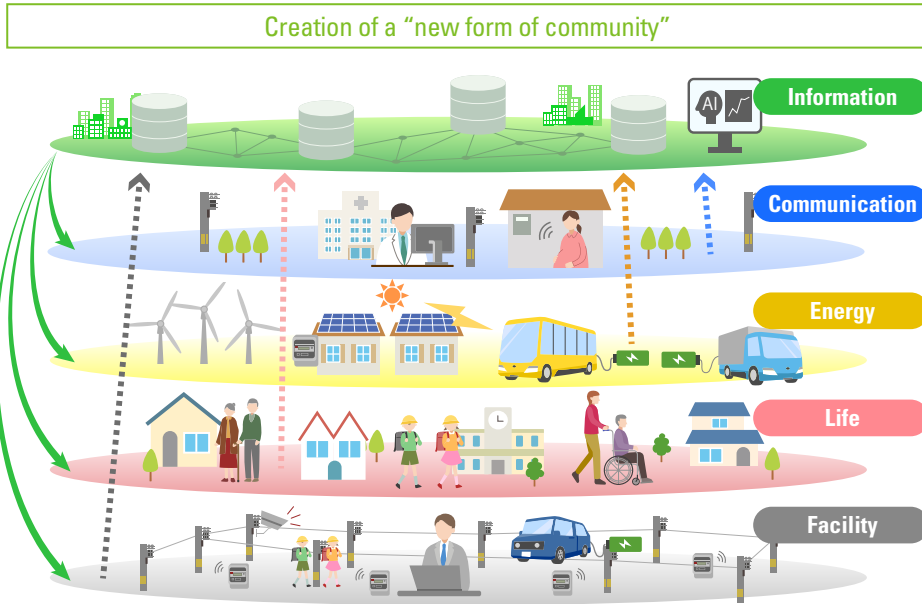
In the future, we will continue to promote decarbonization and resource recycling with the aim of realizing a sustainable society and participate in creating communities by fully utilizing the characteristics of communities to “contribute to the resolution of regional issues and regional revitalization.” Through these efforts, the Chubu Electric Power Group will work together to accelerate the delivery of services that enrich the lives of its customers.

## 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”**.



New Growth Fields



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

<p><b>Healthcare</b></p> <ul style="list-style-type: none"> <li>● Develop services such as online medical examinations</li> <li>● Frailty detection service</li> </ul> <p><b>Link</b> ↑ e-Fraily Navi (Japanese version only)</p>	<p><b>Support for EV dissemination</b></p> <ul style="list-style-type: none"> <li>● Demonstration of optimal operation of EV buses</li> <li>● Demonstration of optimal operation of EV trucks</li> </ul>	<p><b>Community</b></p> <ul style="list-style-type: none"> <li>● Community information service</li> <li>● Kizuna Net</li> <li>● Child care support</li> </ul> <p><b>Link</b> ↑ Kizuna Net (Japanese version only)</p>	<p><b>Infrastructure</b></p> <ul style="list-style-type: none"> <li>● Electric vehicle charging service business</li> <li>● Automated Meter Reading</li> <li>● Mimamori-pole</li> </ul> <p><b>Link</b> ↑ Mimamori-pole service (Japanese version only)</p>
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Iida City selected as a “Decarbonization Leading Area\*1” through a joint proposal

Chubu Electric Power and Iida City jointly proposed the creation of a “community that connects people and regions with a regional micro-grid that utilizes the existing power distribution system” for the “2nd Decarbonization Leading Area” solicited by the Ministry of the Environment. This proposal was selected in November 2022.

Under this proposal, we aim to improve resilience in time of disaster by building a regional microgrid\*2 and to promote regional energy-saving activities by utilizing demand response. Together with Iida City, we will realize a “new form of community” that accelerates the decarbonization of the region.



\*1. A region selected by the Ministry of the Environment that aims to achieve net zero CO2 emissions by fiscal 2030 in accordance with regional characteristics toward carbon neutrality in 2050.

\*2. Building a regional microgrid enables supplies to be quickly resumed even if the power supply from the grid is interrupted.

Real estate development in the Chubu Electric Power Group

Group companies ES-CON JAPAN and Chuden Real Estate are promoting real estate development such as condominium development and commercial development together.

We plan to synergistically utilize ES-CON JAPAN's and Chuden Real Estate's know how in real estate development and Chubu Electric Power Company's and the Group's deep ties with local residents to accelerate the real estate business that enables a “new form of community” aimed for by the Group and promote community development that realizes a safe and comfortable life for everyone.



Senri-fujishirodai Project (Suita-shi, Osaka Prefecture)  
Integrated development of commercial facilities, condominiums





# 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



**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
<ul style="list-style-type: none"> <li>Increased uncertainty in global energy policies</li> <li>Increased uncertainty in supply-demand structures</li> <li>Delays in establishing an environment for realizing zero-emission thermal power</li> <li>Increased geopolitical risk</li> </ul>	<ul style="list-style-type: none"> <li>Global trend toward decarbonization</li> <li>Support for zero-emission thermal power</li> <li>Market creation and new system introductions</li> <li>Fluctuations in resource prices</li> </ul>

- Efforts**
- Expansion of integrated projects from fuel procurement to power generation
  - Replacement with the most efficient power plants
  - Proactive development of renewable energy and hydrogen/ammonia businesses
  - Response to variation in demand through optimization of entire value chains
  - Risk control through optimal management of our fuel portfolio in response to market trends
  - Decarbonization initiatives (coal-ammonia co-firing, O&M in offshore wind power)

**Targets in 2025**

<b>[Profitability]</b>	● Net profit: 200 billion yen ● EBITDA: 500 billion yen
<b>[Capital efficiency]</b>	● ROIC: 4.5% ● WACC: 3.5%
<b>[Growth potential]</b>	● Investing cash flow: FY2022–FY2025 total = 1,400 billion yen
<b>[Financial health]</b>	● Net DER: 1.0x or lower ● Net Debt/EBITDA: 4.5 years or less

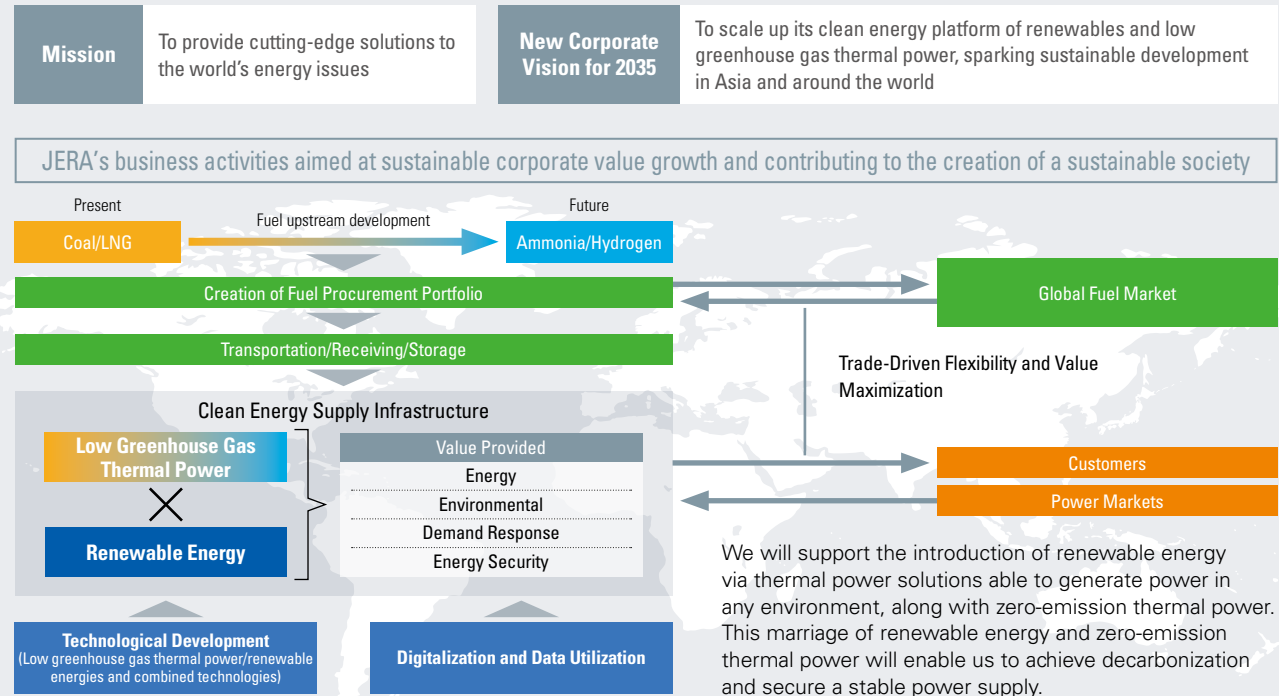
**Integration Synergy Effect**  
**100 billion yen/year**  
 (within 5 years from integration)

**FY2022 Synergy Effect Results**  
 Around **120 billion yen**  
 (Achieved initial target one year ahead of schedule)



Transport ship SOHSHU MARU for marine transportation of LNG

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.

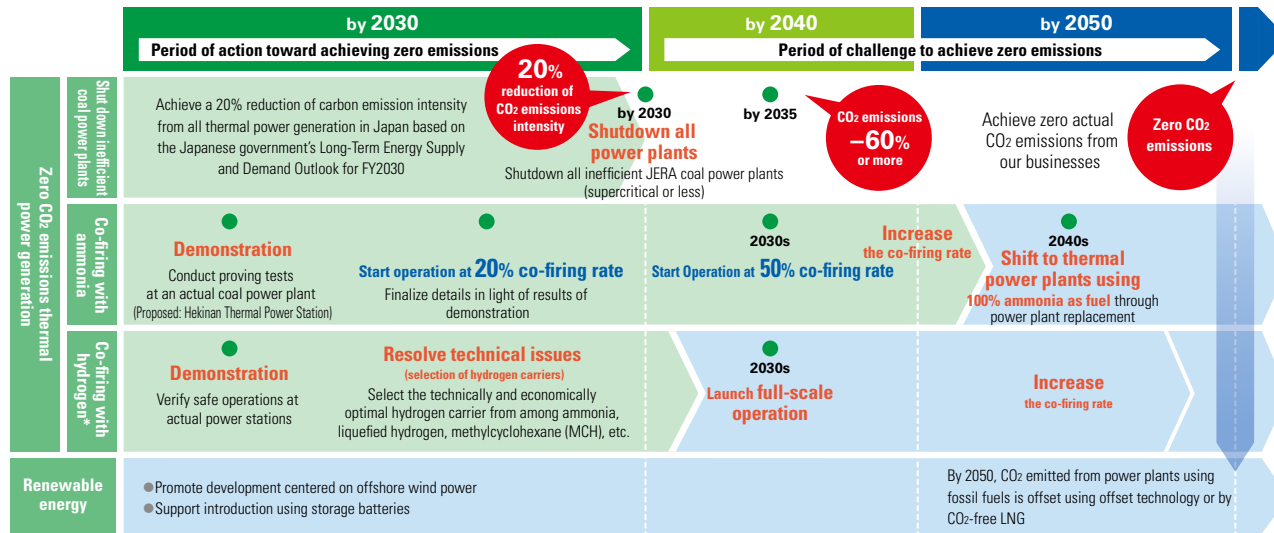


JERA Zero CO<sub>2</sub> Emissions 2050: Committed to Achieving Zero CO<sub>2</sub> Emissions across Domestic and Overseas Operations

**JERA Zero CO<sub>2</sub> Emissions 2050**

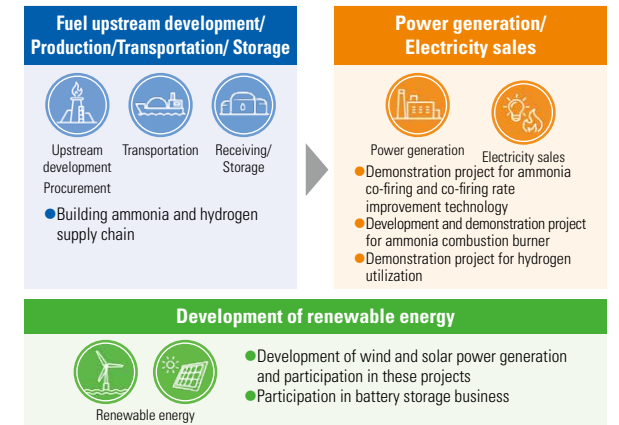
- JERA’s mission is to provide cutting-edge solutions to the world’s energy issues.
- JERA is rising to the challenge of achieving net-zero CO<sub>2</sub> emissions from its domestic and overseas operations in hopes of creating a more sustainable society for us all.

[JERA Zero CO<sub>2</sub> Emissions 2050 Roadmap for its Business in Japan]



[Efforts to achieve zero CO<sub>2</sub> emissions in the value chain]

We participate in the entire value chain from upstream development to transportation, trading, power generation and sales, and collaborate with governments and companies around the world.



This roadmap will be gradually developed in greater detail based on relevant conditions such as government policies. JERA will revise the roadmap when relevant conditions change significantly.  
 \* The use of CO<sub>2</sub>-free LNG is also being considered.

Excerpt from JERA's FY2023 first quarter financial results materials

[Main initiatives to Zero CO<sub>2</sub> emissions thermal power generation (an ammonia and hydrogen supply chain)]

Area	Business Partners	Contents	Date	
Upstream development/Production	ADNOC (UAE)	Consideration of cooperation in the fields of clean hydrogen and ammonia	July 2023	
	PIF (Saudi Arabia)	Consideration of opportunities for the development including green hydrogen production	July 2023	
	CF Industries Holdings (USA)	Consideration of project development for blue ammonia production and sales & purchase of clean ammonia	January 2023	
	Yara (Norway)			
Transportation	Nippon Yusen, Mitsui O.S.K. Lines	Consideration of transporting fuel ammonia for the Hekinan Thermal Power Station	November 2022	
Fuel for power generation Supply/Utilization	Japan	Kyushu Electric Power, Chugoku Electric Power, Shikoku Electric Power, Tohoku Electric Power, Hokuriku Electric Power, Hokkaido Electric Power	Consideration of cooperation in the adoption of hydrogen and ammonia as fuel for power generation	November 2022–June 2023
		Mitsui	Signed an Ammonia Sales and Purchase Agreement for its use in the demonstration project at the Hekinan Thermal Power Station Unit 4	June 2023
	Europe	EnBW (GER), VNG (GER)	Consideration of the development of ammonia cracking technology for hydrogen production	June 2023
	Asia	PTT (Thailand)	Consideration of collaboration on initiatives for expanding the supply chain and usage of hydrogen and ammonia towards decarbonization in Thailand	May 2023
		Aboitiz Power (Philippines)	Consideration of cooperation in studies to decarbonize business and co-firing using ammonia at a coal-fired power plant	February 2023
Technology development (NEDO projects)	NIPPON SHOKUBAI, Chiyoda Corporation	Development of large-scale ammonia cracking catalyst and technology	June 2023	



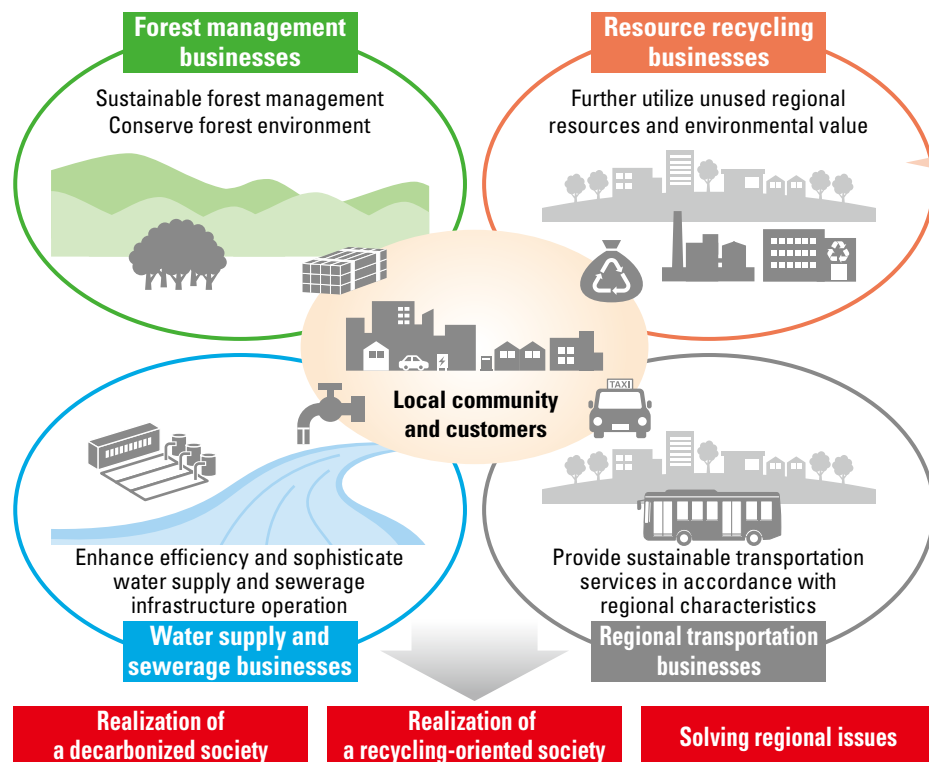
# Undertaking Regional Infrastructure Business

## Undertaking 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.

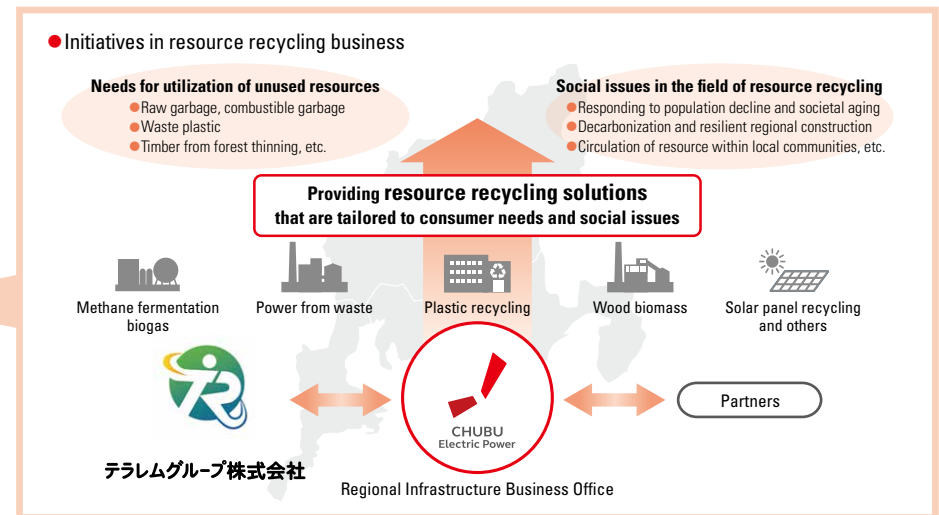
In striving to provide a “new form of community” as set forth in Management Vision 2.0, we will proceed with considerations of businesses that leverage our ties with communities and customers and our know-how in operating infrastructure facilities with the overarching aim of establishing sustainable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

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



## [Resource recycling business]

In the resource recycling business, in collaboration with local partners and the Terrarem Group Co., Ltd. (former Ichikawa Kankyo Holdings Co., Ltd., corporate name changed in April 2023), in which we have an investment, we aim to quickly commercialize such businesses as power from waste encompassing methane fermentation biogas power as well plastic and solar panel recycling with the aim of effectively utilizing unused resources (waste) of local communities.



### TOPICS

#### Concluding a partnership agreement with Hekinan City for consideration of resource recycling business

On June 2, 2023, Chubu Electric Power signed an agreement with Hekinan City for the purpose of promoting efforts by the public and private sectors to recycle resources and energy. In the future, we will work together to consider the following matters.

- Matters related to construction and operation of waste incineration facilities for the purpose of maximizing the use of biomass generated in the region
- Matters related to local production for local consumption by supplying renewable energy generated by biomass to public facilities within the city



Left: Mayor Negita  
Right: Managing Executive Officer Kamiya

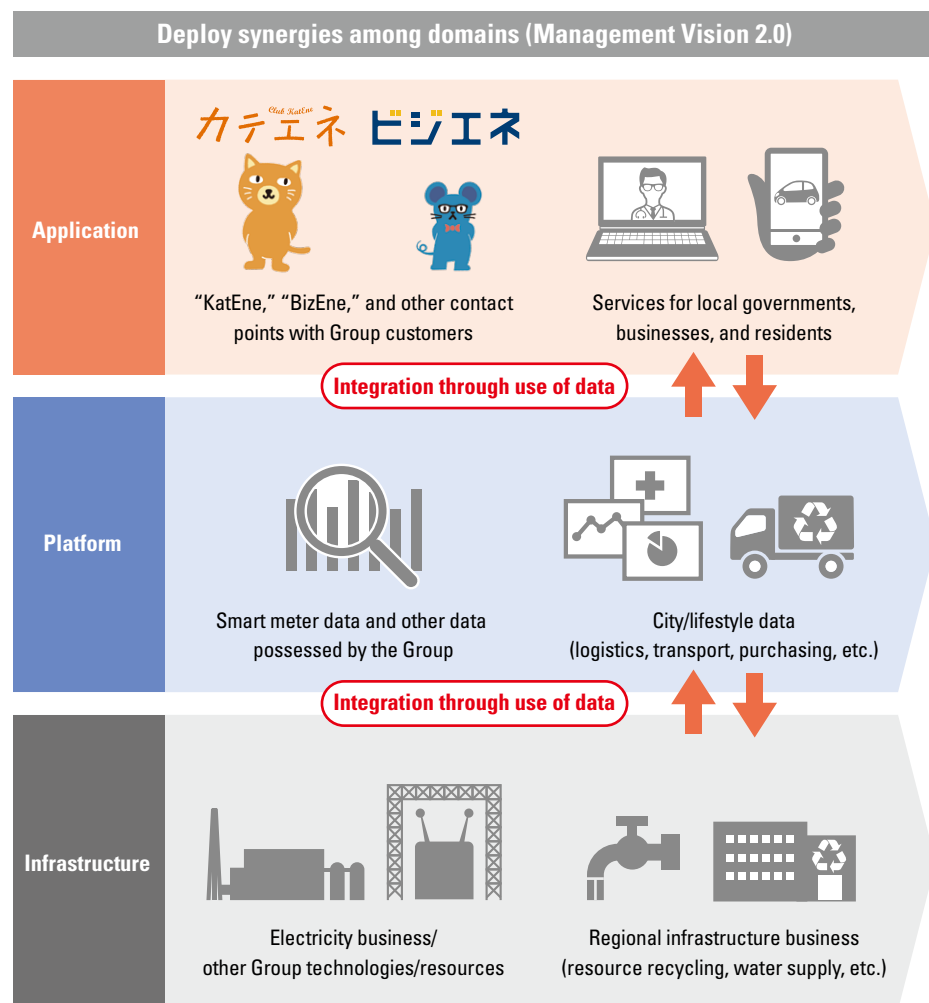




# Contribute to Solving Local Issues and Revitalizing Local Communities

In working to accelerate the expansion of new growth areas, the Chubu Electric Power Group will strive to increase the added value of its services by combining services (application areas) within the Group and deploying synergies with regional infrastructure businesses (infrastructure areas).

We will work with local governments and local residents to co-create and expand services to enable electricity data and government administrative data to be used to solve issues facing local communities and help revitalize these communities.



\* Use of personal data is premised on opt-in (prior consent of the individual)

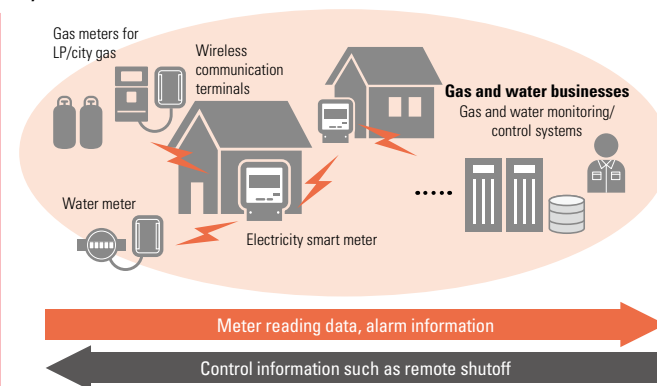
## Services that utilize electricity data, water and gas meter reading

### Commercialization through specialized subsidiary (Chuden Telemetering LLC.)

**First in Japan**  
(former general electric utility)

#### Main services

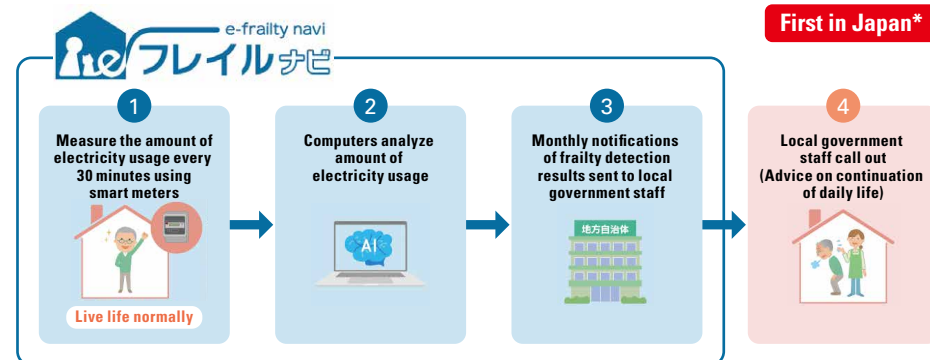
- **Automated Meter Reading**  
(Remote acquisition of meter reading values)
- **Remote acquisition of alarm information**  
(Remote acquisition of alarm information such as for gas leaks and water leaks)
- **Remote control of meters**  
(Implement remote gas setting, remote shutoff, and restoration)



Contribute to the sophistication of meter reading and safety operations. Also focus on personal protection and asset management through data utilization

### Began providing "e-Frailty Navi," a frailty detection service for local governments

**First in Japan\***



\* Japan's first service that detects frailty using electricity data