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# Chubu Electric Power Group Management Vision 2.0 and Medium-term Management Plan

# Transformation of society and decarbonization and sophistication of electric power systems toward 2050

The Chubu Electric Power Group assumes that in 2050, society will have evolved into a "decarbonized," "safe and secure" and "self-distributed and circular" society, and everything will be optimally controllable by electric power.

The Group will contribute to the transformation of society through the decarbonization and sophistication of electric power systems as the core infrastructure supporting various types of infrastructure.



### **Contributions by the Chubu Electric Power Group**

Decarbonization of electric power systems supporting various types of infrastructure; Sophistication of electric power grid
 Pursuit of value creation by integrating each infrastructure or infrastructures and data

Coexistence with residents of the local communities

Working to achieve technological innovation and cost reductions in response to a rise in costs resulting from transformation of society and also delivering new value-added services

# **Providing Energy in 2030**

In working toward the realization of a decarbonized society, we assume that in 2030 there will be a further increase in needs for renewable energy-derived electricity and non-fossil fuel value, mainly from corporate customers.

To respond to customer needs, the Chubu Electric Power Group will strive to expand renewable energy, utilize hydrogen and ammonia mixedcombustion in thermal power generation, maximize the use of nuclear power, and provide electrification and energy-saving solutions on the demand side for the decarbonization of the entire social system.



		Chubu Electric Power Group		1		
Top Commitment	Value Creation	Management Strategies	<b>Business Activities</b>	Foundation for Growth	Governance	Financial / Corporate Data

Chubu Electric Power Group Management Vision 2.0 and Medium-term Management Plan

# **Initiatives for 2030**

Toward 2030, we will expand our business areas from the energy business to the real estate business and resource recycling business. While doing so, we will accelerate our efforts in the platform areas mutually connecting these businesses and application areas providing high value-added services, in order to transform our business model.

Even amid the drastically changing business environment, the Chubu Electric Power Group will steadily promote the initiative described in our Management Vision 2.0 with the aim of its quantitative targets for 2030 of achieving consolidated ordinary income of 250 billion yen and realizing a well-balanced profit portfolio.

In addition, we have defined medium-term management targets for FY2025 as a milestone toward achieving consolidated ordinary income of 250 billion yen or more in FY2030 as set in our Management Vision 2.0.

We aim to achieve the medium-term targets for FY2025 of consolidated ordinary income of 180 billion yen or more and return on invested capital (ROIC)\*<sup>1</sup> of 3.0% or higher.

\*1 ROIC: Return on Invested Capital



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# **CFO Message** [Toward Achieving Our Medium-term Targets]

# MESSAGE



# Mizutani Hitoshi

**Director & Executive Vice** President. General Manager of Corporate Management Division. Chief Financial Officer (CFO) and Chief Compliance Officer (CCO)

Chubu Electric Power will ensure its stakeholders gain an understanding of the Company's policies and initiatives by undertaking proactive dialogue with all stakeholders and enhancing information disclousure.

In our Medium-term Management Plan announced in April 2022, we set a new management target of consolidated ordinary income of 180 billion ven or higher and ROIC of 3.0% or above in FY2025.

In FY2022, Chubu Electric Power faced extremely harsh conditions that included expectations of temporarily operating in the red. Despite these difficulties. Chubu Electric Power ultimately recorded a certain level of profits thanks to a sharp downturn in resource prices and to Groupwide efforts to thoroughly enhance management efficiency and strengthen market responsiveness. Our business environment that includes resource prices is expected to remain uncertain. To raise predictability in our businesses, we will appropriately control risks across the entire value chain, from fuel procurement to the delivery of electricity to customers.

With our strategic investments currently in a phase of expansion, I believe we must place even greater emphasis on efficiency in working toward sustainable growth. To this end, we will maintain a higher-than-ever awareness of capital efficiency and the cost of capital and will promote initiatives together as a group to achieve returns that exceed the cost of capital, such as by utilizing a breakdown of targets and initiatives in each business starting from ROIC, as well as optimizing resource allocation and monitoring.

While continuing to provide value demanded by stakeholders, Chubu Electric Power will strive to maintain stable dividends and return profits to shareholders in accordance with its profit growth. At the same time, through proactive dialogue and information disclosure, we will work to ensure that our shareholders understand and acclaim our policies and initiatives as we aim to raise our corporate value.

STEP1

Recovery to

Acquiring profits from strategi

# Progress toward achieving medium-term targets

### [STEP1: Quick recovery of profit level]

In FY2022, Chubu Electric Power recorded consolidated ordinary income excluding time lag impact of 156 billion yen, which exceeded the rough target for a quick recovery of 150 billion yen. Because the future outlook for the business environment is highly uncertain, we will continue efforts to sophisticate risk management and enhance management efficiency.

### [STEP2: Toward achieving our medium-term targets]

To attain its medium-term targets, Chubu Electric Power aims to secure stable profits from its electric power value chain businesses as well as profits from further growth in New Growth Areas. Besides active investment in New Growth Areas, we will work to expand earnings by promoting autonomous business operations at companies such as JERA and ES-CON JAPAN Ltd. as well as execute appropriate management and optimal resource allocation throughout the entire Group.



rs	17.5	50–60						
al*²	65.1 (Approx. 156) 180							
es in parentheses are consolidated net income excluding the time-lag impact.								
e time-lag impact ach segment are rounded and thus do not o the cumulative figures.								

FY2025

Medium-term

Managemen

Targets

20-30

20-30

70-80

FY2022

results

64.8

7.0

-24.2

(Approx. 67)

top communent	value creation	Management Strategies	Foundation for Growth	Governance	Financial / Corporate Data	
Top Commitment	Value Creation	Management Strategies	Rusiness Activities	Equipation for Growth	Governance	Financial / Corporate Data

CFO Message [Toward Achieving Our Medium-termTargets]

# Basic approach to investment and capital policy and shareholder returns

#### [Investment policy]

Chubu Electric Power will use operating cash flow as a source of funds for investments needed for assuring a safe and stable supply of electricity and for strategic investments for business growth and development with the aim of realizing sustainable growth as we work to raise corporate value.

For investments needed for assuring a safe and stable supply of electricity, we will invest around 200 billion yen to 300 billion yen annually for increasing resilience and sophistication while thoroughly enhacing efficiency.

Furthermore, by executing strategic investments, Chubu Electric Power will push ahead with an expansion of New Growth Areas upon carefully examining the significance of its investments and risk versus return. By doing so, we will strive to achieve its Management Vision of consolidated ordinary income of 250 billion yen or more in 2030 and realize a business portfolio whereby the proportion of profits generated in the domestic energy business and New Growth Areas is balanced at 1.1. We plan to make strategic investments totaling around 450 billion yen from FY2022 to FY2025.



Chubu Electric Power regards returning profits to shareholders as a key mission. Based on its policy of maintaining stable dividends, we makes efforts to ensure shareholder returns taking into consideration profit growth and aims for a consolidated dividend payout ratio of 30%.

#### [Maintaining financial soundness]

FY2022 to FY2025 will be a period in which Chubu Electric Power expands its investments, which includes the allocation of funds to growth areas, utilizing capital accumulated through profits generated by enhancing efficiency and other means as a source of funds. In this phase of expanded investment, there will be fiscal years when free cash flow is negative. Nonetheless, Chubu Electric Power will maintain a consolidated shareholders' equity ratio of 30% or higher as it works to ensure financial soundness.





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# Realizing Management with an Awareness of Cost of Capital and Stock Price (toward Improving PBR)

Under the Medium-term Management Plan formulated in 2022, Chubu Electric Power set a target of "ROIC of 3.0% or more by fiscal 2025" and it analyzes the current state of return on capital and market valuation at the Board of Directors in promoting efficient management in which ROIC exceeds the cost of capital. For the next fiscal year, we will formulate plans and initiatives with an even greater awareness of cost of capital while publishing information about the progress, effects, and evaluations of initiatives for improving capital efficiency in our Medium-term Management Plan and in Group Reports as we work to enhance disclosure.

#### [Trends in Chubu Electric Power's PBR]

Chubu Electric Power's PBR declined owing to a deterioration in business results due to factors such as the shutdown of the Hamaoka Nuclear Power Station following the 2011 earthquake. Furthermore, the PBR for TOPIX has trended upward along with an economic recovery after temporarily stagnating owing to the impact of the COVID-19 at the end of FY2019. In contrast, Chubu Electric Power's PBR has declined due to deterioration in profitability caused by soaring resource prices. As a result, PBR has remained below 1.0 since 2010.



#### [Factor analysis of PBR]

We break down PBR as follows and evaluate ROE (1), capital efficiency (ROIC 2), and PER (3).



### Evaluation of ROE (ROA/financial leverage)

Chubu Electric Power's ROE was 6.2% when evaluating the five-year average (FY2018-FY 2022) for each power company's ROE (excluding time lag).

A breakdown indicates that although ROA was the highest in the electric power sector, financial leverage was the lowest. Given this, we believe we **must maintain a certain level of financial soundness (shareholders' equity ratio of 30%)** and recognize **the need to further raise ROA (ROIC)**.



Top Commitment	Value Creation	Management Strategies	<b>Business Activities</b>	Foundation for Growth	Governance	Financia

Realizing Management with an Awareness of Cost of Capital and Stock Price (toward Improving PBR)

2 Capital efficiency versus cost of capital

Chubu Electric Power's ROIC stands at around 3.0% for the most recent years (FY2019, FY2020, FY2022), excluding FY2021, when profitability deteriorated due to soaring market prices. Chubu Electric Power is **generating a return (ROIC) that exceeds its cost of capital (WACC)**.

#### Evaluation of PER (stock price/earnings per share)

Regarding market valuation (PER), Chubu Electric Power recognizes that maintaining the highest level of dividends in the sector and responding to the surge in electricity market prices lead to an improvement in valuation. Conversely, we are aware that the following matters are concerns and risks recognized in our valuation and we will firmly respond to these negative factors.

- (1) Concerns over profitability arising from competition policies in the electric power industry
- (2) Uncertainty in the nuclear power business
- (3) Social demand for decarbonization
- (4) **Possibility of establishing a profit base** through **strategic investment** (expansion of new growth areas)
- (5) Concerns over a decline in public trust concerning compliance

#### [Direction of responses to improve PBR]

Based on the results of this recent analysis, Chubu Electric Power will strive to **improve PBR** by **promoting initiatives to raise capital efficiency** and by proceeding with **proactive dialogue and disclosures in capital markets**.

Specifically, toward the realization of **Management Vision (2030)**, Chubu Electric Power will proactively allocate management resources upon carefully identifying growth areas while striving to secure stable earnings by sophisticating risk management and taking other measures in its existing energy business. Additionally, we aim to achieve the **management targets (2025)** as a milestone of our Vision and we will increase the **probability of achieving our targets** by **setting targets that match the characteristics of each business area and incorporating these into specific measures and steadily monitoring these**. By promoting these initiatives in a manner that simultaneously achieves the goal of **decarbonization**, Chubu Electric Power will raise corporate value as well as enhance shareholder returns.

Furthermore, Chubu Electric Power will reflect these initiatives in its management plan for the next fiscal year and will communicate these to all stakeholders through disclosure in reports and by further enhancing dialogue with capital markets.

#### TOPICS

#### **Deepening ROIC management**

In the Medium-term Management Plan, Chubu Electric Power introduced ROIC as a business management indicator in consideration of the need to place increased emphasis on the perspective of efficiency that also encompasses our existing business fields with our strategic investments now in a major phase of expansion. We aim to generate returns that exceed WACC, which is our funding cost, and are promoting management that emphasizes efficiency as well as profitability such as ordinary income.

#### [Breakdown into each business area]

We aim to raise effectiveness by breaking down management targets into KGIs and KPIs for each business area and department and making it possible to recognize that the efforts of each and every employee are contributing to the attainment of management targets.

Establish business targets, KGIs and KPIs in accordance with the characteristics of each business area.

Promote autonomous management to improve efficiency

#### Energy business area



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Governance

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# Progress of Chubu Electric Power Group Medium-term Management Plan

# Results and issues for FY2022

The Chubu Electric Power Group faced extremely harsh conditions during FY2022, **due to increased power procurement costs** accompanying soaring fuel prices. Despite these headwinds, **consolidated ordinary income ultimately exceeded the target level thanks to Groupwide efforts to expand thoroughgoing measures for enhancing management efficiency and to strengthen market responsiveness**.

Our business environment that includes resource prices is expected to remain uncertain. Nevertheless, we will work to fulfill our unwavering mission of providing high-quality energy that considers the global environment encompassing decarbonization in a safer, more affordable and more stable manner. Alongside these measures, we will accelerate our global business while working toward creating new value by providing services that enrich the lives of our customers and contribute to solving local issues and revitalizing communities.

Area		Results and Issues	Direction of Responses
Energy Business Area	• Even though we operated amid an unstable flexible responses utilizing the features securing stable supplies.         • Initiatives to reduce power procuremen Chubu Electric Power Miraiz         • Fuel trading business that respond to the H         Issues       • Correction of business structure with hig         • Achieve balance between sustainable in	e business environment that includes resource prices, we implemented s of our model that splits off power generation and sales while at costs and carry out sales activities based on procurement costs at high volatility of resource prices at JERAGM where the strengthening of resilience source price shifts itiatives toward carbon neutrality and the strengthening of resilience	<ul> <li>Provide safe, affordable and stable energy P30</li> <li>Build next-generation power networks P49</li> <li>Accelerate initiatives for realizing a decarbonized society P37</li> </ul>
New Growth Area	<ul> <li>Expand growth areas such as renewable on Eneco</li> <li>Cooperation agreement with bp plc for other energy of the energy of t</li></ul>	energy power generation, retail sales, and new services in <b>Europe centered</b> decarbonization in Japan and the Asian region utonomous and flexible business operations reeds through strategic investment, etc.	<ul> <li>Accelerate initiatives for global business P53</li> <li>Contribute to solving local issues and revitalizing local communities P55, 59</li> <li>Provide new value to customers and communities P51, 55</li> </ul>
Management Foundation	• Expand mid-career recruitment and streechanges         • Further enhance management efficiency of t         • Secure and develop diverse human resources a         • Occurrence of inappropriate events succelectric power companies	engthen field-specific education in response to business expansion and he entire Group and create an environment where they can demonstrate respective capabilities h as the inappropriate viewing of a portion of customer information of new	Improve the value of human capital P31 Further improve efficiency in accordance with the characteristics of each business area P28 Promote technology research and development and intellectual property activities P35-36 Initiatives for compliance P15, 83

Governance

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# Providing Safe, Affordable and Stable Energy

- •The unstable business environment continues amid rising uncertainty in the energy market resulting from extreme volatility of resource prices and exchange rate fluctuations.
- Even within such a drastically evolving business environment, the Group will work in unison to provide safe, affordable, and stable energy.



Appropriately understand risks and assess countermeasures





- Ascertain the state of risk response in each business every quarter. (Report to the Board of Directors about once every half year)
- •Understand the impact on consolidated income and expenditures

Management Strategies Busin

# MESSAGE



# Ito Hisanori

Director & Executive Vice President General Manager of Human Resource Strategy Office and Corporate Planning & Strategy Division Chief Information Officer (CIO)

Realizing Vision 2.0 by deepening and evolving our human resources strategy and DX strategy

The Chubu Electric Power Group believes that, in realizing our Management Vision 2.0 (Vision 2.0), it is necessary to promote the growth and active roles of each and every one of our human resources, who are the essence of corporate value, and that this, in turn, will require a threefold effort integrating our human resources strategy, digital transformation (DX) strategy and Kaizen (improvement) activities.

Specifically, we will implement a human resources strategy that supports the promotion of the DX strategy from the aspect of human resources. After making sure that our Kaizen activities pursue what are essential in our operations and are geared to streamline our processes, we will also promote the use of digital technologies and advanced data analysis. While maximizing the synergistic effect of the Kaizen activities and DX strategy, we seek continued business growth by developing human resources and increasing operational efficiency and productivity as well as by expanding our business into growth areas.

Going ahead, while continuing to promote these initiatives, we will actively invest in human resources and facilitate the growth and active roles of diverse human resources. By doing so, we will acquire and expand new revenue sources to realize Vision 2.0 and provide value to our stakeholders.

# Human Resources Strategy

#### Threefold effort integrating our human resources strategy, DX strategy and Kaizen activities

After making sure that our Kaizen activities pursue what are essential in our operations and are geared to streamline our processes, we will utilize digital technologies to increase the levels of our operational sophistication and efficiency, beginning with the visualization of financial data and business operations. We will reskill the resulting extra human resources by offering opportunities for voluntary learning and diverse career development under our human resource strategy, and while doing so, will continue to take up a challenge of expanding into growth areas. Our goal is to simultaneously fulfill our unwavering mission and create new value.

# Idea and overall picture of our human resources strategy



Our Vision 2.0 states that simultaneously fulfilling our unwavering mission and creating new value require the growth and active roles of each and every one of our human resources, who are the essence of corporate value. In our human resources strategy, we have defined two specific pillars designed to secure and develop human resources with diverse strengths and encourage each to demonstrate respective capabilities to the fullest. The pillars shown below are promises of the Company to its employees.

First pillar: Creating an environment where diverse human resources can take active roles
 Second pillar: Providing opportunities and supporting employees who meet the challenge of self-transformation

The Chubu Electric Power Group will contribute to the sustainable growth of local communities and society by promoting this human resources strategy and thus enabling each and every one of our human resources to fully exert his or her capabilities depending on a particular life event or during a certain career stage.

		iglaCompany's promises/	ackslash Key measures $/$	
Providing opportunities	Chance   Create a chance	Provide opportunities for employees to grow and take active roles in line with changes in the business environment and management strategies	Expand transfers through an internal job posting system; Introduce online learning programs	
and supporting employees who meet the challenge of self-transformation	Challenge   Boldly take up challenges	Create an environment for employees to take up challenges	Promote measures to instill Vision 2.0 in all employees	
	Change   Achieve transformation	Achieve transformation of the existing businesses and expansion of business areas with diverse human resources taking active roles	Increase mid-career recruitment; Introduce a job-based personnel system	
Creating an environment where diverse human resources can take active roles	Safety P61	Health DE&I P63	Workstyles P63	

Top Commitment	Value Creation	Management Strategies	Business Activities	Foundation for Growth	Governance
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Human Resources Strategy

# Initiatives to support the growth and active roles of human resources

In order to create an environment where diverse employees can explore their own careers, voluntarily take up challenges and try to outpace and be more active than their predecessors, we are implementing specific measures, as a Group's commitment to its employees, to provide opportunities and support to employees who meet the challenge of self-transformation based on the keyword of 3Cs, namely Chance. Challenge and Change.

### Chance | Create a chance |

State where employees can explore their own Target careers and obtain opportunities for growth and for taking active roles

In achieving this target, we need to take three actions: clarifying envisioned career directions; providing learning opportunities; and creating diverse career opportunities.

#### Clarifying envisioned career directions

Each business and division create envisioned human resource profiles required to achieve Vision 2.0 and clearly present career opportunities by posting these profiles on our intranet. We back up self-directed career development by holding career training and interviews.

#### Providing learning opportunities

We have introduced "Udemy Business," a learning program for employees to choose and take courses necessary for their own career development.

#### Creating diverse career opportunities

We have introduced a "My Career" job posting system (for routine transfers) to increase application opportunities and assign the right persons to the right positions beyond divisional boundaries and have been examining the introduction of systems allowing internal second jobs and external side jobs.

# Challenge | Boldly take up challenges |

State where employees can relate to Vision 2.0 and take Target up challenges toward its achievement by voluntarily capturing opportunities for growth and active roles

We seek to improve employee engagement by implementing the cycle of surveying, planning and acting to instill Vision 2.0 and resolve issues in the workplace.

#### Surveying

We launched an engagement survey in October 2022 to conduct a continuous survey on employees' trust in and attachment to the Company and have been periodically sharing the status of engagement with all employees.

#### Planning

Based on the survey results, we recognize organizational issues and implement action plans, which have been formulated by heads of departments and workplaces to solve such issues, for the ultimate goal of instilling Vision 2.0 and achieving workplace improvement.

#### Acting

Workplaces and individuals clarify the direction of their actions as to what they should do to achieve Vision 2.0.

#### Change | Achieve transformation |

Financial / Corporate Data



State where human resources with diverse strengths have outpaced their predecessors and are taking active roles

To achieve this target, we are promoting initiatives to accept diverse human resources and enable them to take active roles. As a foundation to underpin our recruitment, employee treatment and job assignment, we plan to introduce a talent management system in around FY2024 to reflect individual aspirations, intentions and skills to the maximum extent possible.

#### Recruitment

We will introduce a "come-back" (return-to-work) system for those who have retired for personal reasons and increase mid-career recruitment.

#### Employee treatment

We have started employing "specialist employees" through mid-career recruitment, who will be treated as per the idea of a job-based personnel system.

#### Job assignment

We will synchronize our business plans and human resources plans in order to achieve management strategies and will assign the right persons to the right positions.

# List of key performance indicators (KPI) used to gauge the implementation of each measure (The figures in parentheses show the results.)

- Utilize our job posting systems for about 300 posts (approximately 10% of all transfers) in FY2025 (42 posts)
- •Usage rate\*1 of online learning services of 100% in
- FY2025 \*1 Usage rate = 2 courses or more/person

•Achieve the "A" rating (3rd highest rating out of the 11 ratings) in the Total Score Rating\*2 in FY2025 ("BB." 5th from the top)

\*2 Engagement survey provided by Link and Motivation Inc.

Percentage of mid-career recruitment in the number of hires of 20% in FY2025 (16%)

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# Promotion of Digital Transformation (DX) in the Chubu Electric Power Group

The Chubu Electric Power Group will achieve operational reforms and the transformation of customer services by utilizing digital technologies. We will increase our productivity to generate additional human resources through operational reforms linked with Kaizen activities, and while contributing to the sustainable development of local communities, will promote the transformation of customer services to deliver greater service value as well as new value from the customer-oriented perspective.

We will also nurture human resources, who will promote our transformation through DX, and advance our human resource strategy through the evolution of our digital foundation.

# Example of transformation of customer services

# [Solving issues in local communities and society]

While working with local community members and other companies, we will enhance convenience by resolving community-specific issues, integrating multiple life services into a one-stop service and linking different services. A community platform, which will serve as a foundation for achieving the goal, has a mechanism to support a business ecosystem encompassing other companies as well as local information and will contribute to the sustainable development of local communities.

# **Operational reforms**

# [Applying AI technology to business operations]

We will develop AI that has learned various data through machine learning. Such data includes facility operation data, which is based on the knowledge and experience of skilled workers. This AI will support facility maintenance and inspections as well as facility operation that maximizes economic efficiency using the amount of electricity generated and value of electricity sold as indicators.

We will make the generative AI available to all employees and use it to make proposals on facility operation and provide advice for decision-making based on our internal data, including accumulated know-how. In using the generative AI, we will implement thorough information management.



# Supporting the growth and active roles of each and every one of our human resources

### [Nurturing human resources to engage in DX and providing IT literacy education to all employees]

The Chubu Electric Power Group will nurture human resources to engage in DX, who have both the skills to utilize digital technologies, such as data analysis, and business skills encompassing marketing and who will promote business model transformation in each business segment. As one means to support the nurturing of such human resources, we will work with Group companies, including Chuden CTI Co., Ltd. and the data analysis company TSUNAGU Community Analytics Co., Inc., as well as external experts and offer a broad range of opportunities and venues for various training and personal exchange.

Additionally, as an effort to enhance the DX capability of the entire Group, we will provide information technology (IT) literacy education to all employees to let them learn the latest situations concerning DX and techniques to utilize digital tools.



### [Advancing our human resource strategy through evolution of a digital foundation]

The introduction of a talent management system will enable us to conduct analysis of human resource data, through which to implement effective personnel and other measures. This will also allow us to visualize individuals' skills and characteristics and propose a voluntary learning plan for realizing the career vision of each, for the ultimate goal of enhancing employee engagement. Management Strategies

### MESSAGE



Oka Toshihiko Executive Officer Kaizen Promotion Office Supervisor of Chief Kaizen Officer

Kaizen activities are one key pillar of management indispensable for achieving Management Vision 2.0.

"Kaizen activities based on the concept of the Toyota Production System" are now in the fifth year of implementation at Chubu Electric Power Group. In April 2023, the Kaizen Promotion Office was reorganized under the direct control of the president and I assumed the duties of Supervisor of CKO. The president himself takes the lead in permeating Kaizen activities among employees via management, such as by proactively acting on his own to promote Kaizen activities more quickly and forcefully. Through these efforts, we will strive to advance toward an autonomous promotion system centered on management.

Furthermore, we will improve the outcomes of our Kaizen activities by moving guickly to formulate into rules those measures we have considered until now and firmly position standard processes (post-Kaizen work procedures) in workplaces. To date, the entire Chubu Electric Group has worked on approximately 4,100 business improvement items and these efforts have yielded cumulative cost reductions of around 16 billion ven. We have already shifted about 650 people to new growth areas and for bolstering and sophisticating existing operations, which has enabled us to further extract "human resources" and "time" that create new value and profits. In the future as well, we will link the results of work volume reductions to actual results that lead to improved profitability, such as through labor savings and cost reductions.

# Promotion of Kaizen activities



# **President/Executive officer project**

To convey the degree of seriousness of Kaizen activities and the thoughts of management to employees and to step up Kaizen activities, the president and executives of Chubu Electric Power will take the initiative to set good examples in deploying projects involving Kaizen.



# Kaizen activity example (Renewable Energy Company)

Efforts were made to improve water drainage work in water channels and this enabled a reduction in the number of on-site observers and coordination staff.



Example 2 Enhanced water channel drainage operations at Okuyahagi-Daiichi and -Daini Power Plant [Renewable Energy Company](Japanese version only)



Technology research

and development (Japanese version only) **O** 

### MESSAGE



# Nabeta Kazuhiro

Senior Managing Executive Officer, General Manager of Research & Development Division, Chief Technology Officer and Chief Standardization Officer

Promoting technology research and development in a manner to help achieve Vision 2.0 and adapt to changes in the business environment and seeking the social implementation of innovative technologies

In addition to resolving on-site issues, which will contribute to a stable supply of electricity, we are promoting technology research and development in seven priority areas for realizing the decarbonization of social systems as stipulated in our Management Vision 2.0 (Vision 2.0) and are working to create intellectual properties for enhancing our corporate value. We are also seeking the social implementation of innovative technologies by combining the engineering and industrial perspectives with the perspective of academia, such as universities and research institutes, and the perspective of social needs.

In April 2023, I was appointed to the newly established positions of the Chief Standardization Officer (CSO) and Chief Technology Officer (CTO), the latter of which is responsible for overseeing our technology research and development and intellectual property activities. We will promote the standardization of innovative technologies created through our technology research and development efforts and aim to implement these technologies more broadly in society. Technology Research and Development and Intellectual Property

# Structure to promote technology research and development

We have established the Technology Research and Development Committee under the Senior Executive Committee. In this structure, matters that have been deliberated on at the Technology Research and Development Committee are either reported to the Senior Executive Committee or submitted for discussion at the committee.



# Investment in and contribution through technology research and development

The entire Chubu Electric Power Group invested approximately 8.8 billion yen in research and development in FY2022 with the intention to contribute to the realization of Vision 2.0.

More specifically, as an initiative toward the realization of a carbon-free society, we are promoting technology research and development for production of carbon-free hydrogen (turquoise hydrogen) through thermal decomposition and for a small-scale offshore verification test of a next-generation (floating axis) wind turbine.

### Initiatives toward social implementation of innovative technologies

In seeking the standardization and social implementation of our technology development outcomes, we established the positions of Chief Standardization Officer (CSO) and Chief Technology Officer (CTO) in April 2023. The CTO oversee our technology research and development and intellectual property activities.

As for industry-academia collaboration, we are promoting joint research with Hirosaki University with the aim of establishing an efficient lithium recovery technology.

# Technology research and development: seven priority areas and major initiatives

In addition to resolving on-site issues, we are promoting technology research and development in seven priority areas to realize Vision 2.0 in collaboration with industry, academia, government, and Group companies, and are seeking the social implementation of innovative technologies.



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Technology Research and Development and Intellectual Property



 Intellectual property activities (including the number of patent applications data) (Japanese version only)

# Policy on intellectual property

#### Creating intellectual properties that help enhance corporate value

We operate an incentive program to encourage the creation of intellectual properties for reinforcing our business foundation and expanding business areas. We also make efforts to increase employees' motivation for invention and creation through internal briefing sessions and employee education.

#### Appropriately protecting and effectively utilizing intellectual properties

We work to appropriately protect the intellectual properties thus created by acquiring patents and other rights and managing them as know-how. We also work to release the intellectual properties we own for external use.

#### Respecting intellectual properties of third parties

We conduct a survey on intellectual property rights held by third parties as an effort to prevent infringement of these rights. We are also active in utilizing intellectual properties of third parties, which are useful to our businesses, through licensing and other means.

# Promoting intellectual property activities

Make sure to acquire	<ul> <li>Strengthen efforts to identify inventions useful to business activities</li> </ul>
inventions	Provide education to prevent infringement of intellectual property rights held by others
Contribute to an	Conduct activities to propose solutions utilizing intellectual properties and business information
new growth area	Develop an intellectual property strategy for applicable technologies in the seven priority areas
Enhance corporate	<ul> <li>Increase opportunities to provide information on patents held by us (through our website, Group Reports, etc.)</li> </ul>
implementation	<ul> <li>Participate in patent matching events hosted by public and other institutions</li> </ul>

#### Initiatives for social implementation of patents held by Chubu Electric Power Group

In FY2022, our patented technology for silicone coating equipment was adopted by Ikedo Manufacturing Co., Ltd. through the Intellectual Property Business Matching in Aichi, a matching event hosted by the Chubu Bureau of Economy, Trade and Industry.

It was the first case in which our patented technology was adopted through an event.



Silicone coating method and silicone coating equipment (Patent No. 5897657)

# Patents acquired in FY2022

In FY2022, Chubu Electric Power, Chubu Electric Power Grid and Chubu Electric Power Miraiz acquired 24 patents, and 44 patent applications on a date of publication basis.

System and program to break down the use of electricity consumption (Patent No. 7190846)



It is a technology to calculate electricity used per home electric appliance in each month based on such data as the readings of a smart meter and the number of appliances used within a house.

# **Holding Techno Fairs**

Techno Fairs (Japanese version only)



We hold Techno Fairs to enable numerous people to view our wide-ranging technological research and development initiatives.

 We held our 30th milestone Techno Fair in October 2022 at the Research & Development Division and Chubu Electric Power MIRAI TOWER as well as on a specialized website.
 We showcased 61 exhibits, mainly the latest research outcomes in the seven priority areas.

#### Example awards given to our technology research and development efforts

Offering a development-integrated solution service, which will contribute to the resolution of social issues and manufacturing in Japan

(Excellent Prize at the Ninth Monodzukuri Nippon Grand Awards)

**Initiative to implement infrared heating technology in industrial fields** (70th Electrical Science and Engineering Encouragement Award)

Patrol inspection system (Patent No. 7216046)



It is a technology to calculate a flight path of a drone by tapping a desired facility, such as a power pole and pylon, on the map shown on the display and automatically take photographs of the entire facility from an appropriate position.

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# **Disclosure Based on TCFD Recommendations**

# **TCFD** Governance/Risk management

• The Board of Directors deliberates and makes decisions on key management matters including efforts to realize a carbon-free society, such as the progress status of renewable energy development, and supervises the execution of duties by directors by, for example, receiving reports from each director on the status of execution of his or her duties.

(See P79) for the skills matrix in the composition of the Board of Directors, including skills related to technologies contributing to power supply and the environment)

- The Zero Emissions Committee established in March 2021 is a body placed under the direct control of the President & Director. It defines super long-term as well as medium- to long-term climate change-related goals of Chubu Electric Power, its business companies and group companies, including JERA, and formulates and evaluates action plans for achieving these goals. In addition, we conduct the planning and monitoring of each business as outlined on P81 .
- Chubu Electric Power implements governance measures concerning JERA as a shareholder through dialogue with company executives and quarterly monitoring. Furthermore, through platforms such as the Zero Emissions Committee, we evaluate JERA's goal-setting, action plans, and initiatives, aiming for overall Group optimization. (See P58) for JERA's goals and roadmap.)

Main discussions and frequency on climate change in the Board of	of Directors and Zero Emissions Committee (July 2022 to May 2023)
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<b>Board of Directors: 7 times</b> (Number of discussions on decarbonization, including meetings to exchange opinions by the Board of Directors)	<ul> <li>Direction of short- and medium-term targets and roadmap for decarbonization.</li> <li>Guidelines for production of Group report (Integrated Report) (disclosure policy regarding decarbonization).</li> <li>(Main discussions) Confirmation of further quantification and concretization in disclosures related to decarbonization, including refining the roadmap towards "Zero Emissions Challenge 2050."</li> </ul>
Zero Emissions Committee: 2 times	<ul> <li>Initiatives related to ammonia/hydrogen</li> <li>Initiatives related to expansion of renewable energy</li> </ul>

•We use performance-based stock compensation for directors' remuneration and use the volume of CO<sub>2</sub> emissions as one of these performance indicators. (Refer to P80) for details regarding executive remuneration.)

In formulating a management plan, risk owners\* identify and assess key risks associated with climate change and report them to the risk management department, where they are assessed in an integrated manner. These key risks are also discussed at the Risk Management Committee chaired by the President & Director and reflected in basic management plans. Appropriate measures are being implemented after passing the corresponding resolutions at the Board of Directors.

\* Risk owners: The President of Chubu Electric Power Miraiz, the President of Chubu Electric Power Grid, Company Presidents, and general managers of divisions of the Headquarters



Chubu Electric Power endorsed the recommendations in the final report of the TCFD\* in May 2019.

Governance

\* Task Force on Climate-related Financial Disclosures, established by the Financial Stability Board (FSB) in response to the request of G20 Finance Ministers and Central Bank Governors



#### **Zero Emissions Committee**



		Top Commitment	Value Creation	Management Strategies	Business Activities	Foundation for Growth	Governance	Financial / Corporate Dat
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Disclosure Based on TCFD Recommendations

# • By referring to published data including the International Energy Agency (IEA), we have selected: a **1.5°C scenario** and other scenarios for assessing **risks and opportunities associated with the transition to a carbon-free society**; and a **4°C scenario** for assessing **risks associated with physical changes, such as abnormal weather**.

Scenario selection/Business impact assessment

TCFD

Strategy

Scenarios selected	1.5°C scenario					4°C scenario			
Reference	IEA's Net Zero Emissions by 205 World Energy Outlook 2022 (WEO-20	IEA's Net Zero Emissions by 2050 Scenario (NZE) and Announced Pledges Scenario (APS) for the World Energy Outlook 2022 (WEO-2022) and the Japanese government's Sixth Strategic Energy Plan, others					© Sixth Assessment Report "SSP5-8.5 Scenario" of the Intergovernmental Panel on Climate Change (IPCC)		
	Changes in the external			Perioc	l affe	cted*1		Financial impact (annual impact: billion yen)	
	environment	Impact on the Group	Assessment	Short	Medium	Long	Impact*2	Lower profit Profit Investment	
	[Policy] • Increase emission reduction targets • Support policies for GX investments • Review nuclear power policy • Enhance regulatory measures such as carbon pricing	Operational cost increases through decarbonization investments, fossil fuel levies, and emission trading systems (paid auctions), etc. Changes in value of thermal power assets	Risks Opportunities		•	•	Large (2030)	<ul> <li>With the progress towards decarbonization, there is an anticipated risk of significant cost increase in thermal power generation due to the gradual rise in carbon prices. We will assess the trends in carbon pricing and advance the temporal optimization of various decarbonization measures.</li> <li>(For every reduction of 10 million tons of CO<sub>2</sub> emissions, there is an estimated reduction in impact of approximately 160 billion yen*3.)</li> <li>See the following page for the evaluation of thermal power generation assets.</li> </ul>	
Transition risk scenario Responses to risks and opportunities	[Technology] Evolution of carbon-free/ low-carbon technologies Implementation of creative technologies through innovation • Renewable energy	Effect of power procurement cost reductions due to the operation of the Hamaoka Nuclear Power Station Continued suspension of operation of nuclear power plants	Risks Opportunities	•	•	•	About 260 (period not determined)	© Commencement of operation at the Hamaoka Nuclear Power Station has not been determined, as we are undergoing a review to confirm conformance with new regulatory standards. Assuming the restart of the power station now, it would save annual power procurement cost by about 260 billion yen*4	
associated with the transition to a carbon-free society	•Low carbonization of thermal power generation (Hydrogen, ammonia, etc.) •Safer nuclear power	Increase in profits resulting from investment for large-scale	Opportunities				<b>Small</b> (2030)	© We will invest about 400 billion yen from FY2021 to FY2030 for the development of renewable energy in Japan.	
	generation • Energy management (e.g., storage batteries)	Division and for the use of earlier					About 20 (2030)	© We will invest about 400 billion yen from FY2021 to FY2030 in the global business (including renewable energy) and anticipate a profit contribution of about 20 billion in FY2030 from the investment.	
	[Market] Customers becoming more environment- oriented and introduction of carbon-free technologies	free energy and expanding demand for electrification	Opportunities		• •	•	Medium (2030)	Utilizing subsidies from GX transition bonds, efforts will be made to contribute to profits through resource recycling businesses and new growth areas such as Chubu Electric Power Miraiz's value-added services (energy-saving, etc.).	
Physical risk scenario	[Storm] Increased frequency of extreme typhoons and similar disasters Intensifying flood and landslide disasters	Increase in costs for facility upgrades Increase in recovery costs	Risks	•	•	•	About 5- Medium (short to long term)	© We provide as a reference the actual damage caused by large typhoons (No. 21 and No. 24) in FY2018 (the largest damage incurred in the past five years).	

\*1 Short-term (1 year), medium-term (5 years), long-term (6 years-) \*2 "Large": 50 billion yen per year, "Medium": between 10 billion yen and 50 billion yen per year, "Small": below 10 billion yen per year

\*3 Regarding carbon pricing, considering multiple scenarios, short to medium-term calculations are based on non-FIT non-fossil certificate cap (1.3 yen/kWh), and medium to long-term calculations refer to IEA WEO scenarios (APS, NZE scenarios 2030 \$135-\$140/t-CO<sub>2</sub>). \*4 Estimated assuming the restart of the Hamaoka Nuclear Power Station's Units 3, 4 and 5 and based on the fuel prices and exchange rates in FY2023. The procurement costs aving effect indicates the saving effect of power supply procurement costs at Chubu Electric Power Miraiz, and does not include an increase in profit resulting from CO<sub>2</sub> reduction.  $\bigcirc$ 

1		Diselegure Record on				
Top Commitment	Value Creation	Management Strategies	<b>Business Activities</b>	Foundation for Growth	Governance	Financial / Corporate Data

TCFD Recommendations

# Strategy Business impact assessment

# Basic concept regarding thermal power assets

We actively participated in shaping the Basic Policy for the Realization of Green Transformation (GX), which was formulated by the GX Implementation Council. This policy emphasizes a transition towards carbon neutrality by balancing stable energy supply with the reduction of CO<sub>2</sub> emissions from thermal power generation. It includes initiatives such as long-term decarbonized power source auctions and support for introducing ammonia and hydrogen.

Thermal power generation is recognized for its ability to adapt to the ever-changing electricity demand and the fluctuations in renewable energy output. It also plays a crucial role in stabilizing the power system through inertia and synchronization forces, offering essential functions and substantial value.

### [Development and Ownership of Thermal Power Sources] (Extracted from JERA Securities Report FY2022)

In response to the uncertainty of future business environments, we have formulated plans for the development of new power sources and the ownership of existing ones in the context of various scenarios concerning the future electricity market environment, including scenarios that account for risks that may lead to reduced business opportunities for thermal power sources. By doing so, we are ensuring flexibility and resilience in our strategies.

Taking into consideration future electricity demand and competitiveness within the electricity market, we focus on optimizing profitability while balancing the replacement of aging existing facilities with state-of-the-art high-efficiency facilities. This approach helps us avoid the development and ownership of uneconomical thermal power sources (commonly referred to as stranded assets) and maximize revenue.

• The book value of thermal power production facilities at the end of FY2022 was ¥1,744.7 billion.

• The percentage of supercritical or less coal-fired power capacity relative to total thermal power generation capacity is approximately 5% (as of the end of FY2022) • An investment of approximately 650 billion yen is planned in decarbonization-related fields of renewable energy, hydrogen, ammonia, and others by FY2025

#### [Risks and Opportunities of CO<sub>2</sub> Emissions from Thermal Power Sources] (Derived from JERA Group Corporate Communication Book 2022)

	Impact on husingas	Financial impact sensitivity					
	impact on business	Method of assessment Impacted financial factors -		-2025	-2030	-2050	
Risk	Increased operating costs due to carbon pricing	Sensitivity to increases in the cost of coal for thermal power generation, assuming the price of $CO_2$ in the reference scenario	Cost				
Opportunities	Expanded opportunities to develop and introduce hydrogen and ammonia fuels Expanded business opportunities provided by renewable energy and battery storage	Sensitivity to the avoided cost of coal for thermal power generation, assuming the price of CO <sub>2</sub> in the reference scenario	Cost				

• The potential cost advantages on the order of 50 billion yen per year by 2040 and 250 billion yen per year by 2050 compared to the scenario in which we continue using coal.

Reference scenario IEA: Sustainable Development Scenario (SDS)

10

0

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**Risk level** 

(Billion ven/TWh

1619

**Opportunity level** 

on ven/TWh

Top Commitment	Value Creation	Management Strategies	Business Activities	Foundation for Growth	Governance	Financial / Corporate Data
		Disclosure Based on TCFD Recommendations				

# **TCFD** Metrics & Targets

2050

Zero Emissions Challenge 2050

Together with communities and our customers, we aim to simultaneously achieve "decarbonization" and "safety, stability and efficiency" through the innovation of the energy infrastructure.



 We will take on the challenge of attaining net zero CO<sub>2</sub> emissions for our entire business to contribute to the realization of a carbon-free society. CO<sub>2</sub> emissions and emission intensity pertaining to electrical energy sold by the Company



#### Total greenhouse gas (GHG) emissions\* from the entire supply chain



\* GHG emissions represent CO<sub>2</sub> converted total value of CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFC and SF<sub>6</sub>.

Represents a total of the three companies of Chubu Electric Power, Chubu Electric Power Grid and Chubu Electric Power Miraiz.

Chubu Electric Power is participating in the "GX League," an initiative established in accordance with the "GX League Basic Concept" published by the Ministry of Economy, Trade and Industry.

# Targets for FY2025 after GX League registration\*4



\*1 Electric vehicles (EV), plug-in hybrid vehicles (PHV), fuel cell vehicles (FCV), etc. \*2 Excludes special vehicles such as emergency and construction -use vehicles not suitable for electrification \*3 Chubu Electric Power, Chubu Electric Power Grid, Chubu Electric Power Miraiz

\*4 Target values of Chubu Electric Power, Chubu Electric Power Grid and Chubu Electric Power Miraiz \*5 Target values may be adjusted in case of changes in system design or other factors.  $\bigcirc$ 

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Disclosure Based on TCFD Recommendations

# CO2 reduced by key measures



\*1 The specific power sources are yet to be determined. The provided values are based on the assumption of a scenario where 20% ammonia co-firing is applied to a portion of Chubu Electric Power Miraiz's sourcing.



\*2 International renewable energy capacity. For domestic renewable energy, the capacity at the end of FY2022 was approximately 740 MW, with aims to expand to over 3.2 GW by around 2030.

\*3 Overall emissions reduction from global operations, including not only the renewable energy business but also other businesses.

# Issuing Green Bonds



Based on the dual perspective of promoting initiatives for realizing a decarbonized society and diversifying fund procurement, Chubu Electric Power issues Green Bonds, which are bonds that limit the use of procured funds to environmental improvement projects such as the development of renewable energy. In the issuance of Green Bonds, we have received acclaim from DNV BUSINESS ASSURANCE JAPAN K.K., a third-party assessment organization, regarding the suitability of our various standards related to the issuance of Green Bonds.

#### Reporting on the second Chubu Electric Power Green Bond (issued in May 2022)

#### Appropriation of procured funds (As of March 31, 2023)

	Item	Amount
Procurement amount (amount received)		19.9 billion yen
Appropriated amounts		19.9 billion yen
Seinaiji Hydro Power (Nagano)		1.2 billion yen
	Abekawa Hydro Power (Shizuoka)	2.3 billion yen
	Yokkaichi Biomass (Mie)	4.4 billion yen
	Aichi Gamagori Biomass (Aichi)	0.9 billion yen
(br	Godo Biomass (gifu)	0.3 billion yen
eak	Omaezaki Port Biomass (Shizuoka)	0.9 billion yen
loo	Kamisu Biomass (Ibaraki)	0.9 billion yen
Nn)	Yatsushiro Biomass (Kumamoto)	1.5 billion yen
	Yonago Biomass (Tottori)	2.6 billion yen
	Tahara Biomass (Aichi)	1.7 billion yen
	Atsumi Onshore Wind Power (Aichi)	2.4 billion yen
	Akita Port/Noshiro Port offshore wind power (Akita)	0.1 billion yen
Una	oppropriated balance	

\*1 Figures less than the expressed unit are rounded down. \*2 Of the amount procured, 7.7 billion yen was allocated to the refinancing.

#### Environmental improvement effect (April 2022–March 2023)

Project	Installed capacity	Amount of CO <sub>2</sub> emission reductions
Yokkaichi Biomass (Mie)	49,000 kW	
Yonago Biomass (Tottori)	47,500 kW	
Akita Port/Noshiro Port	54,500 kW (Akita Port)	325,964 (T-UU2/Y)
offshore wind power (Akita)	84,000 kW (Noshiro Port)	

\*1 Annual CO<sub>2</sub> emission reduction calculation method: FY2022 annual power generation volume (MWh) x CO<sub>2</sub> emission coefficient (t-CO<sub>2</sub>/MWh) \*2 Of the power plants listed in appropriation of procurement funds, we plan to report on the environmental improvement effects for the power plants under construction as of March 31, 2023, after they commence operation.

Top Commitment Value Creation Management Strategies Business Activities Foundation for Growth Governance Financial / C
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Disclosure Based on TCFD Recommendations

We are advancing decarbonization through three pillars: renewable energy development, ammonia co-firing, and the restart of the Hamaoka Nuclear Power Station. In renewable energy development, particularly offshore wind power, the consortium the Group participates in has been selected as a power generation operator for three offshore regions, marking a successful start. Efforts will continue in this direction. Moreover, JERA is at the forefront of ammonia co-firing globally, and we are also working towards decarbonizing energy beyond electricity, offering ammonia solutions for customer facilities.

Furthermore, the Hamaoka Nuclear Power Station is a significant power source, not only for ensuring stability and decarbonization but also for stabilizing prices. We are approaching its reactivation with a focus on safety, while seeking the understanding of the local community.



\*1 The specific timing for the completion of the inspections for confirming conformity to new regulatory requirements and the restart schedule have not been established, but efforts are being made to achieve an early restart. \*2 In the case of restart of Units 3, 4, and 5 at Hamaoka Nuclear Power Station. \*3 In the case of replacing inefficient coal-fired power generation with other sources. \*4 In the case of ammonia 20% co-firing in 1-2 units of 1 million kW-class coal-fired power generation. \*5 Calculated based on non-FIT non-fossil fuel energy certificate prices, IEA WEO (NZE Scenario) developed nation carbon prices, etc. \*6 Including research and development expenses in fields other than decarbonization.