

Fiscal 2018

Initiatives to Address Management Challenges

—Toward Achievement of Our Management Vision—

March 2018



Introduction	3
Changing Business Environment and Four Priority Measures	4
Four Priority Measures (Specific Actions)	5
Toward Realization of Our “Vision”	6
I Four Priority Measures	
1 Improving Safety Further at Hamaoka Nuclear Power Plant	8
2 Stable Power Supply for a New Age	10
3 Strengthening Our Business Base for Growth and Achieving Sustainable Growth	13
4 Establishing a Business Structure/Management Base that can Respond Instantly to Environmental Changes	23
II Basic Approach to Investment, etc.	28

In the Chubu Electric Power Group Management Vision, which was released in March 2018, the Chubu Electric Power Group laid out its firm intention to carry out further innovative changes and their direction, in order meet the trust and high expectations of our customers and society and to continue to be chosen by them into the future.

With the aim of achieving the future vision expressed in the Management Vision, we compiled specific initiatives that can be taken immediately as “Initiatives to Address Management Challenges.”

The environment surrounding the energy business is changing greatly, including intensifying competition stemming from the full liberalization of the electricity and gas retailing markets, changes in the supply demand structure associated with the introduction and expansion of renewable energy, and the growing importance of ESG* management. *ESG: environmental, social, governance

Even in the midst of such changes, we will continue to fulfil our mission of delivering a stable supply of energy safely at an affordable price, and we will contribute to the development of society, including the Chubu region, by creating innovative services and achieving dramatic improvements in efficiency utilizing technologies such as IoT and AI, and by providing services that have value for customers.

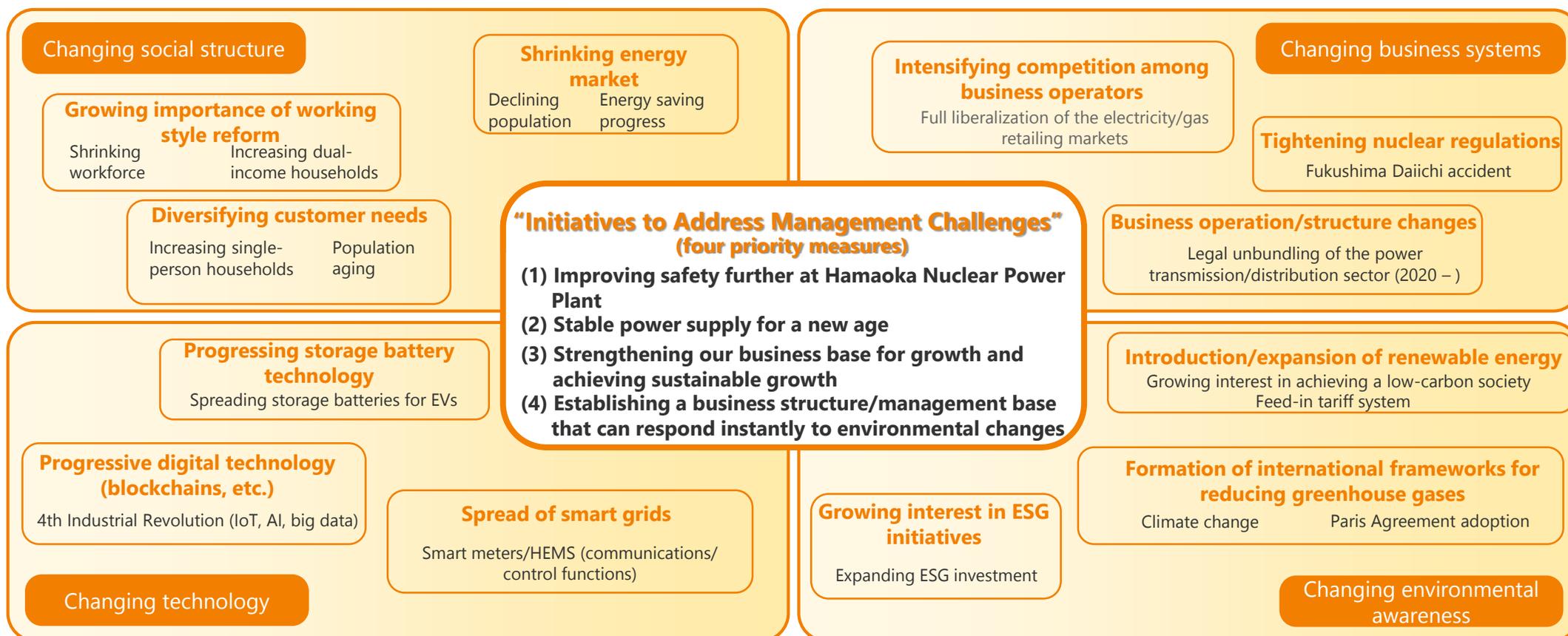
We will strive to fulfil our unwavering mission. At the same time, we will move forward steadily toward becoming a total energy service corporate group that is one step ahead and that provides services that exceed the expectations of customers ahead of our competitors by continuously taking on the challenge of creating new value in view of the changes of the times.

President & Director
Chubu Electric Power Co., Inc.

勝野 哲



- The business environment surrounding the Chubu Electric Power Group is changing increasingly sharply, including shrinking of the energy market and intensifying competition among business operators.
- On the other hand, the diversification of customer needs and technological innovations such as IoT and AI are unprecedented chances to provide diverse services.
- In order to fulfil the Group’s mission of providing a stable supply of energy and to contribute to the development of society by providing new value in the midst of such change, we will carry out the four priority measures shown below.



1 Improving safety further at Hamaoka Nuclear Power Plant

We will carry out safety improvement measures—both in hardware and software—at Hamaoka Nuclear Power Plant and, with top management taking responsibility for improving nuclear power safety, we will continue making efforts to strengthen governance, risk management, and risk communication.

- ✓ Safety improvement measures (prevent accidents and prepare for their occurrence)
- ✓ Aiming for a safer, more reliable power plant

2 Stable power supply for a new age

As the supply demand structure changes greatly, including the introduction and expansion of renewable energy, we will carry out initiatives aimed at stable power supply for a new age, including upgrading output prediction/control utilizing new technology and increasing the available capacity of transmission lines.

- ✓ Upgrade electrical power network
- ✓ Connect & manage network
- ✓ Reuse storage batteries for EVs

3 Strengthening our business base for growth and achieving sustainable growth

[Strengthen business base for growth]

We will work at strengthening our business base for growth by working at further improving management efficiency and by opening up and commercializing new fields in addition to expanding business and providing services through collaboration with other business operators.

- ✓ Improve management efficiency to strengthen business base
- ✓ Integrate existing thermal power generation business with JERA
- ✓ Provide energy services that continue to be chosen by customers

[Achieve sustainable growth]

We will achieve sustainable growth as the Chubu Electric Power Group, including JERA, by developing new growth fields into primary sources of revenue.

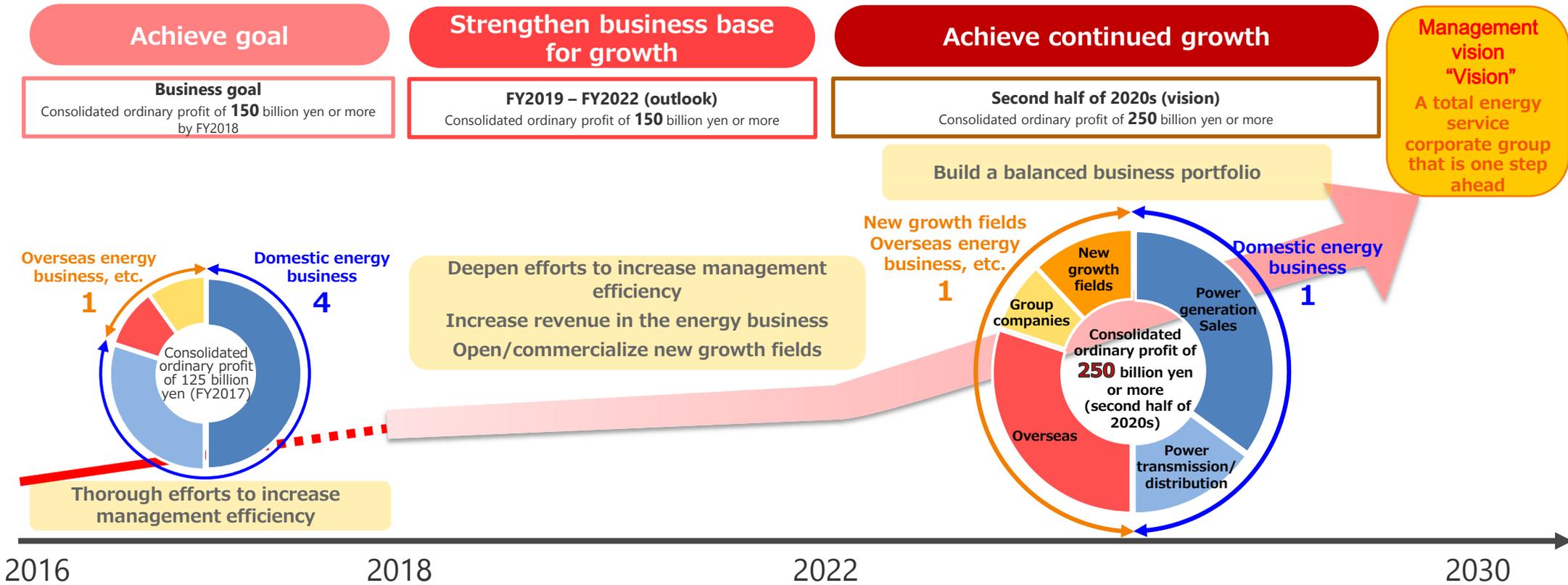
- ✓ Accelerate growth after completion of value chain in JERA
- ✓ Establish new growth fields (provide new forms of community)

4 Establishing a business structure/management base that can respond instantly to environmental changes

We will actively utilize external resources toward sustainable growth. We will work at ESG management, including carrying out environmental management and further enhancing communication with local communities as well as corporate governance. Regarding business continuity initiatives (large-scale earthquake measures), we plan to complete principal equipment measures by the end of fiscal 2020.

- ✓ Strengthen business base and establish structure to create new businesses/services
- ✓ Carry out ESG management
- ✓ Business continuity initiatives (large-scale earthquake measures)

- The Chubu Electric Power Group is carrying out initiatives to increase operational efficiency with the aim of achieving our current business goal.
- Even in a severe operating climate, we will make efforts to strengthen our business base for growth, including deepening efforts to improve efficiency, as well as opening up and commercializing new fields that hold the promise of future growth.
- We will also achieve continued growth for the Chubu Electric Power Group by developing new businesses into primary sources of revenue.





I

Four Priority Measures

1. Improving safety further at Hamaoka Nuclear Power Plant
2. Stable power supply for a new age
3. Strengthening our business base for growth and achieving sustainable growth
4. Establishing a business structure/management base that can respond instantly to environmental changes

I-1 Improving Safety Further at Hamaoka Nuclear Power Plant

Safety improvement measures for Hamaoka Nuclear Power Plant (prevent accidents and prepare for their occurrence)



- Under a strong determination to “not allow another accident like that at the Fukushima Daiichi Nuclear Power Plant,” the Hamaoka Nuclear Power Plant has strengthened its equipment measures to improve safety and is going through an inspection of conformity with new regulatory standards by the Nuclear Regulation Authority.
- Furthermore, we have strengthened our ability to respond on-site to ensure equipment functions effectively in an emergency and our coordination with national and local governments, etc., in case of an accident or problem.
- We will strive to improve safety further and provide careful explanations, aiming to be a power plant that earns more trust from the public.



Main inspection items and progress of application for approval of nuclear reactor establishment/change

Application progress: Earthquake/tsunami-related inspection → Plant-related inspection

Earthquake/ tsunami related	Geology	Site vicinity	On the site	
	Earthquake	Underground structures	Oceanic intraplate earthquake	
		Interplate earthquake	Inland crustal earthquake	
Tsunami, etc.	Tsunami	Volcanic event/ground		
Plant related	Design standards	Aseismic/anti-tsunami design policy	Tornado	Volcano
		External fire	Other natural phenomenon	
		Internal fire	Internal inundation	
	Serious accident countermeasures	Effectiveness assessment	Equipment/technical capabilities	

Legend: Mostly complete Under deliberation To be deliberation complete

As of Mar. 2018

Strengthen ability to respond on-site in an emergency

Education/training of personnel involved in activities to control an accident

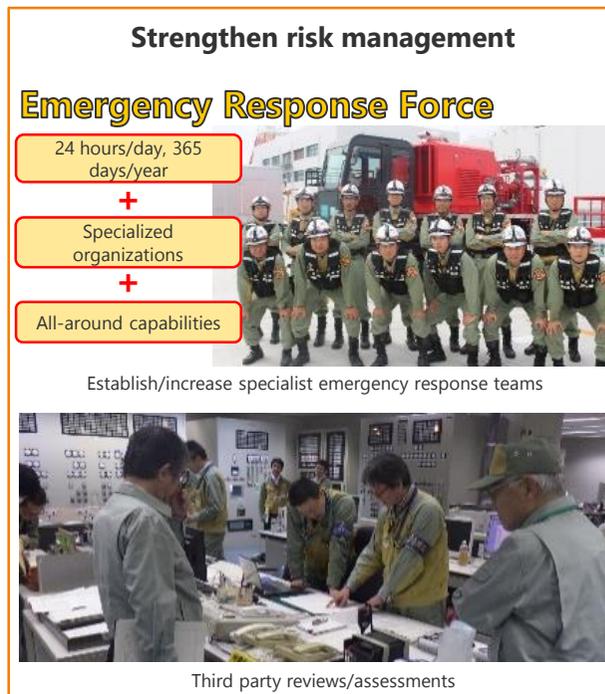
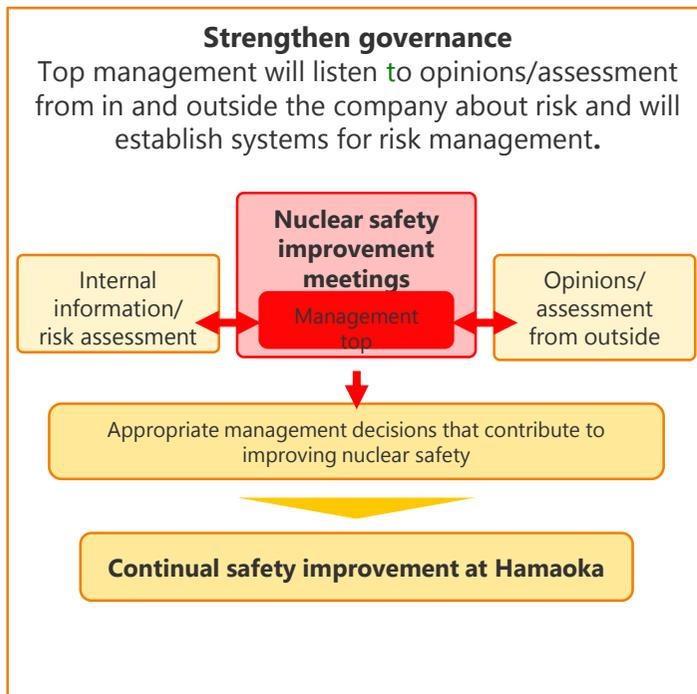
Strengthen coordination with nation/local governments, etc.

Participation in nuclear emergency response drills organized by Shizuoka Prefecture

Implementation of combined exercises with the Omazeki Coast Guard Station

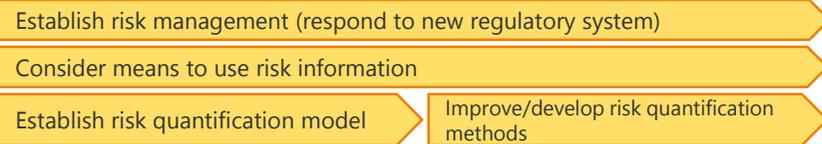
Aiming for a power plant that is safer and more trusted

- In order for the business operator itself to squarely reconsider the safety of nuclear power and make efforts to continuously improve safety in the wake of the Fukushima Daiichi accident, the top management at Chubu Electric Power are taking responsibility for improving nuclear power safety and strengthening governance, risk management, and risk communication.
- We will push ahead with responses to the new inspection system that stresses independent safety using risk information, which will be introduced in fiscal 2020.



2014 2015 2016 2017 2018 2019 2020 2021 – (FY)

Roadmap to strengthen risk management (new regulatory system compliance)

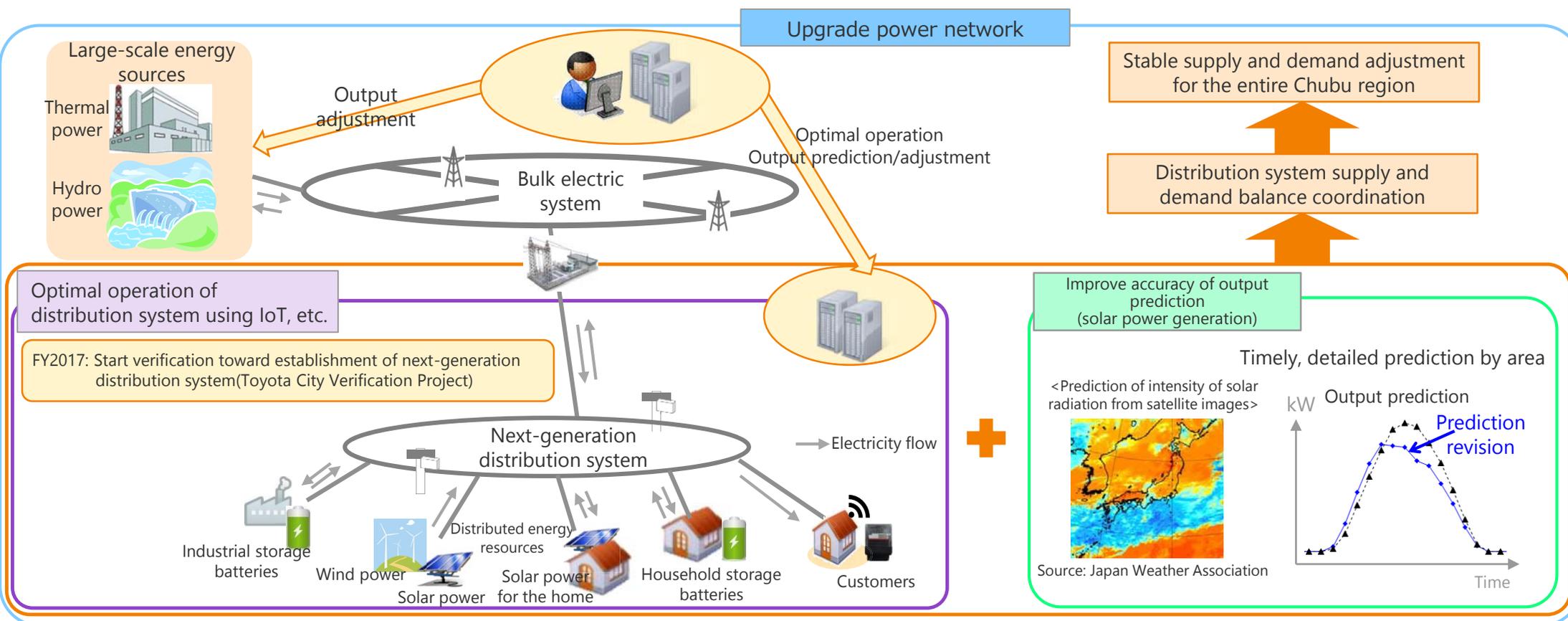


▼ Introduction of new regulatory system

Operate new risk management system; verify and improve it continually

See "The Hamaoka Nuclear Power Station, today and tomorrow" (<http://hamaoka.chuden.jp/english/>) for details.

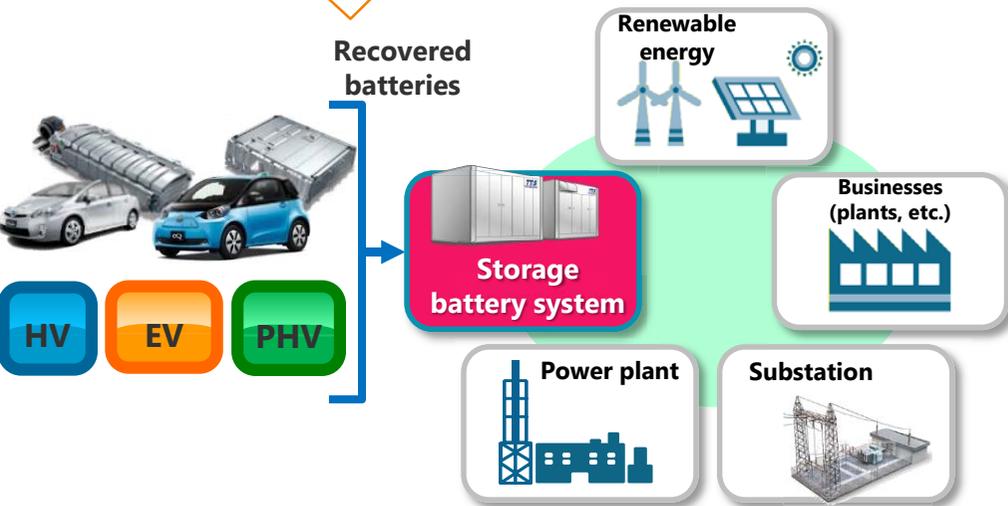
- In response to output fluctuations in renewable energy (distributed energy resources), we will improve the accuracy of output prediction and conduct optimal operation of distribution system using IoT, etc.
- On top of that, we will combine large-scale energy sources from the bulk electric system in an effort to provide a stable supply of power to the entire Chubu region.



- In cooperation with Toyota Motor Corporation, we will start new verification aimed at establishing a high-capacity storage battery system that reuses storage batteries for EVs, in order to use it in various distribution system issues caused by the introduction/expansion of renewable energy.

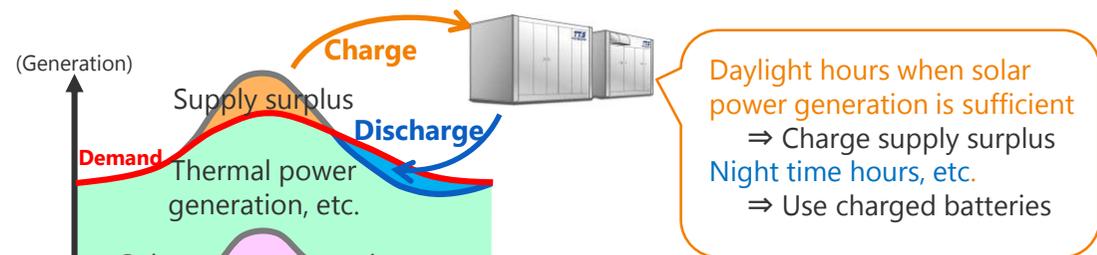
FY2018: Start verification of storage battery system
 FY2020: Plan to introduce approx. 10,000 kW generation output / equivalent to 10,000 batteries

Even batteries whose performance has dropped on an individual basis can be reused in combination.



Example use of storage battery system

[1: Use for supply and demand adjustment]



[2: Use for responding to frequency fluctuations]

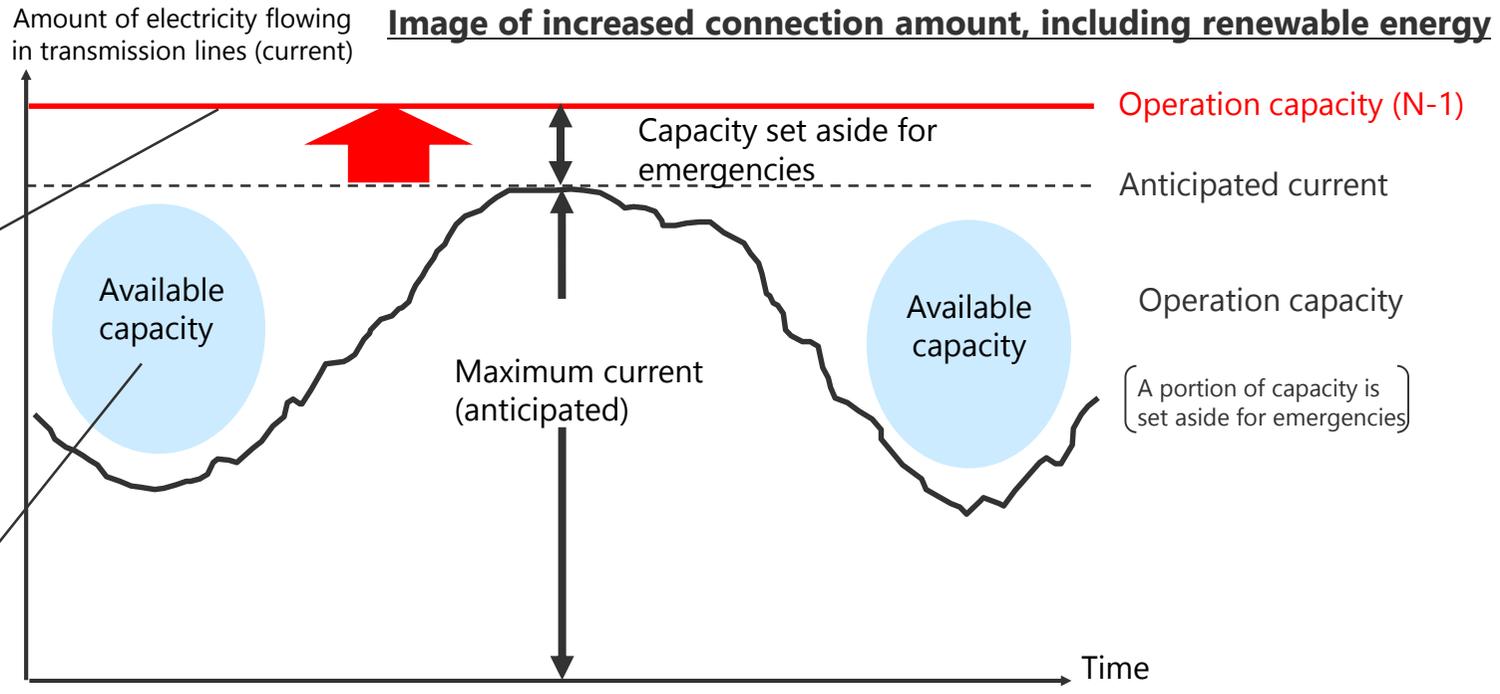


- Chubu Electric Power has begun an initiative (N-1 power control) to use capacity that is set aside for an emergency in case of failure, based on the anticipated flow of electricity in check with power generator operation (anticipated current), so that more sources of power, including renewable energy, can be connected to transmission lines.
- In the future, we will look at an initiative (non-firm connection) to use transmission lines when there is available capacity, as even more effective utilization.

What is connect & manage?
 A system that makes maximal use of existing transmission lines and allows the connection of renewable energy, etc., with certain conditions, enabling the connection of lots of power sources while attempting to reduce the costs of connection

N-1 power control
 Increase the amount of electricity that can flow through transmission lines (operation capacity), on the premise that generator output will be limited instantly during a failure, such as on a transmission line

Non-firm connection
 Allow use of transmission lines when there is available capacity, on the premise that generator output will be limited when operation capacity is exceeded



Improve management efficiency to strengthen business base

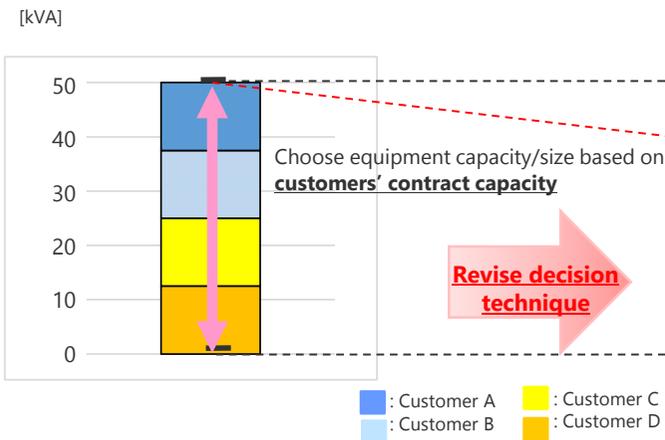
- Aiming to strengthen our business base through improved management efficiency, we will continually work at reducing repair costs and will streamline equipment in light of changes in the supply-demand structure caused by the introduction/expansion of renewable energy.

[Specific initiative example: equipment rationalization using smart meters]

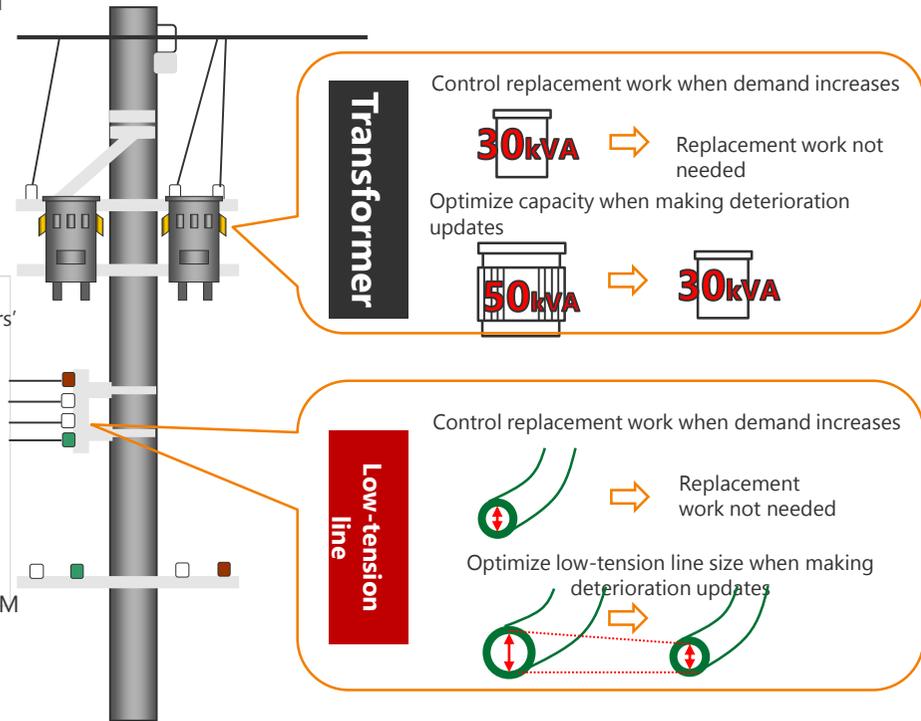
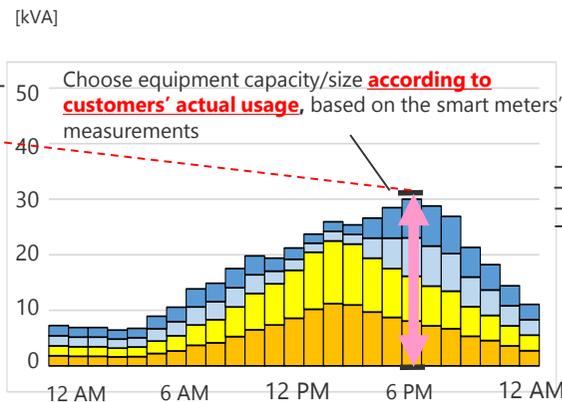
We will increase the capacity factor and reduce device costs by installing equipment according to customers' actual power usage, based on the use of measurements from smart meters introduced.

<Decision method for equipment capacity/size>

Before smart meter introduction



After smart meter introduction

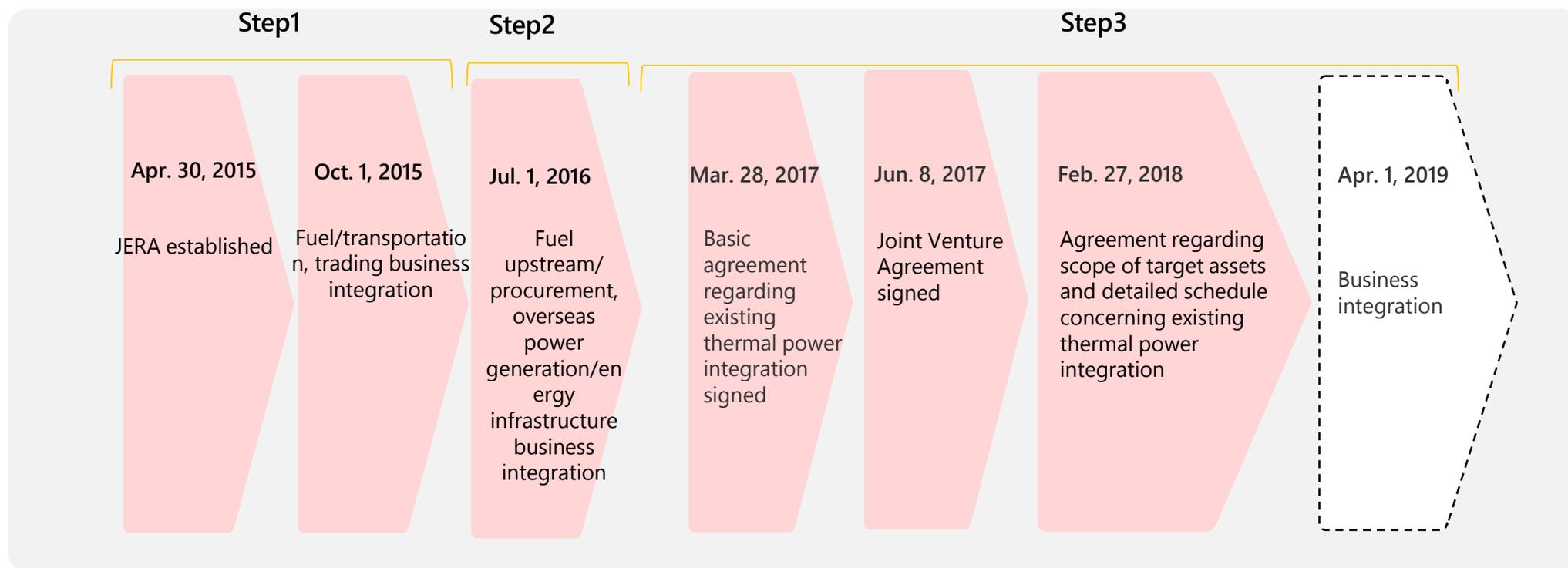


For detailed information on our plan for improving efficiency and our results in fiscal 2017, see **“Initiatives to Improve Management Efficiency and Management Review”** (http://www.chuden.co.jp/corporate/company/bus_plan/gaikyo/) to be released in April 2018.

Integrate existing thermal power generation business with JERA

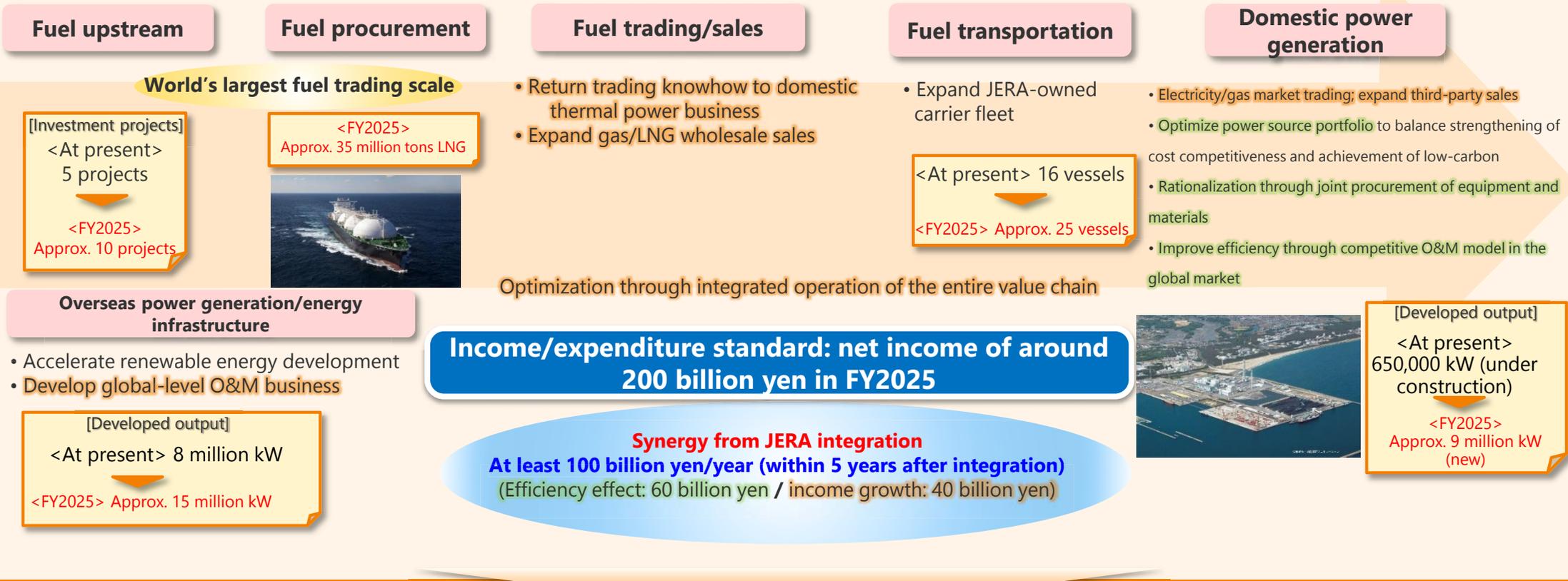
- We will complete a whole value chain from upstream investments and fuel procurement through power generation to power and gas wholesale sales by integrating our existing thermal power generation business, etc., with JERA in April 2019.
- We will aim to become a global energy corporate group by producing synergistic effects with the already integrated fuel/overseas power generation business and energy infrastructure business and by accelerating growth in each business field.

[Integration schedule]



Accelerate growth after completion of value chain in JERA

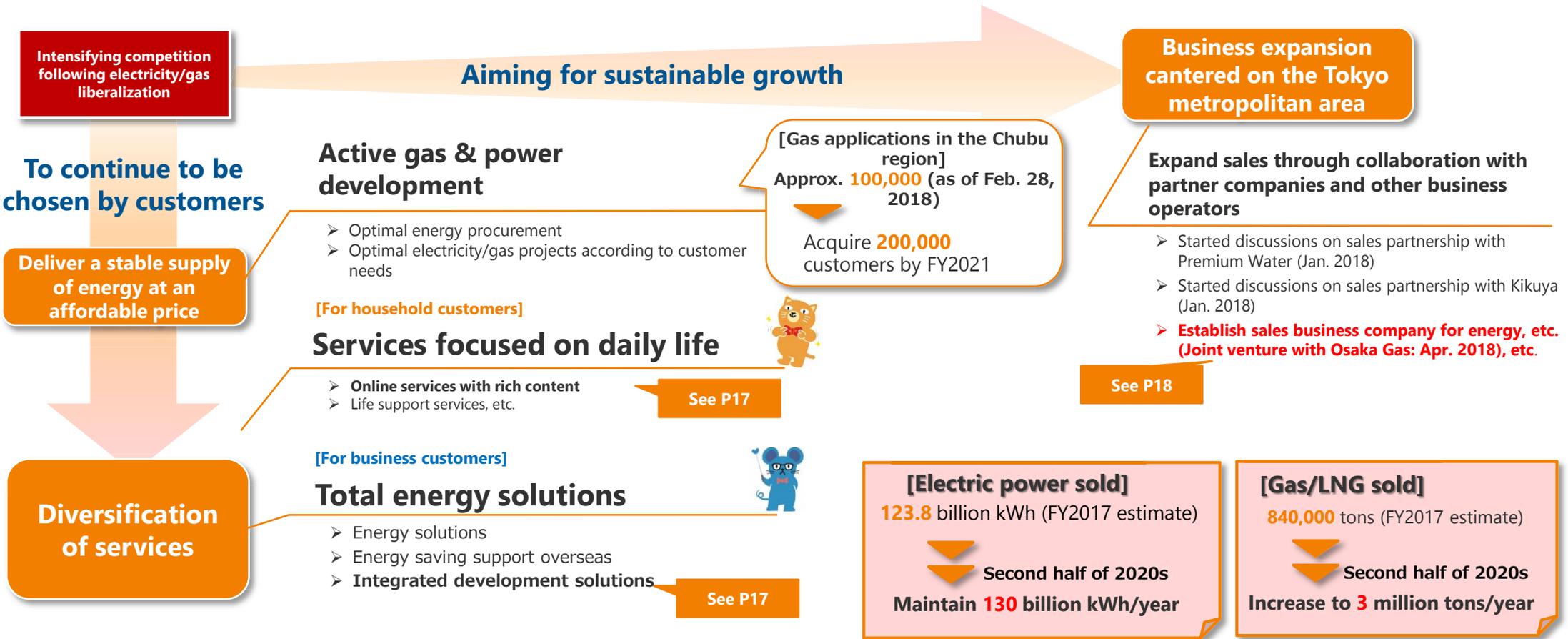
[Initiatives after value chain completion]



Stably deliver energy that is internationally competitive / Increase the corporate value of the Chubu Electric Power Group

Provide energy services that continue to be chosen by customers

- In order to continue to be chosen by customers in a liberalized retailing market, we will deliver new services that meet customers needs using IoT, etc., not just stable, affordable energy.
- Also, aiming for sustainable growth, we will work at business expansion centered on the Tokyo metropolitan area.



Provide energy services that continue to be chosen by customers (service diversification)

Online services with rich content



カテエネ

Approx. 1.9 million members (as of Feb. 28, 2018)

- ◆ We are enhancing content that is useful in the lives of our customers, including visualization of electricity and gas usage and articles related to energy saving and lifestyle.
- ◆ Customers can earn "KatEne Points" by reading online content. Also, we have started new "Family Points Discount" and "Fee Linking Points" services, making it easier to earn points.

Ways to earn points	Points earned
Enrollment points Presented for new member registration	100P (on enrolment)
Switching to online meter reading slip Presented for switching from paper meter reading slip	200P (on switch)
Checking an article Presented for checking articles updated monthly	Up to 20P/month (5P × 4 articles)
Checking energy saving reports Presented for checking electricity/gas usage	10 – 50P/month * Double for electricity/gas set
Family Points Discount (from Dec. 2017) Presented monthly when family members within two degrees of kinship join together	100P/month
Fee Linking Points (from Mar. 2018) Presented according to amount of electricity/gas fees paid	1P/200 yen (incl. tax)

Integrated solutions*1

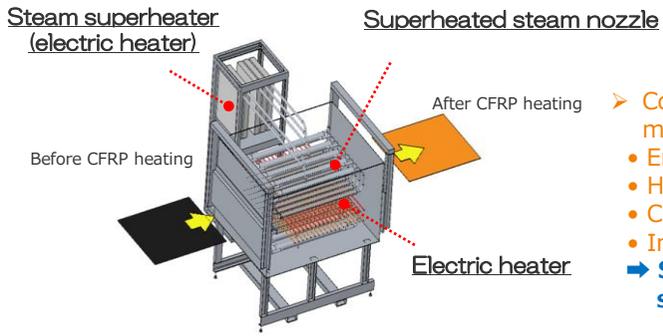


*1 An activity in which we make proposals, from the stage of building a customer's production line, regarding customers' challenges that cannot be solved with existing technology

(Specific example) "Thermoplastic CFRP*2 Rapid Heater"

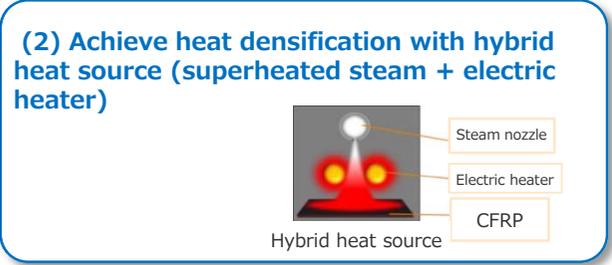
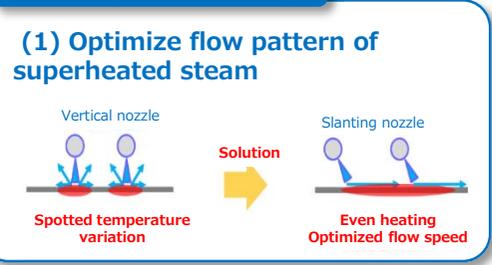
*2 CFRP: Carbon Fiber Reinforced Plastic

Chubu Electric Power and Yutaka Electronics jointly won the **Technology Development Award** from Toyota Motor Corporation at the Toyota Global Supplier Convention held on Feb. 23, 2018.
(First time an electric power company has won the award)



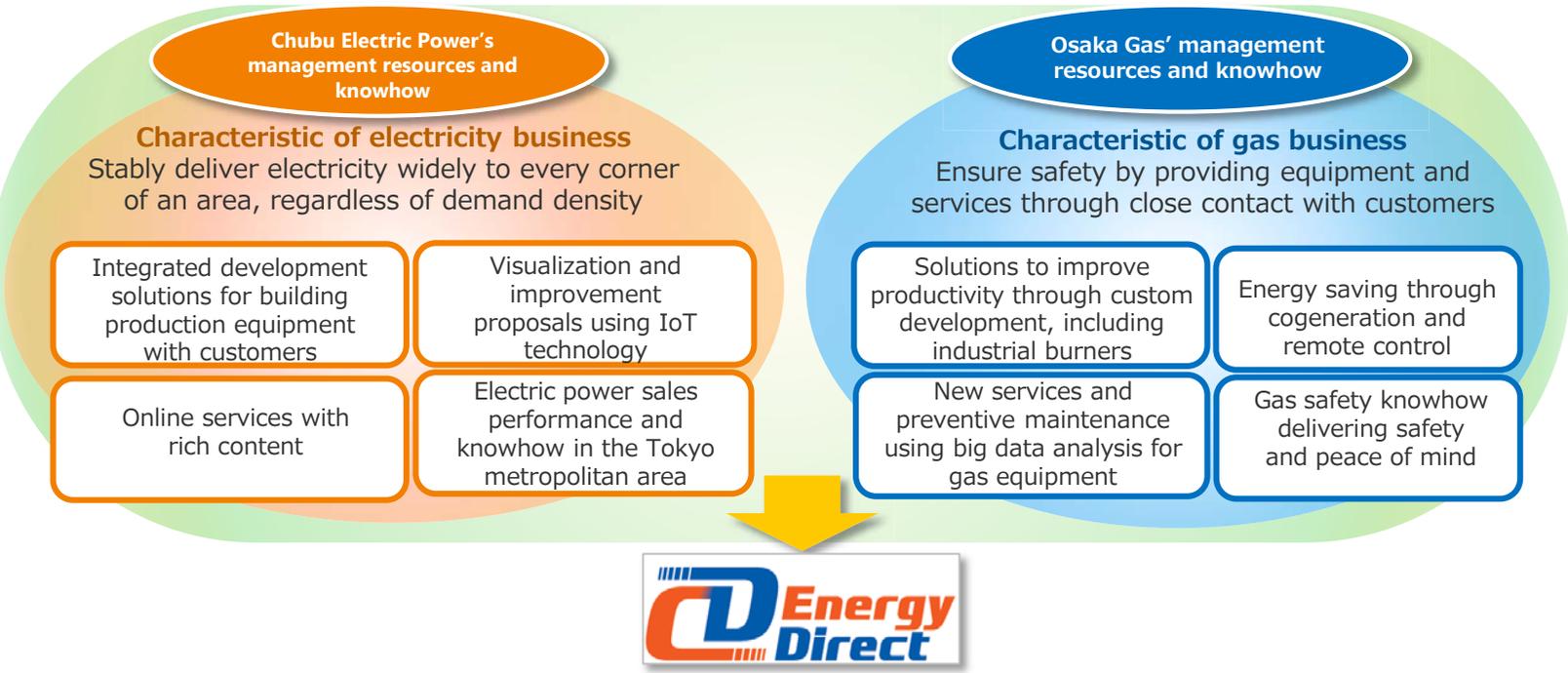
- Compared to conventional air heating method
 - Energy usage: down approx. 80%
 - Heating time: down approx. 70%
 - CO2 emissions: down approx. 70%
 - Installation space: down approx. 40%
- ➔ Significant increase in energy savings and productivity

Developed technology



Provide energy services that continue to be chosen by customers (expand business in the Tokyo metropolitan area)

- We will jointly establish a new company with Osaka Gas to conduct sales of services related to electric power/gas, lifestyle, and business.
- By combining management resources and business knowhow cultivated by both companies in the electricity and gas businesses and making the most of them in the Tokyo metropolitan area, we will contribute to society by maximizing the value provided to household and corporate customers.



Company name	CD Energy Direct Co., Ltd.
Planned date of establishment	Apr. 2, 2018
Capital	1.75 billion yen (Chubu Electric Power: 50% Osaka Gas: 50%)
Business	Business selling services related to electricity and gas as well as lifestyle and business in the Tokyo metropolitan area



< Establishment press conference >

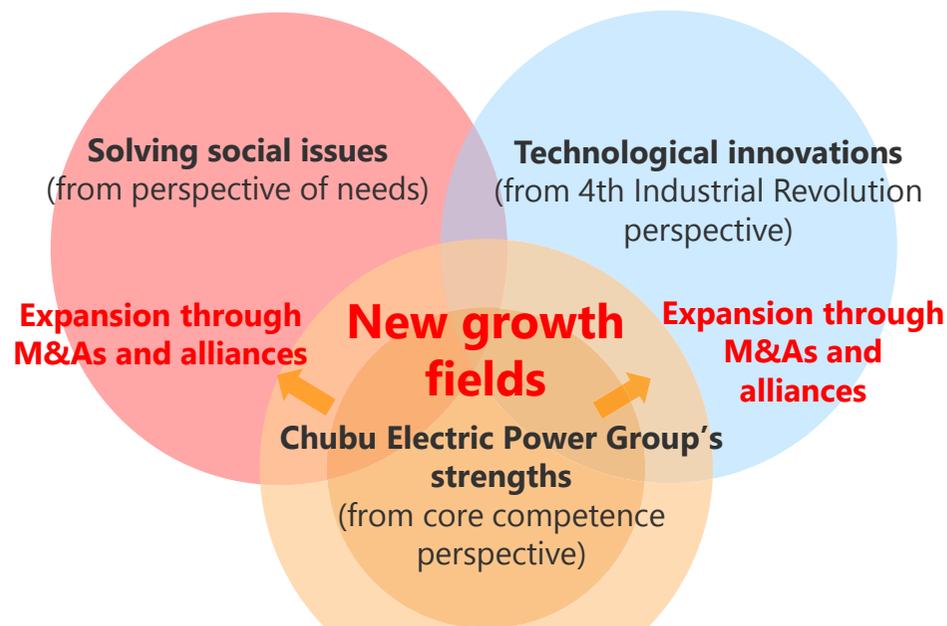
[Household customers] Provide comfortable and convenient living through optimal use of electricity and gas

[Corporate customers] Provide business solutions with excellent economic and environmental performance by leveraging electrification technology and combustion technology

Furthermore, we will create "new value" useful in living and business through services using IoT technology with the aim of establishing a new business model and providing services that go beyond the framework of the energy business operator.

Establish new growth fields (provide new forms of community)

- The Chubu Electric Power Group has contributed to regional development through the energy business. In order to help resolve social issues faced by communities, we will establish growth fields by working at providing “new forms of community.”



We have cultivated in the energy business

- connections and relationships of trust with customers in the community,
- knowledge of building and operating electricity infrastructure
- energy saving and CO2 reduction proposals based on optimal use of energy that leverage our technical capabilities, proposal capabilities, and relationships of trust with customers

Services to raise the quality of life of individuals by using various data

- Approach of attempting to maintain and raise quality of life by making use of our customer base and various data, focusing on the inconveniences of each customer's life



Combine two approaches in various ways
Establish new growth fields = Provide new forms of community

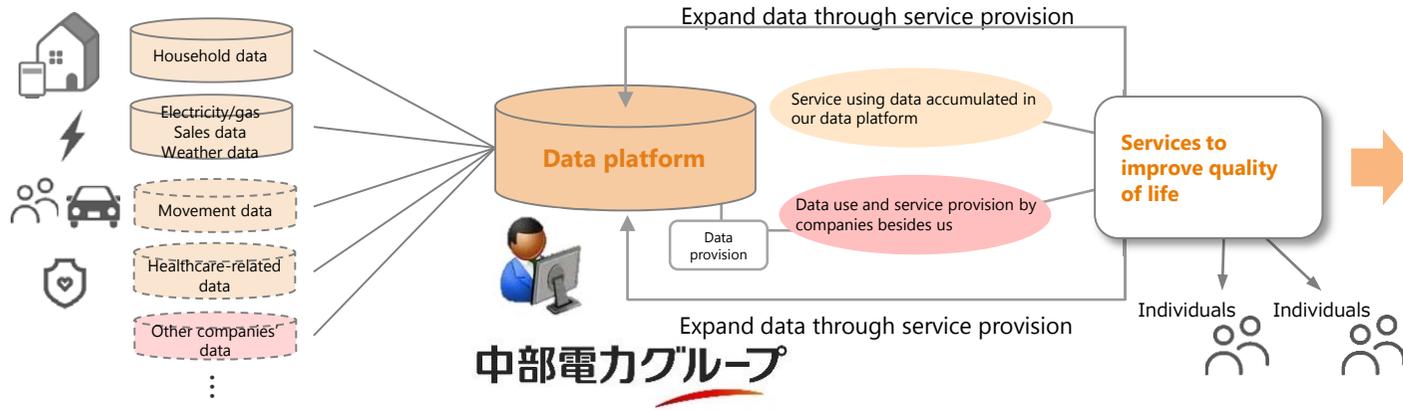


Community services based on connecting and evolving several kinds of social infrastructure

- Approach of making customers' lives convenient and comfortable by evolving energy infrastructure into community support infrastructure that can meet social issues, working on community units of a certain scope

Establish new growth fields (provide new forms of community)

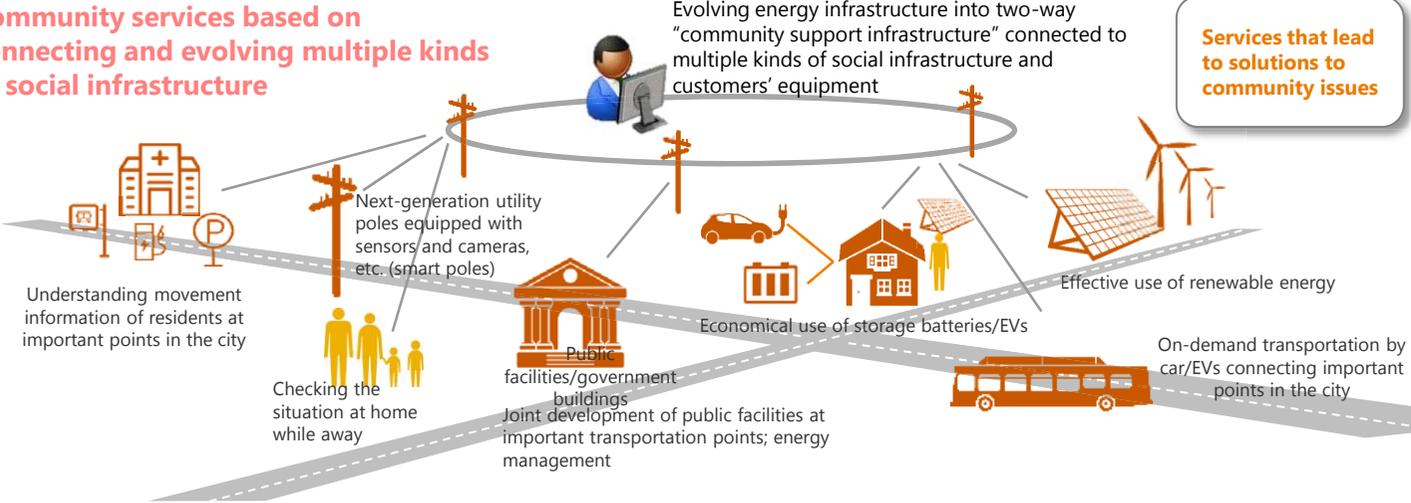
Services to improve the quality of life of individuals by utilizing various data



Provide various "new forms of community"

- **For new community development in urban areas:** Development of safe communities where children and senior citizens can live with a sense of security
- **For provincial cities with declining populations:** Revitalization of the local economy through local production for local consumption of renewable energy
Economical and low-carbon local transportation using movement data and renewable energy
Development of attractive communities through establishment of community support infrastructure
- **For local communities such as schools:** Watching over children as they go to and from school through coordination of movement data
Broadcasting of safe transit routes in real time and guiding of children
- **For households attempting to balance work and parenting:** Care of and watching over children through utilization of household data and remote control of household devices
- **For families living far away** Sharing of electricity between families living far away
Watching over the health of parents living in far removed communities by coordinating household data and medical data
- **For far removed individuals** Easy trading of surplus solar power-generated electricity between individuals by matching the needs of far removed individuals

Community services based on connecting and evolving multiple kinds of social infrastructure



For detailed information, see the "Chubu Electric Power Group Management Vision" (link) released in March 2018.

Establish new growth fields (specific initiatives to provide new forms of community)



- Aiming to provide “new forms of community,” we are developing services that use cutting edge technology such as AI and IoT, including IoT services for the home and energy management services, and strengthening our relationships with local governments.

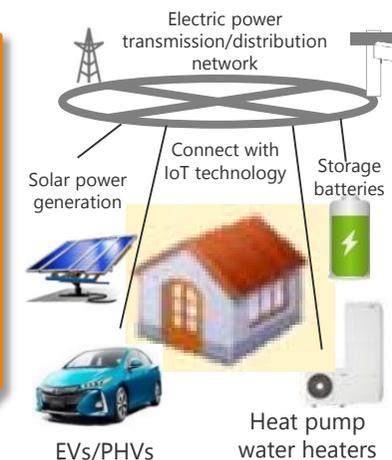
IoT services for the home

- ✓ We will provide **services that make life rich and comfortable** by using IoT devices to gather and make use of household data.

See P22

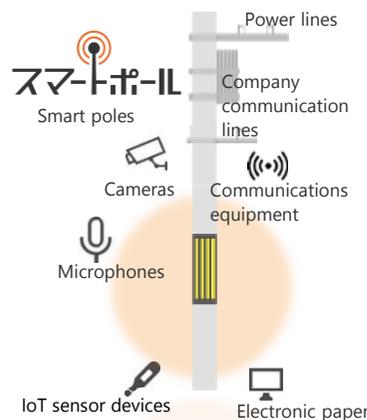
Energy management service

- ✓ We will **enable efficient use of energy by using IoT technology to connect** the energy resources of multiple customers.



Smart poles

- ✓ We will **provide new community services by installing ICT devices** such as sensors and communications equipment **on utility poles** and using the data obtained.



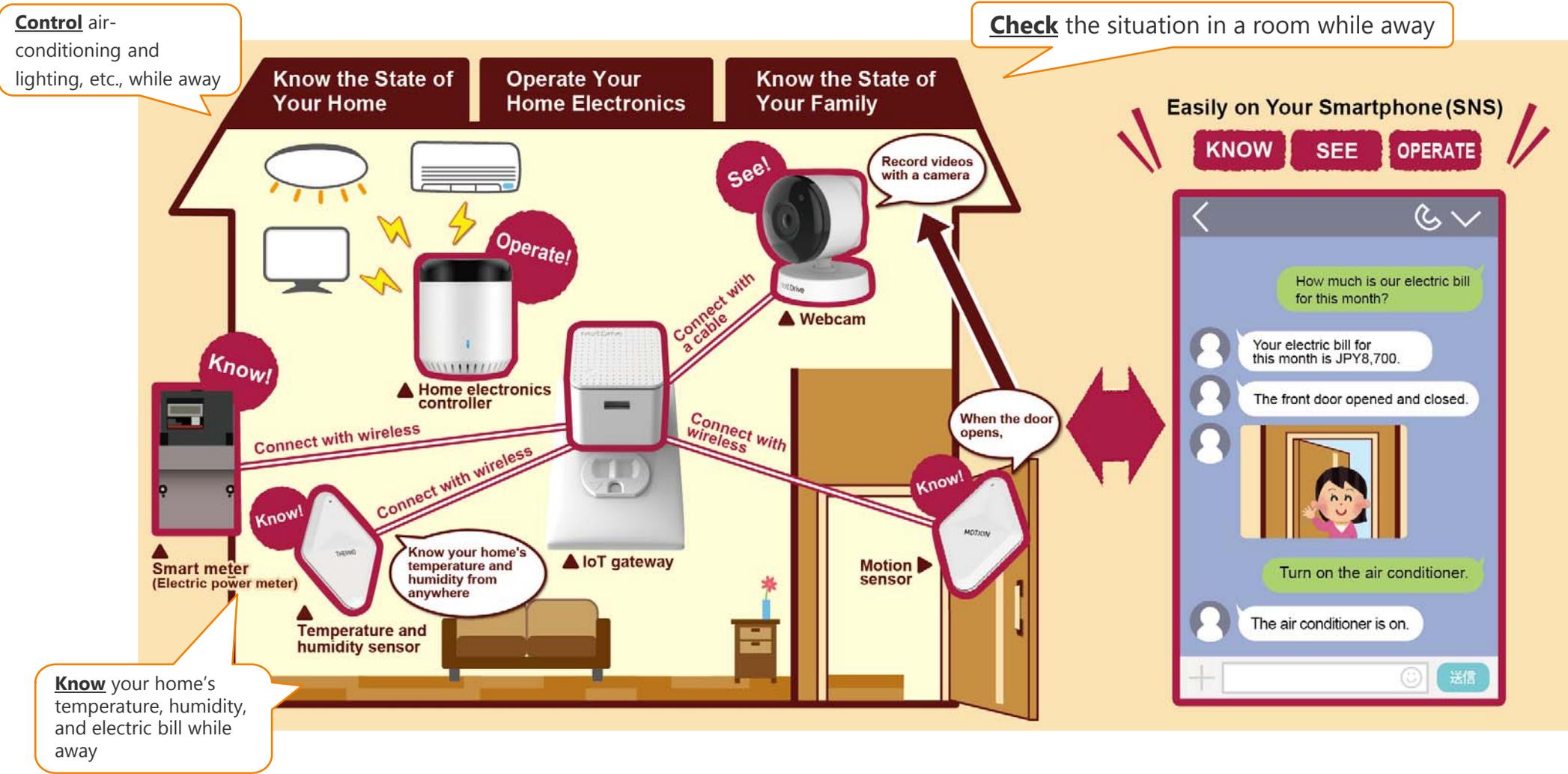
Strengthening relationships with local governments

- ✓ Working with local governments such as Toyota City in Aichi Prefecture and Iida City in Nagano Prefecture, we will work at creating community services that lead to higher quality of life for various communities and residents.

Establish new growth fields (IoT services for the home)



- In April 2018, we will establish a new company with Internet Initiative Japan and begin, in September 2018, to provide services that use IoT devices and smartphones to allow customers to check on their families and homes and to control home electronics while away.



- We will establish a structure that promotes open innovation and will strengthen our business base and achieve new business/service creation by making active use of outside talent.

Strengthen our unique external points of contact

- COLab (verification/development lab)



Verification of the latest ICT and open source software



- COE (website)
URL: <http://coe.chuden.jp>



[Business Factory 2017]

Soliciting new business ideas and business plans using resources and knowhow such as equipment and information held by the power transmission/distribution sector



Use of external talent



Utilize/strengthen external systems, etc.

- Participate in Innovation Leaders Summit
Participate in a business tie-up matching program with about 500 next-generation venture companies about 100 major companies
- Participate in Mirai Creation Fund
Through the Mirai Creation Fund (a venture investment fund that invests in companies and projects at in and outside Japan that have innovative technology such as AI), explore the possibility of cooperation with venture companies that have promising technology

(Idea currently being investigated)

Movement management, search, and discovery service for people and things using San-Flower

The San-Flower System* is a ground-breaking and innovative system that enables search and discovery using proprietary IoT technology that can lead searchers to within about 50 cm of a target by dynamically managing the location of a person or thing.

Using this system, we hope to contribute to the safety and security of the Chubu region, including watching over children and searching for people with dementia who have gone missing by wandering about, which is becoming a societal problem.

* Provided by Kato-Denki (Handa City, Aichi)

Carrying out ESG management



- We carry out business activities with awareness of ESG (environment, society, and governance), in order to fulfil our corporate social responsibility (CSR), increase our medium- to long-term corporate value, and contribute to the sustainable development of society.

E (Environment)
 In line with the Chubu Electric Power Group Basic Environmental Policy, we establish action plans as specific goals and practice environmental management.

Reduce CO2 emissions

- **Develop, introduce, and expand renewable energy**
 - Actively develop power sources
 - Increase connection volume to transmission lines
- **Increase thermal efficiency of thermal power generation**
 - World-class high efficiency power generators
 - Optimize power plant operation using IoT
- **Use nuclear power generation**

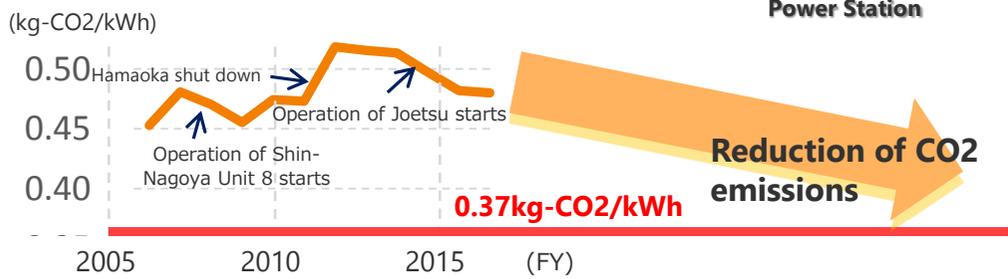


Mega Solar Shimizu



Nishi-Nagoya Thermal Power Station

[Image of our reduction of CO2 emission intensity]



Help customers/communities reduce CO2

- **Energy solutions & energy saving support**
 - (1) Current situation survey
 - (2) Analysis/assessment
 - (3) Planning/proposal
 - (4) Cooperation (implementation)
- **Energy management**
 - HEMS
 - Storage batteries
 - Solar power generation
 - EcoCute
 - EV

Practice environmental management

- **Harmony with nature**
- **Achieve recycling society**
- **Local and global cooperation**



Training Chuden Foresters



Carrying out ESG management



S (Social)
 So that employees will work with vitality, we will promote work-life balance, based on the idea that life (physical and mental health and a fulfilling life) is the foundation. Also, we will contribute to sustainable development of communities by valuing communication with members of the community.

G (Governance)
 Aiming for sustainable growth, we will strive to further enhance our corporate governance, taking fairness and transparency as the core of management. In April 2018, we will establish a Risk Management Meeting and make a structure for integrated management of risks that would have a material effect on the company's management.

For employees

Work style reform (increase productivity)

- Expand flextime system company-wide (from April 2018)
- Introduce telework (from April 2018)

Promote diversity

- Provide continual training to double, at least, the number of women in managerial positions compared to FY2014 (FY2020)

Health management

- Complete medical check-ups for all employees (from April 2019)



Certified as an "Outstanding Health Management Corporation 2018 (White 500)" by the Ministry of Economy, Trade and Industry and the Nippon Kenko Kaigi.

For the community

Communication with community members

- Cooperation with universities (Mie University, etc.)
- Women monitors (tours of energy facilities, etc.)

Social contribution activities

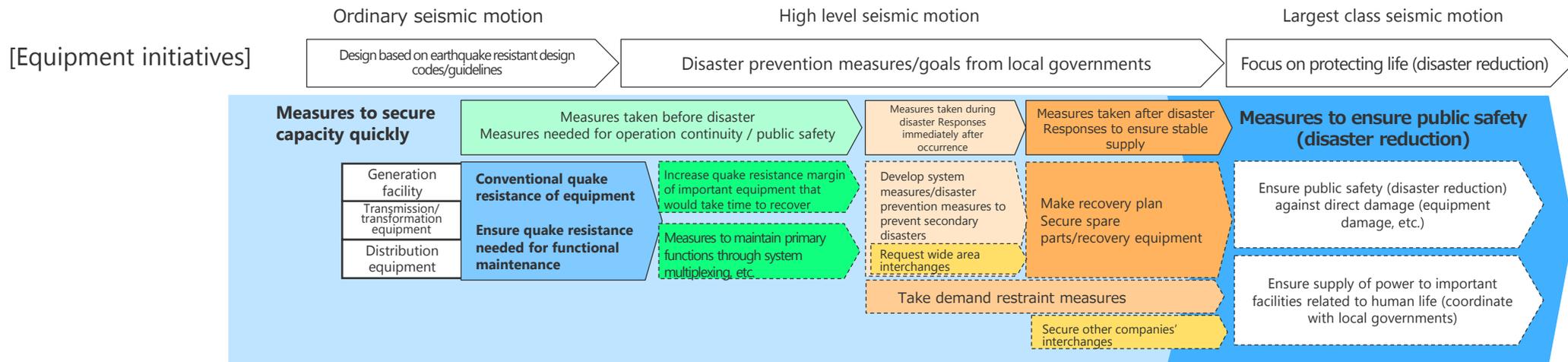
- PR for safe electricity use
- Guest classes / workplace experience

Risk management system



Business continuity initiatives (large-scale earthquake measures)

- In order to maintain a stable supply even when a large-scale earthquake has struck, in the summer of 2015 we compiled the necessary measures from the perspective of securing capacity quickly and ensuring public safety during high level seismic motion and from the perspective of ensuring public safety against direct damage from the largest class seismic motion (reducing the effects of a natural disaster,) in light of reviews by the national and local governments of a Nankai megathrust earthquake and disaster prevention measures. At present, we are steadily moving ahead with those equipment measures and plan to complete the principal measure by the end of fiscal 2020.
- Additionally, we make agreements and coordinate with outside organizations concerned, continue to exchange information during normal time, and strengthen collaboration through various drills.



[Main partners]

Purpose	Main partners
Support for power recovery	JGSDF, Aichi police, Meitetsu Kanko Bus, TechnoChubu, SNK
Secure power recovery bases	Toyota, Meitetsu
Secure fuel	Teisan Bus, Nagano Petroleum Trade Association
Secure relief supplies	Lawson, Aeon



Air transport drill for large power generation vehicle

[Coordination with location governments]

We strengthen coordination by participating in meetings related to disaster prevention organized by each local government.



Nishimikawa Disaster Prevention & Reduction Coordination Study Group workshop



II

Basic Approach to Investment, etc.

Necessary investment in electric power safety and stable supply

We will quickly and steadily implement measures to further increase safety at our facilities, including the Hamaoka Nuclear Power Plant. We will also keep investing steadily in equipment needed for stable supply while continuing to streamline. When making investments, we will thoroughly ensure efficiency.

Strategic investment for business growth and development

In order to ensure sustainable growth over the long-term, we will steadily make strategic investments for business growth and development after taking appropriate risk management.

Shareholder return

Chubu Electric Power has adhered to the following Policy on Shareholder Return since July 30, 2012.

The company will work to maintain stable dividends after taking account of financial condition and other factors, while continuously investing in building and operating facilities that are essential for a safe and stable supply of electricity.

We issued an interim dividend of 15 yen per share in fiscal 2017. Based on our commitment to keep improving management efficiency as much as possible in the future, we plan to issue a year-end dividend of 20 yen per share, taking comprehensive account of our medium- to long-term financial condition, management environment and other factors.



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The future plans and forecasts described in this document are based on information the company possesses at the present time and involve potential risks and uncertainty. Therefore, actual performance or business developments in the future may differ from those described. Examples of potential risks or uncertainty include changes in the economic or competitive circumstances affecting a business sector, fluctuations in fuel prices, or modification of laws or regulations.