Domestic Electricity Business

Business Outline

The domestic electricity business is the core business of the Kyuden Group, and we will continue to fulfill our responsibility to provide a stable supply of electricity based on our unchanging mission of "delivering a stable supply of low-priced, high-quality energy."

Power generation

Based on our preferred perspective of S+3E, we are generating power from a well-balanced combination of various power sources, including renewable energy sources that are expected to become the main power sources, nuclear power sources that do not emit CO_2 during power generation and are not affected by weather and climate, and thermal power sources providing excellent adjustment capabilities to make possible the further introduction of renewable energy sources. We are also strengthening our fuel procurement capabilities through active involvement in the fuel value chain to reduce fuel prices and improve flexibility in fuel procurement.

Power transmission and distribution (conducted by Kyushu Transmission and Distribution)

In the Kyushu area, electricity generated at power plants is delivered to factories, offices, and households via power transmission and distribution facilities. Through efficient facility formation and proper inspection and repair work, we are working to reduce power outage incidents and improve the quality of our electricity, as well as to expand the further introduction of renewable energy.

● Breakdown of total Group electricity sales volume in Japan (billions of kWh)

	FY2020	Ratio to the previous year
Retail*	75.2	+2.7%
Wholesale	10.7	+41.9%
Total	85.8	+6.3%
*Kyuden Mirai Energy	5.8	+106.0%

Note: Kyuden Mirai Energy Co., Inc. is mainly engaged in retail sales outside the Kyushu region.

Sales

Since the full deregulation of electricity retailing, we have been stepping up our sales activities to increase the amount of electricity sold both in and outside of the Kyushu area. Of particular note is our expansion in sales volume in recent years in the areas of retail sales principally in Kanto and other regions outside the Kyushu region, as well as wholesale sales both in and outside of the Kyushu area.

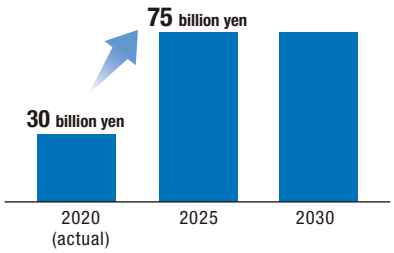
How We See the Business Environment

- Intensifying competition and expansion of sales opportunities outside Kyushu due to full deregulation of electricity retailing
- Heightened interest in climate change and carbon neutrality in Japan and abroad
- A move toward electrification to achieve carbon neutrality; growing calls to make renewable energy the main power source and to fade out inefficient coal-fired power generation
- Expansion of the introduction of distributed power sources such as renewable energy
- Creation of new trading markets such as the capacity market, the non-fossil value trading market, and the supply-demand adjustment market

Vision for the Future

Through the stable supply of environmentally-friendly energy and offering of energy services that meet the needs of our customers, we aim to realize our management vision of "providing more prosperous, comfortable living to become our customers' No. 1 choice" and to work toward achieving ordinary income of 75 billion yen (i.e., 50% of the 150 billion yen target for consolidated ordinary income).

● Ordinary income snapshot



Management targets for FY2030

- Total electricity sales volume of 120 billion kWh (including overseas) (FY2020 results: approx. 95 billion kWh)
- Contribute to the 70% reduction of CO_2 emissions in Kyushu (target: -26% relative to FY2013)
- Unending pursuit of offering some of the best electricity prices available

Forecast for FY2025

- Total electricity sales volume of 105 billion kWh

Business Strategy

Expansion of total electricity sales

In the process of achieving carbon neutrality, along with promoting electrification in all areas of society, we will take steps such as face-to-face sales which make the most of our direct contact with customers, expanding retail sales by group companies outside the Kyushu area (Kanto area, etc.), and ramping up wholesale sales both in and outside of the Kyushu area through actions such as proactive bilateral transactions that leverage our power supply competitiveness. These are among the ways we will diversify sales channels and expand our total electricity sales volume.

Increase profits by maximizing the use of non-fossil power sources

As a top runner in the field of low-carbon and non-carbon power generation, we will promote the development of renewable energy as a main power source through Group-wide efforts, and continue to make maximum use of nuclear power that places the highest priority on safety and gains the trust of local communities. Through these efforts, we will simultaneously promote the decarbonization of power sources and economic efficiency, and expand profits by trading the non-fossil value generated by non-fossil power sources.

Cost reduction through the further promotion of greater efficiency

We will make possible the further reduction of costs through the continuation and greater integration of cost-reduction initiatives which have been taking hold within the organization in recent years as we have been navigating a demanding business environment. Further cost reductions will also be achieved by expanding competitive ordering, improving the efficiency of materials procurement, and promoting more efficient operations through digital transformation.

Expanding Earnings by Leveraging the Advantage of Possessing One of Japan's Top Percentages of Non-fossil Power Sources

Boasting a high ratio of non-fossil power sources (44% in FY2019)* due to the expanded introduction of renewable energy and the safe and stable operation of nuclear power generation, Kyushu Electric Power (Kyushu EP) is expanding its revenue by selling non-fossil fuel certificates to retail businesses and offering a renewable energy menu to household and business customers.

* Out of the electricity generated by Kyushu EP and electricity procured from other companies (before trading in non-fossil fuel certificates, excluding FIT sources), the percentage of electricity generated and received from nuclear power and renewable energy sources

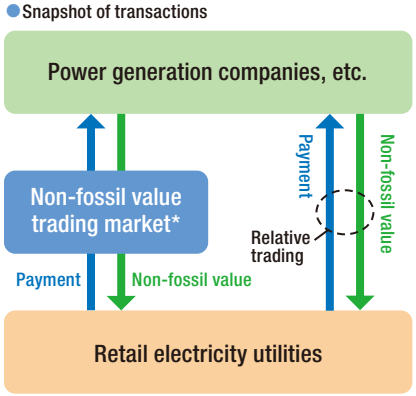
Trading of non-fossil value

The trading of non-fossil fuel certificates derived from nuclear power and non-FIT renewable energy sources began in 2020.

With a high ratio of non-fossil power sources, Kyushu EP has achieved favorable sales performance through market and bilateral transactions, while encouraging other retail power providers to achieve the goals of the Act on Sophisticated Methods of Energy Supply Structures (hereinafter referred to as the "Sophisticated Act").

As the need for non-fossil value is rapidly increasing with the move toward carbon neutrality, we believe that this demand will continue to contribute to increased profits.

Revenue from the sale of non-fossil fuel certificates will be used to pay for the maintenance and expansion of non-fossil power sources, such as the cost of developing and maintaining renewable energy sources (non-FIT power sources) and the cost of safety measures for nuclear power.



*The non-fossil value trading market is to be divided into a market to fulfill the obligations of retail electricity utilities under the Sophisticated Act (the trading of non-FIT certificates that was started in August 2021) and a market for the trading of renewable energy value (the trading of FIT certificates, to be started in November 2021) in which consumers can also participate in market transactions.

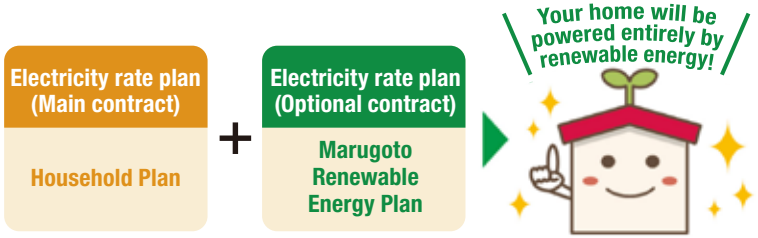
Meeting the obligations of the Sophisticated Act

The Sophisticated Act stipulates that retail power providers are required to increase the percentage of non-fossil power sources procured to be 44% or more by FY2030, with an interim target set for FY2020.

In order to achieve the interim target, retail power providers will be required to purchase non-fossil fuel certificates in the market or through relative transactions.

Provision of a renewable energy rate menu

Kyushu EP offers the Marugoto Renewable Energy Plan for households and the Renewable Energy ECO Plan for corporate customers as energy plans that utilize electricity derived from our renewable energy sources (hydroelectric and geothermal) and have certified environmental value. With heightened environmental awareness in society, these plans have been well received by many customers.



TOPICS Maximizing profits through the effective utilization of new markets

In recent years, new markets such as the capacity market, the baseload (BL) market, and the supply-demand adjustment market have been developed. These markets are leading to diversification of investment recovery methods for power sources, and we will continue to make effective use of them to maximize profits.

Capacity market	• The capacity market was introduced to make sure to secure the future supply capacity of the entire nation by increasing the predictability of investment recovery by power generation operators. • Retail power providers will pay for the value of the capacity (kW) provided by the power generation operators. Transactions are to begin in FY2024.
Baseload (BL) market	• This market was introduced to facilitate easy access to BL power sources (nuclear, geothermal, large hydro, and coal-fired). • In the BL market, operators such as former general power providers sell electricity from BL sources at a fixed annual price, which helps stabilize their income. Transactions began in FY2020.
Supply-demand adjustment market	• Based on the need for adjustable power increases due to the expansion of the introduction of renewable energy, this market was introduced for the purpose of securing low-cost and stable adjustable power by general transmission and distribution companies. • The market makes it possible for power generation operators to secure a fixed level of income through adjustment capabilities. Transactions began in FY2021.

Specific Initiatives

Making Renewable Energy the Main Power Source

The Kyuden Group has developed 2,300 MW of renewable energies to date, and will continue to actively promote the development of offshore wind power and biomass, which have great development potential, in addition to the development of geothermal and hydroelectric power, which are our strengths.
(Target for renewable energy development in Japan and overseas: 4,000 MW in 2025, 5,000 MW in 2030)
In addition, we will proactively integrate renewable energies through steps such as the flexible operation of thermal power generation and utilization of pumped storage power generation, and promote renewable energies as a main power source.

Maintenance and renewal of existing renewable energy facilities

With the use of our existing geothermal and hydroelectric power generation facilities, we will strive to provide a stable supply of electricity while improving efficiency by appropriately renewing and refurbishing facilities with the aim of counteracting aging.

Note: For information on our further development of renewable energy, see "Growth Businesses: Renewable Energy Businesses" on page P35–36

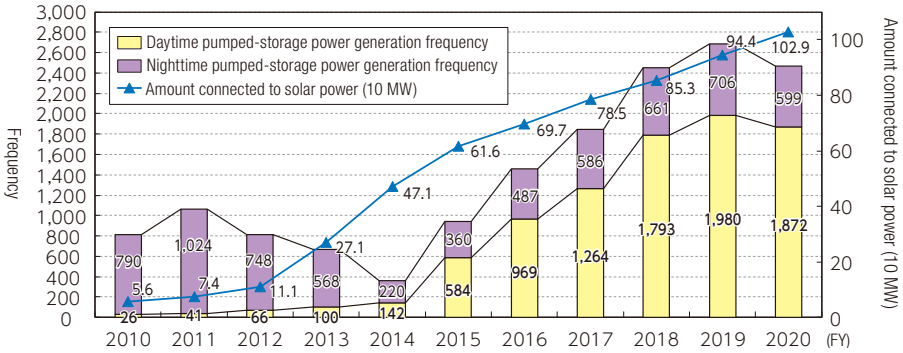
Otake Power Station

Maximizing the introduction of renewable energy

We are contributing to maximizing the introduction of renewable energies through flexible operation of thermal power generation and storage of electricity by pumped storage power plants.

Hitotsuse Power Station

● Pumped-storage Power Generation Frequency (Daytime/Nighttime)



(Note) Daytime pumped-storage power generation: The number of shutdown times that had been recorded as 8:00 to 17:00 until FY2017 have been recorded as 7:00 to 17:00 since FY2018.

Maximizing the Utilization of Nuclear Energy

Since nuclear power is an excellent power source due to benefits such as CO_2 emission reduction and ensuring energy security, we will continue to make maximum use of nuclear power on the premise that safety is ensured.

● Nuclear power generation (as of March 31, 2020)

Station name	Output	Start of operation	Type
Genkai	Units 3 & 4 1,180 MW each	Unit 3: Mar. 1994 Unit 4: Jul. 1997	Pressurized water reactor (PWR)
Sendai	Units 1 & 2 890 MW each	Unit 1: Jul. 1984 Unit 2: Nov. 1985	

Note: Operation of Genkai Unit 1 ended in April 2015, Genkai Unit 2 in April 2019

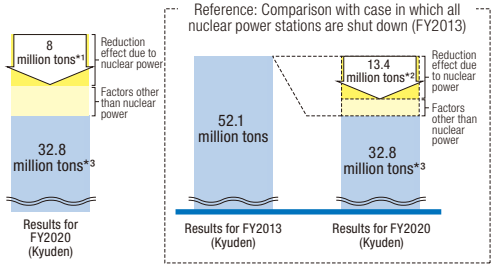
Genkai Nuclear Power Station

Sendai Nuclear Power Station

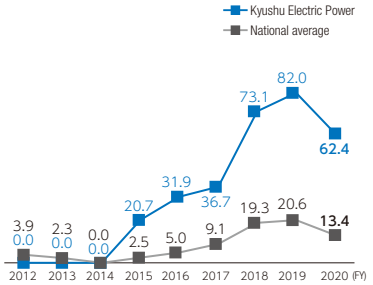
Continued safe and stable nuclear power station operations at high utilization rates

We aim to maximize the utilization of nuclear power stations currently in operation by continuing safe and stable operation through continuous efforts to improve safety and reliability. We will also continue to consider ways to improve the availability and operability of nuclear power stations that is assuredly safe.

● Effect of nuclear power generation on reducing CO_2 emissions



● Nuclear power station utilization rate



*1 FY2019 CO_2 emissions coefficient (adjusted) 0.370kg-CO_2/kWh is used
*2 FY2013 CO_2 emissions coefficient (adjusted) 0.617kg-CO_2/kWh is used
*3 FY2020 results are provisional. The final figures will be announced by the government in December

Contribution of nuclear energy to profitability

Since nuclear power is a power source that can generate electricity regardless of weather conditions or time of day, it contributes to securing stable revenue. In addition, since power stations do not emit CO_2 during operation, nuclear power can be expected to generate earnings from the non-fossil value trading market in the same way as renewable energy sources.
Even factoring in costs for safety measures and other necessities, nuclear power is a competitive power source from a medium- to long-term perspective. Based on such points, decisions about whether to invest are made comprehensively.

Initiatives to Improve the Safety and Reliability of Nuclear Power

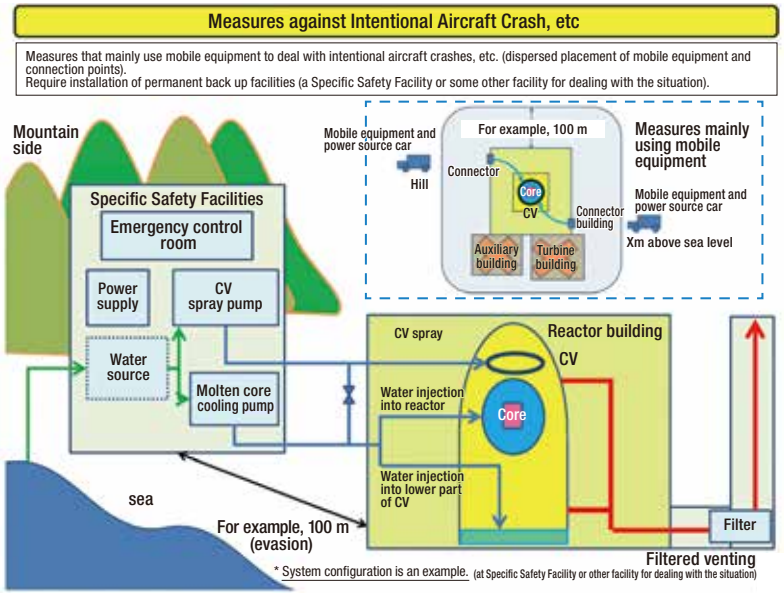
As Kyushu Electric Power's nuclear power stations were the first to comply with the government's new regulatory standards after the accident at the Fukushima Daiichi Nuclear Power Station, they have been restarted, and, as of July 2021, all four of our nuclear power plants are in stable operation.
We will continue to work to continuously improve safety and reliability, not only within the regulatory framework, but also by doing due diligence in collecting the latest technical insights and data.

Status of Specific Safety Facilities

Under the new regulatory standards set by the Japan Nuclear Regulation Authority, it is mandatory to install Specific Safety Facilities* (hereinafter referred to as "SSFs") that are equipped with functions to deal with threats such as terrorism.
The Sendai Nuclear Power Station started operation after becoming the first nuclear power plant in Japan to pass the new regulatory standard compliance inspection. (Unit 1: Nov. 2020; Unit 2: Dec. 2020)
By utilizing the insights gained from the Sendai Nuclear Power Station, the construction work that is underway at the Genkai Nuclear Power Station is planned to be completed by the installation deadline.

* A facility with functions to prevent damage to the reactor containment vessel in the event that the reactor core is severely damaged due to the loss of the reactor cooling ability caused by a deliberate collision of a large aircraft with the reactor auxiliary building or any other act of terrorism.

● Conceptual image of a Specific Safety Facility (Prepared based on materials from the Japan Nuclear Regulation Authority)



(Deadlines for the installation of SSFs at Genkai Nuclear Power Station)

Unit 3	August 24, 2022	Unit 4	September 13, 2022

Initiatives to prevent nuclear emergencies

In order to be able to promptly respond to any kind of event that could take place at nuclear power plants, we are maintaining and improving our response capabilities by developing emergency systems and repeatedly enacting drills that prepare us to deal with a nuclear emergency.


Alternative emergency response centers


Joint cooperation drills by nuclear power operators

In addition, we are stepping up cooperation with related organizations and businesses through participation in the comprehensive disaster drills offered by the national and local governments, as well as the joint drills performed by nuclear power operators.

Management and disposal of radioactive waste

Waste from nuclear power stations that contains radioactive substances is classified and managed as "low-level radioactive waste."
After the waste is treated, the drums in which it is stored in the power station are transported to the Japan Nuclear Fuel Limited (JNFL) Low-Level Radioactive Waste Disposal Center (Rokkasho Village, Aomori Prefecture) for burial and management to ensure that the waste has zero impact on the environments in which people live.
High-level radioactive waste, which is vitrified high-level radioactive liquid waste generated in the reprocessing process of spent fuel, is stored for 30-50 years for cooling at facilities such as JNFL High-Level Radioactive Waste Disposal Center (Rokkasho Village, Aomori Prefecture), and then finally disposed of safely in a stable geological formation at least 300 meters underground. The final disposal of the waste will be carried out by the Nuclear Waste Management Organization of Japan (NUMO), an organization authorized by the Ministry of Economy, Trade and Industry.

● Volume of Stored Radioactive Solid Waste (as of the end of FY2020) Unit: Drums (200-liter drum equivalent)

(FY2020)	Amount stored in power plant	Amount transported out*
Genkai NPS	38,148 (38,418)	14,432 (12,712)
Sendai NPS	27,873 (27,303)	640 (640)
Total	66,021 (65,721)	15,072 (13,352)

Figures in parentheses indicate figures as of the end of FY2019.
*Amount transported out to the Low-Level Radioactive Waste Disposal Center

Improved communication with local residents regarding nuclear power

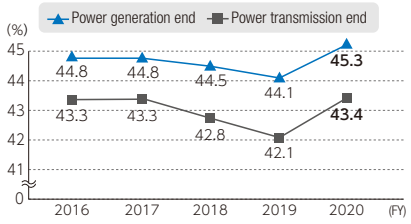
In order to give local residents assurance that the generation of nuclear power is safe and reliable, we make sure to disseminate easy-to-understand information about our initiatives to improve the safety and reliability of our power stations. The entire company is committed to making use of visits, tours or other opportunities to provide interactive communication activities.


Dialogue with local residents

Utilization of Thermal Power Generation That Is Eco-friendly

As it is a power source that compensates for the output fluctuations brought on by the introduction of renewable energy, we will continue to work to maintain and improve the overall efficiency of thermal power generation from the perspectives of controlling the amount of fuel consumption and CO_2 emissions.
With the operation of coal- and LNG-fired power plants with high thermal efficiency, including the Matsuura Power Station Unit 2, which commenced commercial operation in December 2019, the total thermal efficiency of thermal power plants in FY2020 improved by 1.2 percentage points to 45.3% (power generation end).
Going forward, we will continue to take steps to reduce our environmental impact in ways such as decommissioning or planning to decommission aging thermal power plants, aiming to fade out inefficient coal-fired thermal power plants by 2030, and studying the use of hydrogen and ammonia, fuels that do not produce CO_2 during combustion for power generation.

Total thermal efficiency for thermal power stations (Kyushu Electric Power)



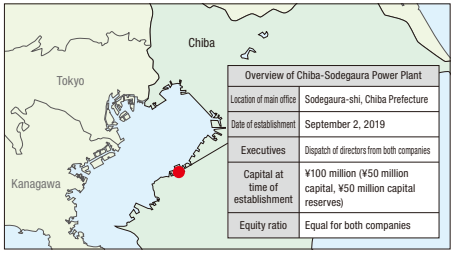
*Thermal efficiency is calculated on a lower heating value basis.

Start of commercial operation of Matsuura Power Station Unit 2 on December 20, 2019 (front side)

Power source development outside of Kyushu

Energy equivalent of power sources developed outside Kyushu by 2030: 2,000 MW

With the aim of increasing profits by supplying stable and inexpensive electricity outside of Kyushu, we are promoting the development of power sources outside the Kyushu area as we move toward our goal of developing 2,000 MW of power outside of Kyushu by 2030.



Overview of Chiba-Sodegaura Power Plant	
Location of main office	Sodegaura-shi, Chiba Prefecture
Date of establishment	September 2, 2019
Executives	Dispatch of directors from both companies
Capital at time of establishment	¥100 million (¥50 million capital, ¥50 million capital reserves)
Equity ratio	Equal for both companies

In September 2019, we joined with Tokyo Gas Co., Ltd. to establish Chiba-Sodegaura Power Co., Ltd., and are investigating the feasibility of developing a LNG-fired thermal power plant.

Strengthening of the fuel business

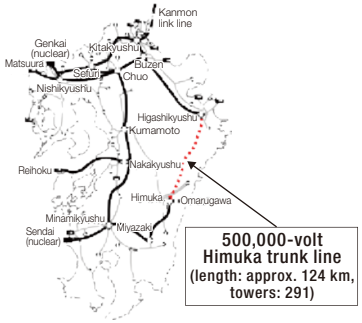
We will work to expand opportunities for new profits, including the business of supplying LNG fuel for ships by making use of the Kyuden Group's assets and know-how, as well as our alliances with other companies in business areas within the fuel value chain that spans fuel's manufacturing to its transport, trading, base business, and electricity/gas supply.

Initiatives in the Power Transmission and Distribution Business

In the power transmission and distribution business, we are engaged in efforts to achieve both stable supply and cost reduction by improving the efficiency and upgrading of maintenance and operations. At the same time, we are working on initiatives such as the creation of demand for electricity by developing technologies to accommodate the next generation of networks and the promotion of electrification.

Efficient facility formation

In the area of power transmission and distribution facilities, we are working to form efficient facilities from a long-term perspective by comprehensively taking into account factors such as demand trends, supply reliability, safety and operational aspects of the facilities, and costs.
Currently, we are constructing the 500,000-volt Himuka trunk line to be operational in 2022.



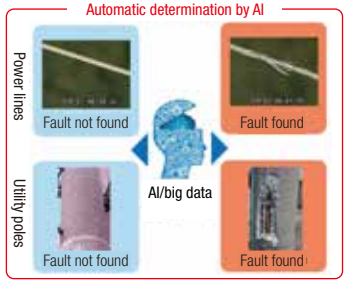
Initiatives for the expanded introduction of renewable energy

In order to make the most of Kyushu's renewable energy potential, we are promoting a smooth connection to the grid and maximizing the introduction of renewable energy by utilizing one of the world's largest battery storage systems.
We are also engaged in initiatives such as the use of digital technology to facilitate both the massive introduction of renewable energy and the successful maintenance of power quality.

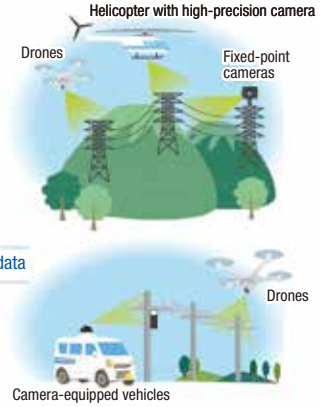
Buzen Battery Storage and Transformer Station

Technology development to upgrade power grids

To suitably maintain the aging equipment we use to transmit and distribute electricity, we are putting effort into a number of areas. These include finding an effective means of gathering data about the equipment, such as through the use of drones, and research and development into methods to determine deterioration, such as image analysis and artificial intelligence.



▲ Determination of equipment irregularities through the utilization of AI and big data



▲ Efficient acquisition of equipment information

Promotion of Electrification

Combining environmentally friendly energy with the resources of the Kyuden Group, we will take on the challenge of maximizing electrification, especially in the Kyushu area where the potential for electrification is great.

Initiatives in the household and commercial sectors

In the household sector, we will continue to promote the transition to all-electric homes by holding events and mass PR that convey the advantages of all-electric energy, as well as by conducting sales activities to seize various opportunities.
Regarding climate-control and hot water supply systems for the commercial sector, we will continue to offer high-efficiency heat pump systems optimized for the usage conditions of customers' facilities. We will also promote the adoption of electric systems by extensively promoting the advantages of electrified kitchens in terms of ease of use, hygiene, and economy.
By promoting these initiatives, we will contribute to the realization of 100% electrification in the residential and commercial sectors by 2050.

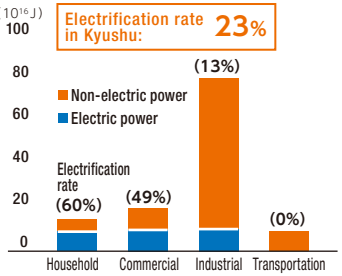
Initiatives in the industrial sector

In the industrial sector, we will take on the challenge of using electrification to meet heat demand in a wide range of temperature zones (hot water, steam, heating, etc.) in production processes, focusing on temperature zones where heat pump technology can be applied.

Development of technologies that contribute to the promotion of electrification

We will engage in the development of technologies that contribute to the promotion of electrification. This will involve the development of technologies such as high-capacity chargers for large vehicles (e.g., buses) and heat pumps in the agricultural sector that contribute to the promotion of electrification in the transportation and industrial sectors, where the electrification rate is otherwise low.

●Final energy consumption by sector in Kyushu (FY2018)



Note: Calculations are based on the energy consumption statistics by prefecture reported by the Agency for Natural Resources and Energy

●Electric buses and large-capacity chargers/dischargers

(Image provided by Nishi-Nippon Railroad Company, Ltd.)

●Use of heat pumps in agriculture (tomato cultivation)

(Joint research with JA Yatsushiro)

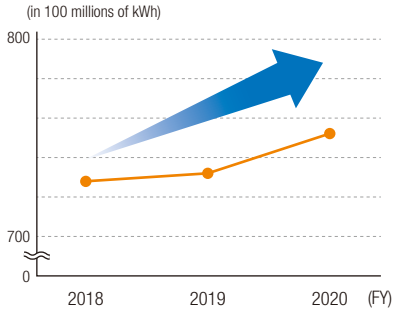
Expanding the Energy Service Business and Providing New Value

In addition to expanding the energy service business both in and outside of the Kyushu area through means such as electricity retailing outside the Kyushu region, we will seek to increase profits by taking steps such as providing new services to meet diversifying customer needs.

Expansion of electric power retailing both in and outside of the Kyushu area

The Kyuden Group is working to increase the amount of electricity sold through Group-wide sales activities. Outside of Kyushu, the Kyuden Group is expanding retail sales of electricity through ways such as offering diverse rate plans: e.g. a plan that enables customers to earn points from Kyuden Mirai Energy Co., Inc.'s partner companies, as well as rate plans for all-electric energy customers. Retails sales of electricity are also being increased by winning contracts from government and other public offices through bidding and other means.

●Changes in the amount of electricity retail sales



●Kyuden Mirai Energy Co., Inc.'s five rate plans to choose from

Expansion of wholesale electricity sales

In February 2021, we established a new wholesale power sales center to centralize the entire series of operations related to wholesale power sales, from the consideration of sales menus to payment, in order to improve operational efficiency. At the same time, through the expansion of wholesale electricity sales both in and outside of the Kyushu area, we are working to increase the total amount of electricity sold and improve profits by diversifying our sales channels.

The offering of new energy services

In order to work toward providing new value to our customers, we are promoting innovations in ways such as considering the prospect of an aggregation business*.

*A business that bundles distributed energy resources, such as storage batteries and electric vehicles, to provide the effective utilization of renewable energy and a host of other such services.