

To provide carbon neutral gaseous energy, we will accelerate the development of e-methane and other advanced technologies, as well as the establishment of supply chains. As for carbon neutral power sources, we will expand the use of renewable energy and proceed with the development of energy saving and supplydemand management technologies. To contribute to the reduction of CO₂ emissions during the transition period, initiatives for both gas and electricity will be strengthened. Specifically, we will construct highly efficient natural gas-fired power plants, in addition to globally facilitating wider usage and advanced utilization of natural gas, a low-carbon energy resource.

FY2024.3 Results

CO₂ emissions of the Daigas Group **24.63** million tons

Percentage of renewables in our power generation portfolio in Japan 22.4%

Renewable energy development contribution

Avoided emissions

*1 CO2 emissions in the domestic supply chain (Scope 1, 2 & 3). Please refer to P.52 for greenhouse gas emissions from the Daigas Group's value chain (Scope 1, 2 & 3).

Initiatives through FY2024.3

We proceeded on the creation of new supply chains for e-methane, the development of technologies to achieve carbon neutrality and joint national and international studies on CCS*2. We also promoted a more widespread use of renewable energy with various initiatives, such as the joint development of solar power plants in Japan and overseas and the launch of commercial operation of new biomass power plants in Japan. In addition, we took measures to reduce CO₂ emissions across the Daigas Group and society. Specific initiatives in the Group included the adoption of low-carbon offices and company cars, as well as cryogenic power generation at our LNG terminals. For our customers, we strived for the introduction of high-efficiency gas-fired power generation both in Japan and overseas, introduction of fuel cells and gas-powered air conditioning and high-efficiency hot water heaters, and conversion to the use of natural gas as a fuel.

Secure Peace of Mind Today

In March 2024, we joined forces with seven other companies that engage in energy businesses*3 to announce the creation of the e-NG Coalition, the first international alliance for e-methane.

The alliance aims to further promote a widespread use of e-methane across the world.

Challenges

We aim for a 1% introduction of e-methane by FY2031.3 and a more widespread adoption afterwards. To achieve this, it is necessary to develop innovative SOEC methanation technology*4, as well as to realize early practical application of existing Sabatier methanation technology*5 through large-scale demonstrations. In addition, cooperation with various partners is necessary in building e-methane supply chains and facilitating a widespread use of renewable energy. This is because the development of large-scale solar power generation and onshore wind power generation is challenging in Japan, where there are few suitable locations for renewable energy production.

^{*2} CCS: Carbon dioxide Capture and Storage

^{*3} Tree Energy Solutions Belgium B.V., Tokyo Gas Co., Ltd., Toho Gas Co., Ltd., Mitsubishi Corporation, Engie S.A., Sempra Infrastructure Net Zero Holdings LP, and TotalEnergies SE

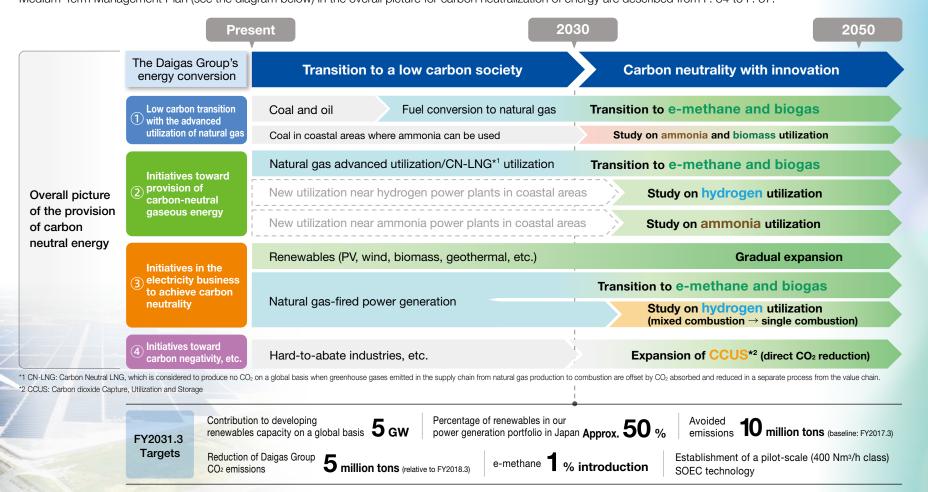
^{*4} Technology that uses SOEC equipment to electrolyze water and CO2 into hydrogen and carbon monoxide using renewable energy, etc., and then synthesizes methane by catalytic reaction of the hydrogen and carbon monoxide.

^{*5} Technology that synthesizes methane by catalytic reaction of hydrogen, e.g. from renewable energy sources, with CO2.

Initiatives for the Future

In Energy Transition 2030 (ET2030) released in March 2023, the Daigas Group outlines the overall picture of the provision of carbon neutral energy. The Group has been working on specific initiatives in accordance with a roadmap.

In order to achieve carbon neutrality, a steady transition to low-carbon energy is crucial, as a great deal of time and social cost will be required for technological innovation and the building of supply chains. It is also important to choose optimal energies and supply methods to suit the customer's energy use characteristics, such as the balance of electricity and heat use and their location. Focusing on the transition to low-carbon energy by 2030 through a shift from coal and oil to natural gas, and the seamless transition to carbon neutral energy with the introduction of e-methane and biogas in the future, we will continue to pursue carbon neutrality of power sources in ways that meet customer needs. This will include the use of hydrogen and ammonia, as well as carbon neutrality of power sources, such as renewable energy generation and zero-emission thermal power plants. Initiatives under the current Medium-Term Management Plan (see the diagram below) in the overall picture for carbon neutralization of energy are described from P. 34 to P. 37.



Secure Peace of Mind Today

Build Sustainable Lifestyles for Tomorrow

Providing Carbon Neutral Energy

1 Low Carbon Transition with the Advanced Utilization of Natural Gas

Initiatives Enhanced under the Medium-Term Management Plan

At our customers' large-scale factories, etc., we will promote fuel conversion from coal and other fuels to natural gas and LNG with low CO₂ emissions. In addition to promoting a widespread use of equipment that contributes to energy saving, we aim to avoid CO₂ emissions of 7 million tons across society in FY2027.3 by taking such measures as launch of an LNG bunkering business, construction of gas-fired power plants, and sales of highly efficient gas equipment.

Widespread Use and Advanced Utilization of Natural Gas

We will promote transition to low-carbon energy by converting fuels from petroleum-based fuel and coal to city gas and LNG and promoting a widespread use of energy saving equipment. Enhancing initiatives in parts of Japan and Asia where city gas infrastructure does not exist will enable a smooth transition when introducing e-methane in the future, because existing city gas infrastructure and customers' combustion equipment can be used without modification.

Domestic initiatives

We will strive for the sales and expanded use of fuel cell type ENE-FARM as a cogeneration system for the residential segment that contributes to energy saving and CO₂ reduction. The system generates power from the chemical reaction between hydrogen taken out from city gas and oxygen in the air. As of April 2024, we have sold a cumulative total of 200 thousand units*1, which contributed to reduce CO₂ emission by approximately 370 thousand tons*2 per year.



- *1 Based on orders received by Osaka Gas
- *2 Estimated by Osaka Gas based on the assumption that families of four living in detached homes replaced conventional gas hot water supply and heating systems with ENE-FARM or ENE-FARM type S units

Overseas initiatives

Sabine Oil & Gas Corporation in the United States aims to increase shale gas production by developing new wells. We will work to expand Sabine Oil & Gas Corporation's mining areas and find additional areas for potential development projects.

LNG bunkering business

To transition from conventional heavy oil to low-emission marine fuel, we plan to launch a ship-to-ship*³ bunkering business in FY2027.3 in the Osaka Bay and Seto Inland Sea. In the future, we aim to contribute to the provision of carbon neutral marine fuel by replacing LNG with e-methane.

*3 An LNG supply method where a bunkering ship comes alongside an LNG-fueled ship moored to a berth or tied to an anchorage point and supplies LNG to the ship

Expansion of City Gas Business in India

To address increasing energy demand associated with economic growth, lower carbon emissions, and tackle air pollution, the Indian government promotes the expansion of natural gas use by developing city gas infrastructure for a widespread use of natural gas cars and taking other measures. Osaka Gas Singapore Pte. Ltd., a Daigas Group company that has been participating in the city gas business in India since 2021, decided in April 2024 to invest in AG&P LNG Marketing Pte. Ltd. The investment will be made through a Japanese consortium jointly with SUMITOMO CORPORATION and Japan Overseas Infrastructure Investment Corporation for Transport & Urban Development. This will expand the city gas business the Group participates in India to a total of 19 GA*4. Going forward, the Group will expand the sales of city gas mainly in the transportation segment, as well as in the residential, commercial, and industrial segments. We aim to eventually expand the scale of the city gas business in India to a level that exceeds a half of our gas sales in Japan*5.

We will develop the city gas business in India into a pillar of our business in Asia, and contribute to the transition to low-carbon energy and stable energy supply in India.

- *4 GA stands for geographical area and is the unit by which urban gas business rights were assigned. Approximately 320 thousand km², which is equivalent to 10% of India's land (approximately 90% of Japan's land)
- *5 Consolidated gas sales volume (45MJ/m³) in FY2024.3 was 6,646 million m³





2 Initiatives toward provision of carbon-neutral gaseous energy: 1

Initiatives Enhanced under the Medium-Term Management Plan

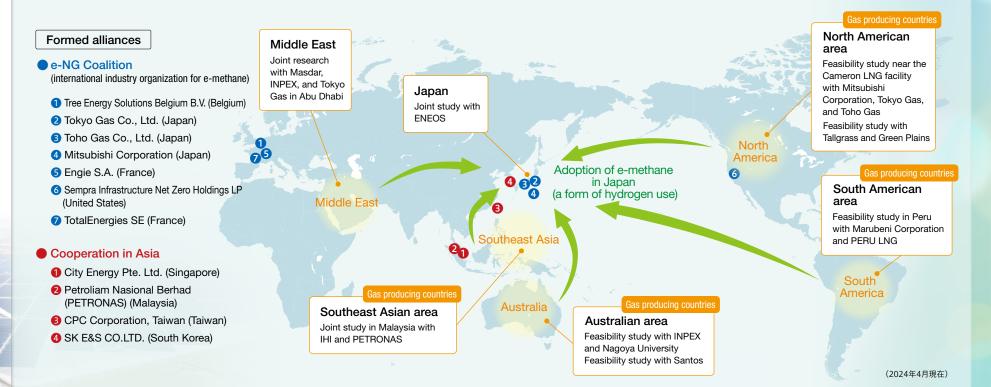
We will build supply chains to achieve 1% introduction of e-methane by FY2031.3. Aiming for a wide spread use of e-methane, we will consider multiple projects in North America, South America, and other regions in addition to domestic projects, by taking advantage of the e-NG Coalition and international partnerships in Asian countries.

Formation of Supply Chain Alliances

For the full-scale introduction of e-methane in 2030, the Daigas Group will consider establishing diverse methanation technologies, developing renewable energy sources, and building a supply chain both in Japan and overseas, including the procurement of hydrogen and CO₂ in collaboration with customers.

For stable procurement in the future, we are identifying locations suitable for e-methane production, focusing our consideration on North America, South America, Australia, the Middle East, and Southeast Asia, where existing natural gas and LNG facilities can be used. In addition, we will cooperate with energy companies in Asia and advance e-methane use not only in Japan but also in Asia.

In March 2024, we announced the establishment of the e-NG Coalition with seven companies that engage in energy businesses. The coalition is an international alliance that aims to facilitate a widespread use of e-methane worldwide and achieve a carbon neutral society by cooperating across country and industry borders.



2 Initiatives toward provision of carbon-neutral gaseous energy: 2

Initiatives Enhanced under the Medium-Term Management Plan

To achieve a carbon neutral society, we will develop methanation technologies that produce e-methane, and proceed with demonstration projects and studies for large-scale production and practical application. We will also carry out demonstration projects on such technologies at the Osaka/Kansai Expo starting in 2025, introducing them as the Daigas Group's initiatives.

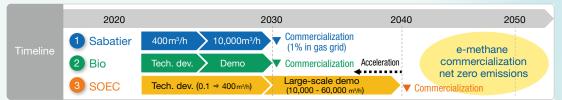
R&D toward Provision of Carbon Neutral Gaseous Energy

Described below are the Daigas Group's initiatives for the development of diverse methanation technologies. We will also advance the development of hydrogen and ammonia combustion technologies to meet customer needs.

- 1 Initiatives for practical application of existing Sabatier methanation technology

 Jointly with INPEX CORPORATION, we will proceed with the construction of a test facility plant in one of the largest technology development projects in the world for the commercialization of methanation*1, which aims to reduce the emissions of and effectively use CO₂. The plant is scheduled to start operation in FY2026.3. By FY2027.3, we will carry out demonstration to understand the reactive behavior of methanation, evaluate durability, and review scale expansion.
- 2 Initiatives for practical application of biomethanation
 After demonstrating at a waste incineration plant (Maishima Plant) in Osaka
 City, we plan to demonstrate the technology*2 at the Osaka/Kansai Expo site
 from April 2025. (See below)
- Promotion of the development of innovative SOEC methanation technology*3 Having started laboratory-scale testing in June 2024, we plan to conduct bench-scale testing from FY2026.3 to FY2028.3 and pilot-scale testing from FY2029.3 to FY2031.3, and aim to achieve a top-level energy conversion efficiency (approximately 85–90%) in FY2031.3.





- *1 NEDO Grant Project: "Development of Carbon Recycling and Next-Generation Thermal Power Generation Technologies / Practical Utilization Technology Development for Effective Use of CO₂: "CO₂ Utilization Technology for Gaseous Fuels"
- *2 Ministry of the Environment Commissioned Project: "Project to Construct and Demonstrate a Model for Reducing the Cost of Hydrogen Supply by Utilizing the Existing Infrastructure (Fiscal Year 2023)"

 *3 NEDO Green Innovation Fund Project: "Innovative Technology Development for Synthetic Methane Production: "SOEC Methanation Technology Innovation Project:"



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Initiatives at the Osaka/Kansai Expo

Demonstration of methanation utilizing biogas

We will demonstrate how methanation produces e-methane through synthesis from green hydrogen and CO₂ generated from food waste or contained in the air at the venue. The e-methane produced will be supplied to equipment that uses city gas in the venue and used for gas supply facilities and gas kitchens.





■ Use of SPACECOOL® at the Expo

SPACECOOL®, developed by Osaka Gas, has been adopted as a membrane material for the gas pavilion at the venue. SPACECOOL® is a radiant cooling material with a unique optical design, which lowers the indoor temperature below the temperature outside without using energy. It not only keeps a comfortable temperature inside the pavilion but also reduces the load of air conditioning, which contributes to reducing CO₂ emissions.



■ Utilization of CO2NNEX®*4

The Daigas Group plans to supply carbon neutral gas to the venue by transferring environmental value created by e-methane and biogas.

In addition, at the Expo venue, we aim to utilize a digital platform "CO2NNEX®"*4 for visualizing the environmental value management and transfer of e-methane and CO2 distribution, which we are jointly exploring with Mitsubishi Heavy Industries, Ltd.

^{*4} CO2NNEX is a registered trademark of Mitsubishi Heavy Industries, Ltd.

Initiatives in the Electricity Business to Achieve Carbon Neutrality

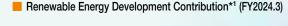
Initiatives Enhanced under the Medium-Term Management Plan In Japan, we will cooperate with various partners and advance the development of small- and medium-scale solar power plants across the country. Outside Japan, we will participate in solar power projects in the United States and Australia. Led by the Power Business Unit established in FY2025.3, we will further accelerate these initiatives and aim to achieve 4 GW renewable energy development contribution in Japan and overseas by FY2027.3.

Low-Carbon Transition of Power Sources

We aim to commence the operation of the Himeji Natural Gas Power Plant in 2026, which will contribute to a highly efficient energy use and a stable supply of energy. The scale of this power plant will be approximately 1.2 GW, and it is expected to serve as a dispatchable power source during the transition period.

Increase in Renewable Energy Development Contribution

In Japan, we will cooperate with various partners and advance the development of small- and medium-scale solar projects across the country. Outside Japan, we participate in a solar power development project in Australia, in addition to multiple solar development projects in the United States. We will accelerate these initiatives and aim to achieve 4 GW renewable energy development contribution in Japan and overseas by FY2027.3.





Initiatives toward Carbon Negativity, etc.

Initiatives Enhanced under the Medium-Term Management Plan With the aim of achieving carbon negativity, we will consider reusing CO₂ (CCU*3) emitted from H-to-A industries*4 such as steel and cement, and injecting and storing excess CO₂ deep underground (CCS*5). In addition, we will drive forward carbon credits and other businesses conducive to CO₂ offsetting.

- *3 CCU: Carbon dioxide Capture and Utilization
- *4 H-to-A industries: Industries where CO₂ emissions reduction is difficult (Hard-to-Abate)
- *5 CCS: Carbon dioxide Capture and Storage

Initiatives for CO₂ Value Chain Development

Taking advantage of our experience and cooperative relationships with stakeholders cultivated in a wide range of city gas businesses from the upstream (natural gas production, liquefaction, and marine transportation) to the downstream (regasification and supply in Japan), we are conducting studies on and promoting the development of value chains in the capture, utilization, storage, and management of CO₂ (CO₂NNEX®).

In addition to the development of CCS value chain and studies on the capture and utilization of CO₂ which we have been conducting with partner companies, we started in March 2024 a joint study with Mitsubishi UBE Cement Corporation on CCUS to achieve carbon neutrality in the cement production process.

Initiatives by a Forest Fund Established by Sumitomo Forestry Group

In July 2023, Osaka Gas announced its joint investment, along with nine other Japanese companies, in the Eastwood Climate Smart Forestry Fund I ("the Fund") established by the Sumitomo Forestry Group.

By 2027, the pooled capital will have been invested in the acquisition and management of 130 thousand hectares of forest, primarily in North America. The Fund will contribute to the realization of a carbon-neutral society by generating new absorption of CO₂ and the production and trading of high-integrity carbon credits. (Approx. 46 thousand hectares of forest assets acquired as of June 2024.)



An example of forests purchased by the Fund (Courtesy of Eastwood Forests, LLC)

Secure Peace of Mind Today

Enhancing the Resilience of Customers and Society



Heightened geopolitical risks, the impact of climate change, and measures against natural disasters have become major challenges for society. As the Daigas Group engages mainly in energy businesses, the Group strives to enhance the safety and stability of energy supply chains to overcome such challenges. We will continue to take measures to prepare for disasters and ensure safety, and contribute to enhancing the resilience of customers and society by facilitating a widespread use of disaster-resistant equipment and energy.

FY2024.3 Results

Continued **Zero** serious accidents

Ratio of strengthening of earthquake resistance*1 89 %

Number of supply blocks*2

727 blocks

- *1 Percentage of earthquake resistant pipes
- *2 Number of divided blocks of pipeline networks for the purpose of suspending gas supply only in severely affected areas after earthquakes or other natural disasters



Enhancing resilience in energy supply chains

Ensuring the safety of city gas, gas production, and power generation facilities is the Daigas Group's top priority. As a result of working on the enhancement of resilience at each stage from raw material procurement to use of gas by customers, we achieved continued zero accidents, a target under materiality indicators. As countermeasures against earthquakes, we replaced aging gas pipes and divided supply blocks into smaller segments to enable early recovery after earthquakes.

In the electricity supply chain, we not only enhanced electricity supply by developing and procuring from renewable energy sources but also promoted a widespread use of gas CHP units, fuel cells (ENE-FARM), and other disaster-resilient equipment. Such equipment can operate in isolation and keep generating power even in times of blackout.





Challenges

We are seeing heightened geopolitical risks, such as instability in the Middle East and transit restrictions on the Panama Canal. In light of the possibility that such risks may intensify, continued efforts are necessary to reduce risks by using diverse suppliers, as well as to ensure a stable procurement.

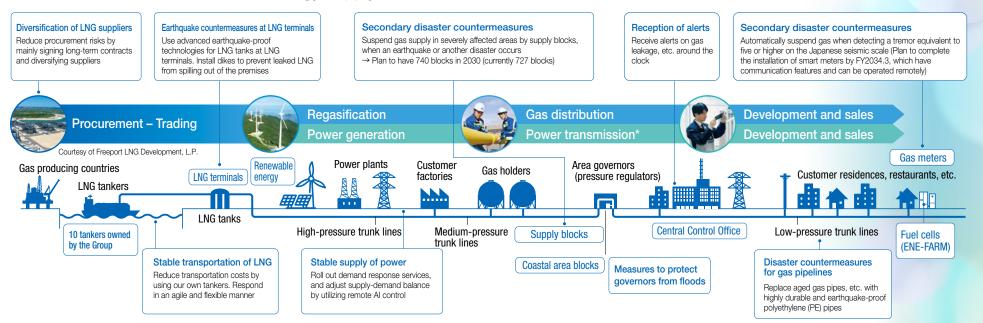
In addition, the use of renewable energy is expanding in response to the trends of carbon neutrality and electrification. Against this backdrop, we are expected to promote energy management, where energy use is visualized and optimized to address the surplus and shortage caused by gaps in demand during daytime and nighttime.



Enhancing the Resilience of Customers and Society

Initiatives Enhanced under the Medium-Term Management Plan In addition to existing initiatives, we will further enhance security and safe supply by utilizing AI and other digital technologies, as well as contribute to grid stabilization by developing energy management technologies and taking other measures.

Initiatives to Enhance Resilience in Energy Supply Chains



*Supply electricity through the power grids operated by other companies such as Kansai Transmission and Distribution, Inc.

Enhancing security and safe supply by utilizing AI and other digital technologies

Achievement of operational efficiency improvement and labor saving in gas leakage inspection

In 2023, Osaka Gas Network Co., Ltd. developed a new inspection method and system for the inspection of gas leakage from underground pipes. The introduction of high-precision laser spectroscopic detectors for inspections, as well as a navigation system that supports inspections by generating inspection routes, more than halved the number of persons needed for inspection, resulting in higher efficiency and labor saving.

We will continue to combine the technological capabilities and know-how we have cultivated with cutting-edge digital technologies, enhance our business operations, and help the industry overcome the challenges it faces.

Contributing to a stable supply-demand balance of electricity

Establishment of a virtual power plant with "ENE-FARM"

The amount of power generated from renewable energy depends on weather conditions. To address this issue, we aim to release an energy management service, where a large number of ENE-FARM units are controlled and utilized as if they were one power plant to stabilize power supply.

Co-creating Advanced, Diverse Solutions



In a world advancing toward carbon neutrality and digitalization, we will create progressive and diverse options. We will offer more comfortable lifestyles for residential segment customers, as well as create an environment where commercial and industrial segment customers can focus on business with peace of mind. Our strengths include extensive feedback received from customers over the years, deep connections with a wide range of customers, and technologies cultivated over time. By taking advantage of such strengths, we will keep evolving into a marketer trusted by customers and society through cocreation with our stakeholders.

FY2024.3 Results

Number of customer accounts

10.38 million

Customer satisfaction rate



Initiatives through FY2024.3

With the aim of offering services helpful to customers and society and achieving business growth, we expanded new services and rolled out new solutions. As a result, the number of customer accounts reached 10.38 million. We also strived to ensure safety and improve the quality of services. The satisfaction rate for customer-facing operations* remained high at 92%. In addition, the LBS Business domain expanded, with the launch of new businesses in the property development business, enhancement of business domain through M&A in the information technology business, and further advancement in the development of materials with high added value in the materials business.

*Five areas of operation that have direct interaction with customers (opening gas valves, appliance repairs, appliance sales (with installation), periodic safety inspections [gas facility surveys], and telephone support (customer center)).

Residential Energy Business

- Expanded the services offered by life service platform "Sumai LINK"
- Launched "FitDish," a refrigerated food delivery service
- Expanded the rate plans for fixed-line telecommunication service

Commercial and Industrial **Energy Business**

- Launched the "D-Charge" service, an EV charging solution
- Converted customer's fuel to natural gas (Iwakuni Production Center, TOYOBO Co., Ltd., etc.)

LBS Business

- Property development business: Launched REIT and logistics real estate businesses
- Information technology business: Made AMMIC Corporation a subsidiary to enhance the ERP introduction support business
- Material business: Insulated materials for semiconductor production grew, and the offering of activated carbon products expanded in and outside Japan

Challenges

Competition has intensified due to the deregulation of the gas retail market and other factors. In addition, the energy business is facing a turbulent environment due to the accelerated move toward carbon neutrality. To secure new revenue sources and seek a sustainable growth, it is important not only to expand Sumai LINK and other new businesses, as well as LBS Business domain, but also to keep creating new businesses that meet diversifying customer needs.



Lifestyles for Tomorrow

Co-creating Advanced, Diverse Solutions

Initiatives Enhanced under the Medium-Term Management Plan To strengthen the function to create new businesses that meet customer needs, we have established the Next-Generation Business HQ and will accelerate the creation of new businesses. Under the new structure, we will work to expand new services and businesses, as well as enhance existing services and businesses. Our aim is to increase the number of customer accounts to 10.90 million by FY2027.3.

Further Expansion of New Businesses by Segment

Residential Energy Business

In addition to offering diverse rate options and energy services suited to each customer, we will expand lifestyle-related services. Sumai LINK is to be expanded as a service that increases alliances for co-creation and supports lifestyles. We will expand the menu for FitDish and develop it into a service that customers use repeatedly.

Expansion of the Sumai LINK Service

Sumai LINK is a one-stop platform where we offer a range of services used in daily life. By cooperating with various partners, we aim to make the platform into a service used by a large number of customers.

In November 2023, we signed a trilateral agreement with Tawaramoto Town, Nara Prefecture and RIZAP, Inc. to start a demonstration project from July 2024, where customers are encouraged to participate in health promotion programs offered by RIZAP, Inc. on their TV sets through the Sumai LINK TV Stick.

By making it easy to participate in the health promotion programs offered by RIZAP, Inc., we will increase the participation rate of elderly people and provide an opportunity for not only elderly people but a wide range of people to take up exercising. We aim to roll out the initiative to other local governments and companies interested in health, while working to resolve issues identified in the demonstration.

Commercial and Industrial Energy Business

In addition to energy (gas and electricity), we offer total solutions (CHP units, photovoltaic power, air conditioning, etc.) centered around D-Lineup, and contribute to solving issues customers and society face. We also contribute to reducing customers' CO2 emissions by converting fuels to natural gas and offering renewable energy services, in anticipation of a carbon neutral society.

LBS Business

We will contribute to society by further demonstrating the strengths each company has cultivated, such as urban development through co-creation, information systems that add high value, and provision of activated carbon, etc.

Urban Development Business (Osaka Gas Urban Development Group)

We will proceed with the development of sustainable, high-quality housing and offices in response to social issues and customer needs, and accelerate new businesses, such as logistics real estate and REIT.

Materials Business (Osaka Gas Chemicals Group)

We will expand the business by launching new products that use highly unique, high-functioning materials. We boast a large global share of activated carbon products, and will develop and promote a widespread use of such products for biogas refinement and Per- and PolyFluoroAlkyl Substances (PFAS) removal purposes.

Information Technology Business (OGIS-RI Group)

We aim to expand the ERP introduction support business, which is our strength. In addition, we seek to expand our business globally by acquiring IT talent and develop new strategic partners primarily in Asia.

Creation of New Businesses

Promotion of Innovation under a New Structure

Aiming to increase the Daigas Group's earnings and contribute to resolving social issues, we will commercialize the Group's proprietary technologies and seek to create new businesses by combining our strengths with other companies' technologies and services.

From FY2025.3, functions to create new businesses are consolidated under the umbrella of the Next-Generation Business HQ. With this structure, we will further new businesse creation by promoting a consistent process from research and technology development to collaboration with a variety of partners and commercialization. Specifically, we will promote the commercialization of the Group's proprietary technologies, as well as the creation of new businesses with our partners, such as those related to EV and circular economy.