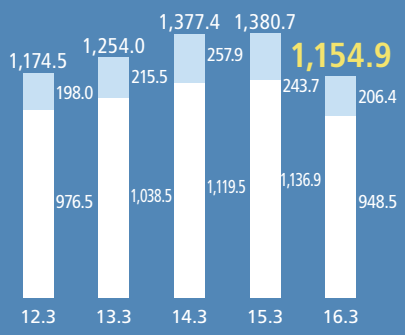
Domestic Energy Business

2016 Targets

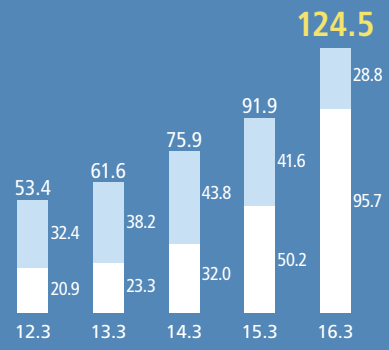
Net Sales
¥986.9 billion

Segment Income
¥59.0 billion

Net Sales (billion yen)



Segment Income* (billion yen)



Note: Starting in the fiscal year ended March 31, 2015, Osaka Gas repositioned the renewable energy business from the environment/non-energy segment to the LPG/electricity/other energy segment or to the international energy segment according to the details of individual business activities. For this reason, figures from the fiscal year ended March 31, 2015 on include the domestic renewable energy business.

* Segment income = Operating income + Equity in earnings of affiliates

In the fiscal year ended March 31, 2016, net sales from the domestic energy business were ¥1,154.9 billion. Segment income came in at ¥124.5 billion.

Heightened interest among customers with regard to saving energy and protecting the environment, combined with lower crude oil prices, population decline in the Kansai region, and the full deregulation of the retail electricity and gas markets are all factors that will keep conditions in the energy business in constant flux.

Osaka Gas sells energy in forms including city gas, LPG, and electricity, and combines offerings of gas appliances, such as ENE-FARM, with services that contribute to the success of customers' lives and businesses, thereby meeting the diversifying needs of customers.

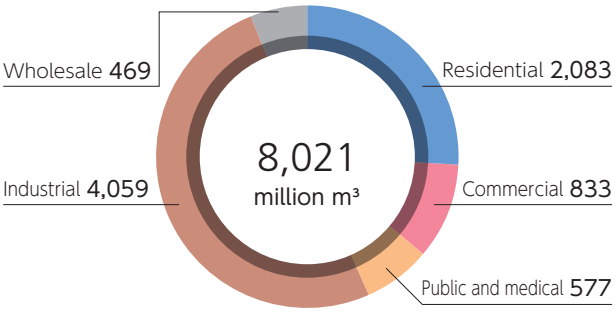
Kansai Region Gas Business

As a core pillar of the Osaka Gas Group's business, we provide comprehensive gas-related services to customers in the Kansai region, ranging from the production, supply and sale of city gas to the installation of gas pipes and the sale of gas appliances.

Overview of Gas Sales in the Fiscal Year under Review

The non-consolidated gas sales volume reported by Osaka Gas for the fiscal year ended March 31, 2016 fell 2.9% from the previous year to 8,021 million m³. A breakdown by use shows that residential use was down 4.7% to 2,083 million m³ due to high air and water temperatures and reduced demand for heating and hot water. Due to a downturn in operations at customers' facilities, commercial use was down 2.9% from the previous year to 833 million m³, while public and medical use was down 5.1% to 577 million m³. Industrial use was down 1.8% from the previous year to 4,059 million m³ due to a decline in operations at customers' facilities. Sales to other gas companies were down 1.0% to 469 million m³.

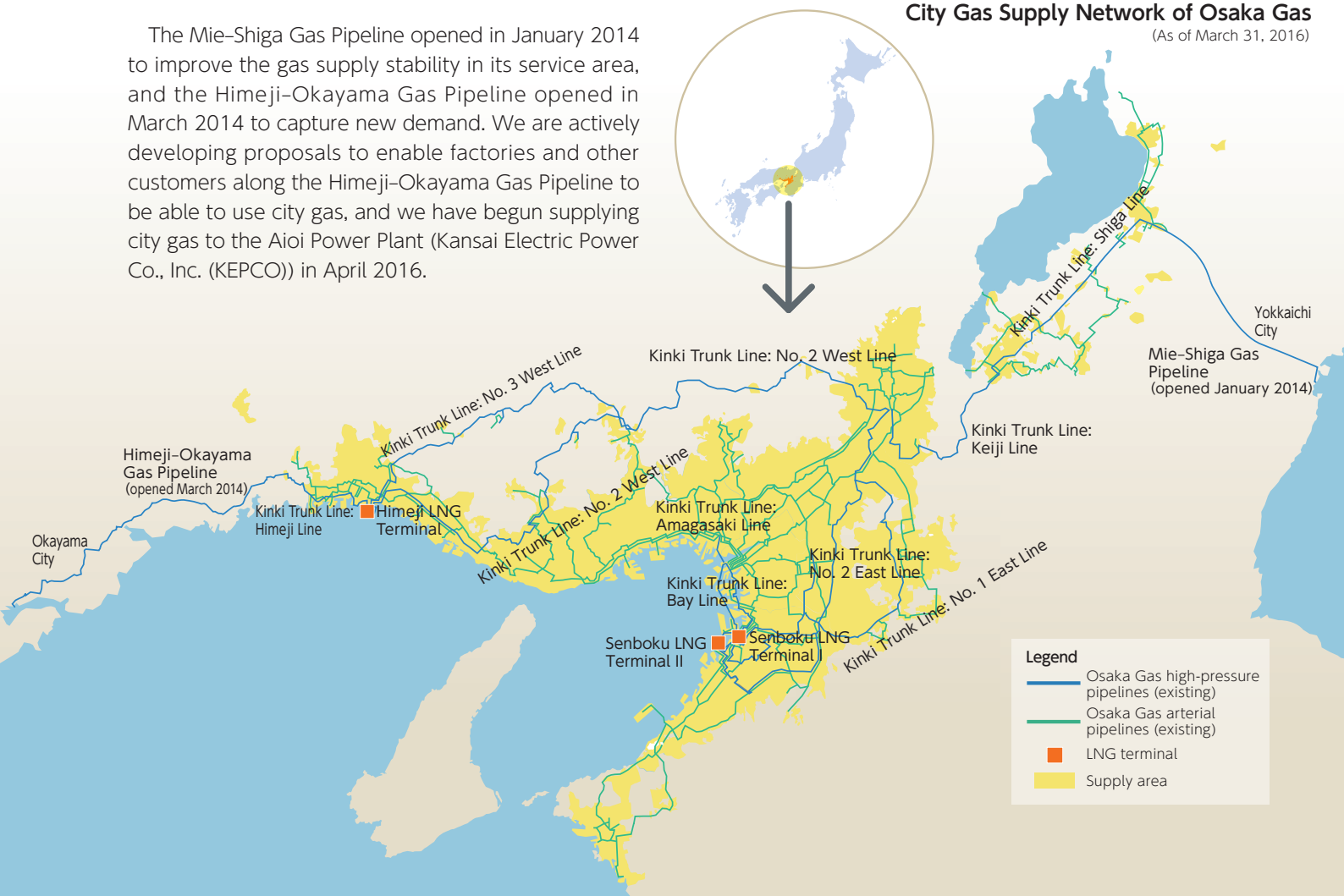
Gas Sales Volume by Use (Non-Consolidated) (million m³)
(2016.3)



Pipeline Expansion and New Demand Development

The Mie–Shiga Gas Pipeline opened in January 2014 to improve the gas supply stability in its service area, and the Himeji–Okayama Gas Pipeline opened in March 2014 to capture new demand. We are actively developing proposals to enable factories and other customers along the Himeji–Okayama Gas Pipeline to be able to use city gas, and we have begun supplying city gas to the Aioi Power Plant (Kansai Electric Power Co., Inc. (KEPCO)) in April 2016.

City Gas Supply Network of Osaka Gas
(As of March 31, 2016)



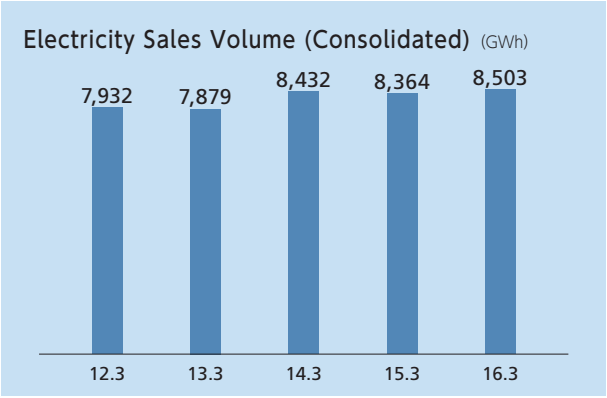
Electric Power Business

Business Overview and Characteristics

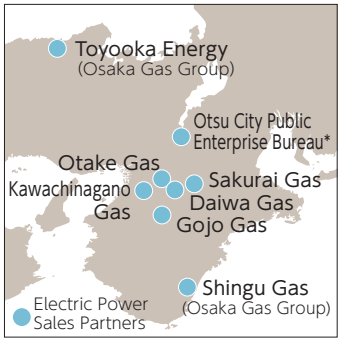
The electric power business is mainly conducted across two business domains: power generation and electricity sales (wholesale and retail). The electric power business is growing into a second core business after city gas. In its power generation activities, the Group relies heavily on the use of natural gas-fired thermal power plants. At the same time, we are actively involved in renewable energy operations encompassing a wide range of areas including wind and solar power generation. In the electric power wholesale business, we engage in wholesaling to electric power companies and the Japan Electric Power Exchange (JEPX). In the electric power retail business, we are engaged in retail sales through ENNET Corporation, a joint venture between Osaka Gas and other companies. In addition, we began handling some of our own retail sales starting in April 2016.

We have created a well-balanced mix of wholesale and retail sales, and are developing the optimal electric power sales portfolio.

The total power generation capacity of our domestic power sources currently amounts to approximately 1.8 GW, with our flagship power plant being the Senboku Natural Gas Power Plant, which has a capacity of approximately 1.1 GW. Combining our domestic capacity with our overseas capacity, Osaka Gas boasts a total power generation capacity of approximately 2.9 GW. Including power sources currently under construction brings this figure to 3.2 GW. We are currently looking to double our capacity to 6.0 GW by the 2020s.



Electric power sales in partnership with energy suppliers



* The Otsu Gas Service Center serves as our representative agent in the City of Otsu.

Hirogawa Myojin-yama Wind Power Plant (Wakayama Prefecture)

Overview of the Fiscal Year under Review

In the fiscal year ended March 31, 2016, the Osaka Gas Group's electric power sales volume rose 2% year on year to 8,503 GWh. We are continuing to provide a stable supply of electric power and are promoting the further expansion of our electric power business.

Efforts to Expand the Electric Power Business

Leveraging the full deregulation of the retail electricity market in April 2016, we have begun offering our own retail sales of electric power and plan to secure 200,000 contracts by the end of the fiscal year ending March 31, 2017. Our goal is to have 700,000 contracts by the end of the fiscal year ending March 31, 2021. We are partnering with eight companies in the Kansai region on electric power sales.

To expand its electric power business, the Osaka Gas Group is working to develop power sources nationwide. In addition to our natural gas-fired power plants, which play a central role among our power sources, we are working on coal-fired power generation and renewable energies as well. By establishing the optimal energy portfolio, we will be able to reliably meet the diversifying demands of our customers.

Initiatives Aimed at Expanding the Use of Renewable Energy

The Osaka Gas Group is actively engaged in solar and wind power generation projects in Japan and overseas and is promoting the widespread use of environmentally friendly energies to help bring about a low-carbon society.

The Osaka Gas Group maintains five wind power generation installations in the prefectures of Wakayama, Kochi, Yamaguchi, and Saga, and six solar power generation plants in the prefectures of Osaka, Wakayama, Okayama, Mie, and Oita.

In December 2015, we began construction of a wind power generation plant with a power generating capacity of 26 MW in Inamicho, Hidaka-gun, Wakayama Prefecture (operations scheduled to start in June 2018).

Expanding Electric Power Business Nationwide

Power Source Development

Adjacent to the Nakayama Nagoya Joint Power Generation Plant currently in operation, a coal-fired power station is now under construction. This power station partially uses biomass fuel to generate power, thereby reducing the environmental load.

In March 2015, we established Yamaguchi-Ube Power Generation Co., Ltd. as a joint venture with The Electric Power Development Co., Ltd. and Ube Industries, Ltd. to review and prepare to set up a coal-fired power plant in the Nishiokinoyama district of Ube, Yamaguchi Prefecture.

In April 2016, we established Himeji Natural Gas Power Generation Co., Ltd. as a joint venture with Idemitsu Kosan Co., Ltd. to review and prepare to set up a natural gas-fired power plant in Himeji City, Hyogo Prefecture.

Nagoya Ⅱ Power Plant (under construction), Nakayama Nagoya Joint Power Generation
Generation capacity: 110 MW / Generation facilities: sub-critical pressure boiler (coal/wood biomass) / Start of operations: FY2017

Yamaguchi-Ube Power Generation
Generation capacity: 1.2 GW (planned) / Generation facilities: ultra supercritical pressure boiler (coal) / Start of operations: early 2020s (planned)

Himeji Natural Gas Power Generation
Generation capacity: 1.8 GW (planned) / Generation facilities: combined cycle / Start of operations: early 2020s (planned)

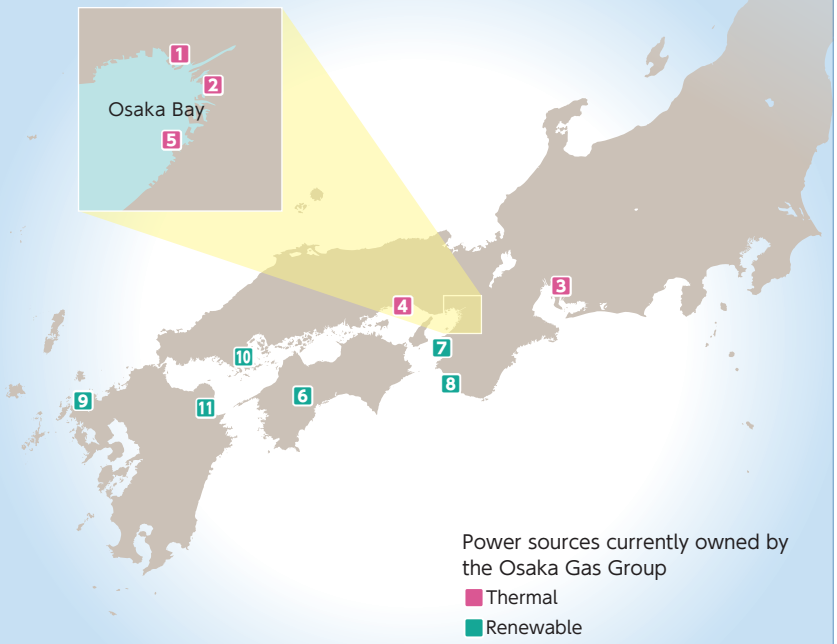
Power Sources Owned by the Osaka Gas Group

(As of May 31, 2016)

Domestic power plant	Capacity
1 Torishima Energy Center (natural gas), Gas & Power	150 MW
2 Funamachi Power Plant (natural gas), Nakayama Joint Power Generation	149 MW
3 Nagoya Power Plant (coal/wood biomass), Nakayama Nagoya Joint Power Generation	149 MW
4 Himeji Power Plant (natural gas)	55 MW
5 Senboku Natural Gas Power Plant (natural gas)	1,109 MW
6 Hayama Wind Farm Power Plant (renewable energy), Hayama Wind Farm Power Plant	20 MW
7 Hirogawa Myojin-yama Wind Power Plant (renewable energy), Hirogawa Myojin-yama Wind Power Plant	16 MW
8 Yura Wind Power Plant (renewable energy), Yura Wind Power Generation	10 MW
9 Hizen Wind Power Plant (renewable energy), Hizen Wind Power Generation	30 MW
10 Hirao Wind Power Plant (renewable energy), Hirao Wind Power Generation	9 MW
11 Nissan Green Energy Farm in Oita (renewable energy), Nikki Mirai Solar Plant	27 MW
Others	116 MW
Total	**1,840 MW**
	Company share of capacity: 1,812 MW

In addition to the above, the Osaka Gas Group owns stakes totaling 1,100 MW in power sources outside of Japan.
Data in parentheses indicate the fuel used for power generation.

Power Facilities of the Osaka Gas Group



Residential Gas and Electricity Sales

Business Overview and Characteristics

In the residential sector, we provide homes with a stable and safe supply of gas and also sell various gas appliances with the aim of encouraging increased gas usage.

Following the full deregulation of the retail electricity markets in April 2016, we began supplying electric power to residential customers.

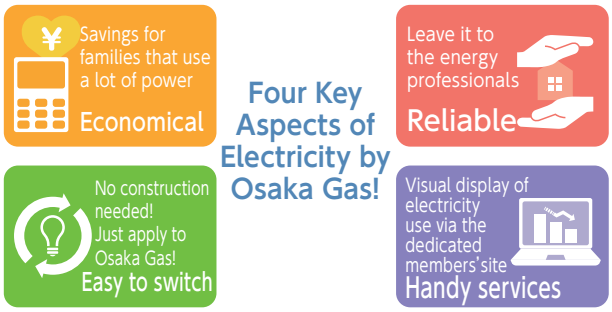
We are taking steps to help create a low-carbon society through the efficient use of energy. By improving energy security through the increased usage of distributed power generation systems, we are working to expand gas demand. Furthermore, as an integrated energy supplier, we are helping our customers live more comfortably and are contributing to their business development.

Initiatives Aimed at Residential Electricity Sales

Following the full deregulation of the retail electricity markets in April 2016, we also began supplying electric power to residential customers. Leveraging the relationships we had built with our customers through our business thus far, which is well embedded in the local community, we have been marketing "Electricity by Osaka Gas." As of the end of June 2016, we already received about 150,000 contract applications.*1

Our electricity rates offer savings for families that use a lot of electricity. A combination contract that includes city gas from Osaka Gas offers up to 5% savings on a two-year contract.*2,3,4

We will continue striving to bolster our rate plans and services to meet the needs of our customers.



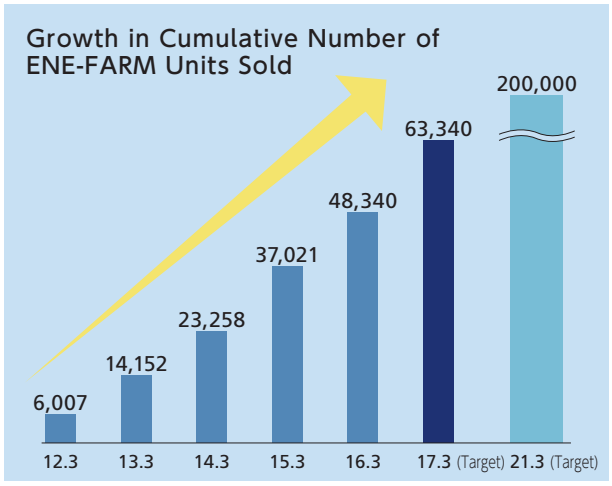
*1 No. of low-voltage electricity supply contracts
*2 Comparison based on KEPCO meter rate lighting A electricity rates (price as of January 2016), excluding renewable energy surcharges and fuel cost adjustment amounts
*3 Applies to base plan A (equivalent to KEPCO meter rate lighting A)
*4 Discount rates are as of July 8, 2016

Initiatives Aimed at Promoting Installation of Residential Fuel Cell Cogeneration System "ENE-FARM"

ENE-FARM is a fuel cell cogeneration system for residential use that generates energy by initiating a reaction between hydrogen extracted from city gas and oxygen in the air. In addition to further expanding the use of natural gas, it can help save energy and achieve CO_2 emission reductions, improve energy security, which is an increasingly pressing need for society, and cut peak electricity.

In April 2016, we began marketing a new product, ENE-FARM type S, which achieves the world's highest*1 power generation efficiency*2 of 52% and the world's smallest size.*3 In conjunction with the full deregulation of the retail electricity markets, we were the first in Japan to implement purchases of (surplus) electricity that was generated using fuel cells but not used in customers' homes.*4 This allows for the further reduction of customer utility expenditures as well as CO_2 emissions.

Since we first launched sales of ENE-FARM in 2009, the product has been adopted by many residential customers, and in May 2016, we reached a cumulative total of 50,000 units sold. We hope to increase the total sales to 200,000 units by the fiscal year ending March 31, 2021.



*1 World's highest power generation efficiency using a household fuel cell with a rated power output of 1 kW or less (Source: Osaka Gas, as of February 24, 2016)
*2 Calculated using the lower heating value; the power generation efficiency for the LP gas model is 51%
*3 World's smallest solid oxide fuel cell (including waste heat management system) for residential use (Source: Osaka Gas, as of February 24, 2016)
*4 First in Japan in the business of purchasing electricity generated by residential fuel cells through the electric power system (Source: Osaka Gas, as of February 24, 2016). Applicable targets from whom surplus electricity is purchased are customers who are using the new product (192-AS05 and 192-AS06 models) and have gas usage contracts with Osaka Gas.

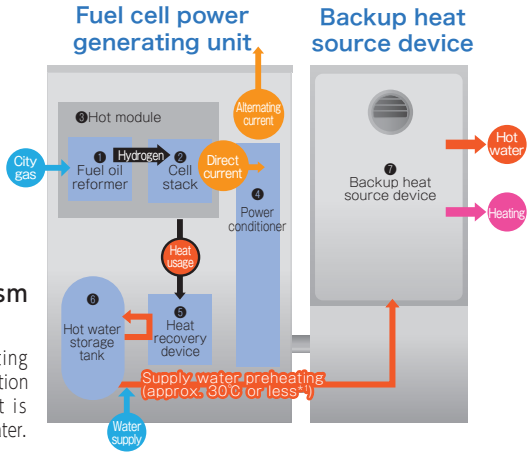
In the future, we will strive to see ENE-FARM come into more widespread use and will work to further develop the relevant technologies and reduce costs. As an integrated energy supplier, we are helping our customers live more comfortable lifestyles, while reducing the burden on the environment, and improving energy security.

New Product, ENE-FARM type S

- ○Achieves the highest power generation efficiency in the world at 52%
- ○Smallest in the world, requiring only 1.4 m² for installation
  (Only when installed in a detached residence. Can only be installed in multi-unit residential buildings at the time of initial construction.)
- ○Purchases of surplus electricity have begun

Power Generating Mechanism of the ENE-FARM type S

The system generates power by extracting hydrogen from city gas and initiating a reaction with oxygen in the air. The heat that is generated by this process is used to heat water.



"Sumikata Services" (Home Services) Strengthen Relationships with Customers

We launched our "Sumikata Services" (Home Services) in May 2016 as a new service offering that will strengthen our relationships with our customers. Leveraging our strength in having close ties to our communities, this new service offers optimal residential approaches that best suit our customers' lifestyles, providing a form of residential support.

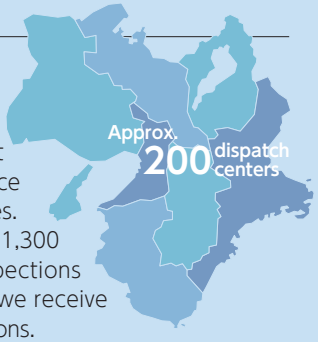
Osaka Gas and its service chain partners have spent more than 50 years working as members of their communities in offering local residents gas appliance sales, maintenance services, and renovation proposals.

Using the results and know-how developed thus far by Osaka Gas and service chain partners, we are further improving our service levels and starting to offer new types of services based on a new concept of "residential support."

In addition to advancing the conventional services already available, we are expanding our lineup by gradually developing and adding new services.

It is through such services that we are aiming to strengthen our relationships with our customers and to continue being our customers' number one choice for energy.

Service Chain Partners



There are about 200 service chain partners in our service area, and they develop activities that are grounded in their local communities so that they can be helpful to customers in many different ways. In addition to offering services on our behalf (opening and closing gas valves, gas appliance maintenance), they also make gas appliance recommendations and propose upgrade opportunities.

Our gas appliance maintenance services have gained the high regard of our custumers. About 1,300 certified maintenance specialists conduct more than 500,000 gas appliance repairs and inspections annually. Inquiries received by 3:00 pm are handled with same-day service calls. Furthermore, we receive 14,000 renovations inquiries annually, and have performed a cumulative total of 270,000 renovations.

About Our "Sumikata Services" (Home Services)

住ミカタ サービス
もっと、住まいのミカタに。
Home Services

Safe, Reliable Support

We offer our customers "just-in-case" support by combining the various functions of our extended warranty services on gas appliances and other residential equipment, known as our RAKU-TOKU Warranty Service, with our disaster prevention services and crime prevention services.

Maintenance Services

We will bolster our gas appliance repair services with plumbing and air conditioning repair services, offering prompt service appointments and robust technological capabilities that take advantage of the local integration of our service bases. We want to be a one-stop shop for customers, whatever their problems.

Renovation

Our upgrade services utilize our knowledge of energy conservation and our maintenance capabilities on home equipment, including gas appliances. We present custom upgrade plans that combine gas and electrical appliances, home equipment, and construction materials that allow customers to save energy while living in safety and comfort.

Commercial and Industrial Gas and Electricity Sales

Business Overview and Characteristics

In the commercial and industrial sectors including public and medical institutions, Osaka Gas supplies gas to its customers for such wide-ranging applications as gas cogeneration systems and gas air conditioning systems. Harnessing its engineering capabilities, where the Company's strengths lie, Osaka Gas strives to enhance the efficiency of customers' gas usage by developing custom burners and proposing business solutions tailored to the specific needs of each customer.

The deregulation of the retail electricity market, which has been gradually moving forward since the 1990s, was fully achieved in FY2016.

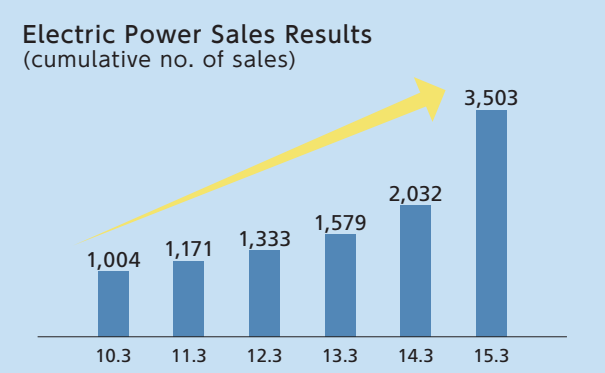
At Osaka Gas, we aim to continue selling electric power to an ever wider range of customers.

Initiatives in Commercial and Industrial Electric Power Sales

Osaka Gas, through the retail agents of its affiliated company ENNET Corporation,*1 has been engaged in electricity sales activities in the special high voltage and high voltage fields that have already been deregulated for more than 15 years. Thus far, through ENNET, we have sold electricity to more than 3,000 customers.

In April 2016, we began selling and supplying electricity directly to low-voltage customers, such as eating and drinking establishments and dry cleaners.

*1 ENNET Corporation is a joint venture established by three companies: NTT Facilities, Tokyo Gas, and Osaka Gas. It entered the retail electricity business in 2000.



*1 Sales performance of ENNET retail agents

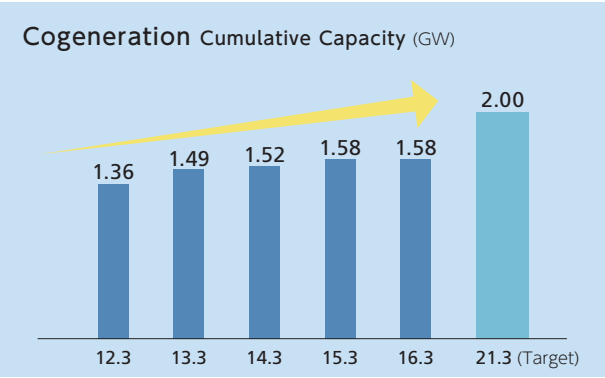
Expanded Use of Gas Cogeneration Systems and Air Conditioning Systems

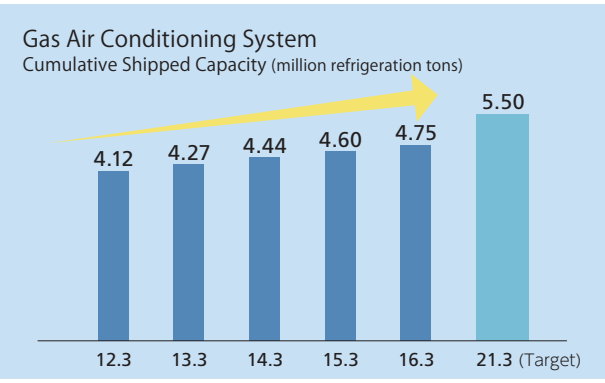
We are continuing to propose cogeneration systems and gas air conditioning systems that help reduce peak electricity consumption and promote energy conservation.

The cumulative capacity of gas cogeneration systems sold stood at 1.58 GW as of March 31, 2016 and we are striving to expand this to 2 GW for the fiscal year ending March 31, 2021.

With robust sales of gas air conditioning systems including gas heat pumps and natural chillers (gas absorption water heater-coolers), cumulative capacity sold stands at 4.75 million refrigeration tons (RT) as of March 31, 2016. Osaka Gas is looking to reach a cumulative total of 5.5 million RT in the fiscal year ending March 31, 2021.

Gas cogeneration system





Solutions That Strengthen Relationships with Customers

To encourage the use of energy through optimal systems, we provide an integrated series of services that includes everything from energy diagnoses and facility improvement proposals to the procurement of necessary equipment, technology and product development, and maintenance and management services. We want to be a one-stop shop for solving all our customers' energy needs.

We are also offering several ICT services, such as "HelloOG!" which offers gas and electricity usage, rate, and other helpful information for free via a customers-only website. "ekul" meanwhile, measures gas and electricity usage in real time, and notifies customers of excessive usage or wastefulness.

It is through such services and the provision of optimal energy solutions that we are aiming to strengthen our relationships with customers and to continue being their number one choice for energy.

No Initial Cost Services

From the time our equipment is installed, we offer a complete service package that includes operation, maintenance, and management. We can devise plans to help customers save energy and reduce costs by introducing cogeneration or gas air conditioning equipment, without requiring customers to make any initial investment.

ICT Services

We offer ICT services that can meet customers' needs for energy-saving, cost-saving, and labor-saving solutions, as well as visual depictions of their energy consumption landscape. We offer customers optimal solutions using a wide variety of data.

HelloOG! Eneflex エネフレックス

EcoWave エコ・ウェーブ　イイ!Gパック easy pack　ekul イークル　スカイリモート SKY REMOTE SERVICE

ekul

The "ekul" service measures and immediately provides gas and electricity usage information in real time. It can also measure various data, including water usage, number of customers, temperature, and humidity.

Delivering Solutions for the Industrial Market

We began developing burners for industrial furnaces in the 1950s and 1960s, and have developed a vast range of burners at our experimental facility.

With our unique engineering expertise, we supply optimal solutions that boost customer satisfaction and help develop further demand.

Energy Diagnoses and Facility Improvement Proposals

Using cutting-edge measurement technologies and our specialized know-how, we perform thorough surveys of customers' equipment. We then propose optimal gas systems that can save energy and improve product quality.

Technology and Equipment Development Using Unique Engineering Strengths

Osaka Gas develops technologies and equipment for the systems we propose. We reproduce the customer's furnace at our experimental facility and conduct repeated testing and analyses to meet the needs of the customer.

Boost Customer Satisfaction

Develop Demand

Maintenance

We employ information technologies to provide fast and detailed service. We handle troubleshooting and also propose facility improvements to save energy and improve the quality of products.

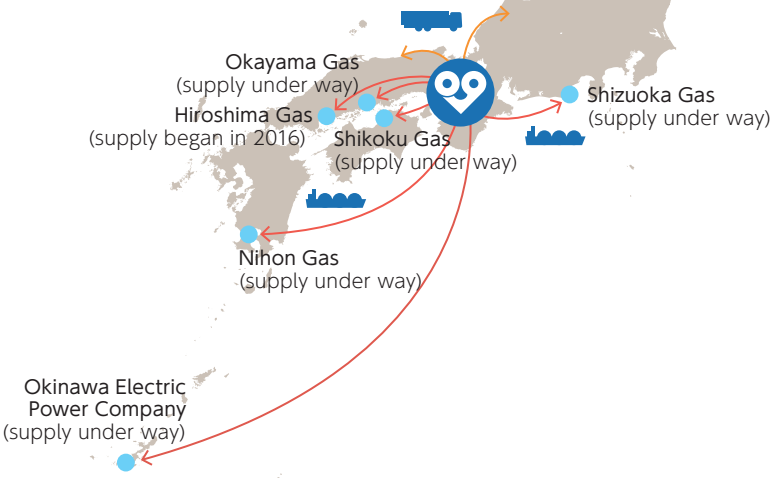
Engineering Solutions, Fuel Conversion

We offer systems to meet the specific needs of each customer. When installing, we strive to shorten the construction period to minimize impact on the customer's production activities. We conduct fuel conversion and install new gas equipment.

Broad-Area Energy Business

Business Overview and Characteristics

In addition to supplying city gas to customers within its service area, the Osaka Gas Group sells a portion of the LNG it procures to large-scale customers outside of the Kansai region and to other utilities, transporting the gas by tanker truck or ship. In addition to ongoing LNG supply using large-scale LNG carriers to Okinawa Electric Power Company, Inc. and Shizuoka Gas Co., Ltd., in 2016, we began supplying to Hiroshima Gas Co., Ltd. Going forward, we will expand the volume of LNG we handle to enhance competitiveness from a resource procurement standpoint, and will continue to provide energy solutions that address the needs of customers while pursuing alliances with regional utilities.



LNG satellite station

LPG Business and Industrial Gas Business

Business Overview and Characteristics

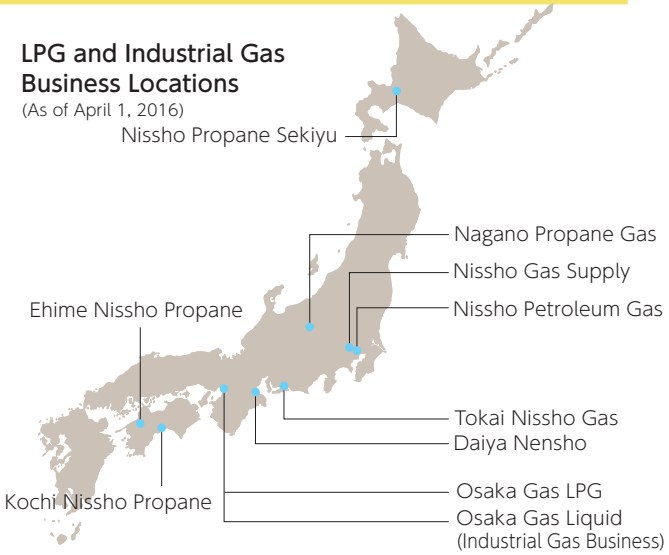
The Osaka Gas Group's LPG business mainly serves customers outside its city gas service area by providing retail and wholesale supplies of LPG. The Group takes full advantage of its city gas operating know-how as well as its nationwide sales network to enhance competitiveness in its LPG business. At the same time, the Group is working to provide multi-energy services that combine city gas and electricity for a wide range of applications from residential to industrial use.

Moreover, in the industrial gas business, the Group utilizes cryogenic technologies to engage in such businesses as air separation as well as the manufacture and sale of liquefied carbon dioxide and dry ice. We are also expanding our business using proprietary low-temperature crushing technologies.

LPG business

Industrial gas business
(low-temperature crushing technologies)

LPG and Industrial Gas Business Locations
(As of April 1, 2016)



Energy Resource Procurement and Trading

Business Overview and Characteristics

The city gas supplied by the Osaka Gas Group to customers is produced from LNG, which is imported entirely from overseas. Taking into consideration growing global demand, the Group's ability to secure stable and competitive supplies of LNG is a critical issue for business management.

Under these circumstances, the Osaka Gas Group is making every effort to lower the procurement cost of energy resources by diversifying its suppliers and procuring new natural gas resources, including shale gas, as well as diversifying the terms and conditions of contracts, including its LNG pricing mechanisms.

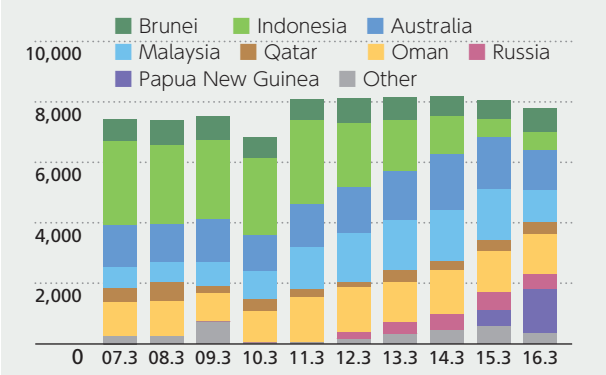
Diversifying Sources of Supply

Currently, the Osaka Gas Group procures supplies of LNG under long-term agreements concluded with producers from the eight countries of Brunei, Indonesia, Malaysia, Australia, Qatar, Oman, Russia, and Papua New Guinea.

Looking further into the future, we are pursuing opportunities to source supplies from the USA.*

* Please refer to "Status of Main Upstream Investments" on page 34.

LNG Purchase Volume (thousand tons)



Status of Energy Resource Procurement

Use of Osaka Gas Group LNG Carrier Fleet

In order to further stabilize the procurement of energy resources while reducing the costs of transportation, as well as expand trading in LNG, the Osaka Gas Group is building a fleet of LNG carriers. Its seventh carrier entered service in 2014. This carrier is a new model that incorporates an innovative steam turbine engine, and is expected to cut fuel costs compared to existing vessels. Thus reducing emissions of CO_2 and sulfur oxides (SO_x), our new carriers will help in addressing environmental concerns.

Venus, the 7th Osaka Gas carrier

Diversifying the Terms and Conditions of Agreements

There is an established system in Japan wherein LNG procurement prices are generally linked to the price of crude oil. For this reason, when crude oil prices rise, the price of LNG in Japan also rises, creating a situation which easily leads to a price discrepancy between Japan and the West.

The Osaka Gas Group is striving to establish new pricing mechanisms in LNG procurement. As one example, the Group has introduced pricing mechanisms indexed to Henry Hub* prices instead of crude oil prices for procurement from the USA. By diversifying pricing mechanisms in agreements, we are working to stabilize and reduce the price of LNG.

* The name given to an index widely used as a reference for natural gas prices in the USA.