

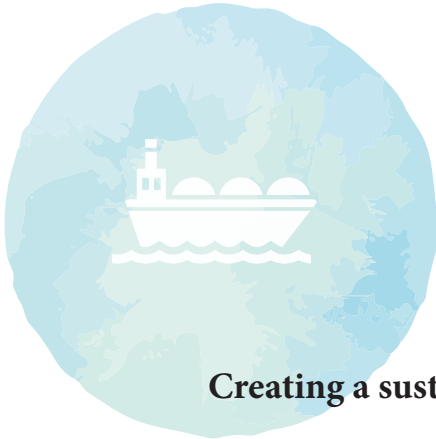


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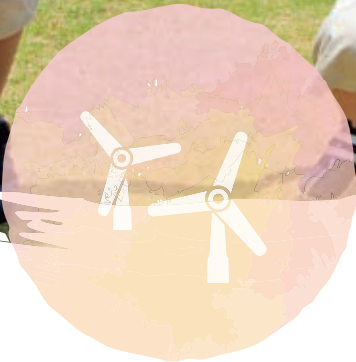
広島ガス

Hiroshima Gas CSR Report 2020

Digest



Creating a sustainable society with our hands...



Flow of delivering natural gas to our customers

City gas supply flowchart

Raw material procurement and transport

City gas production

Natural gas is extracted overseas, cooled to approximately -160°C , liquefied, and then imported as LNG (liquefied natural gas).



Russia, Prigorodnoye facilities

[Natural gas extraction]

[LNG transport ship]



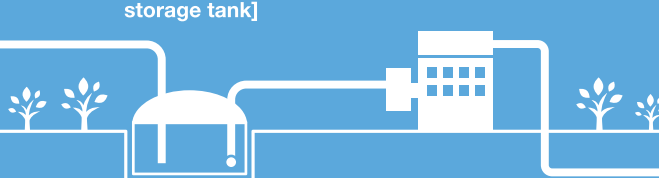
LNG is placed into storage tanks and vaporized according to demand. It then undergoes calorific value adjustment and is supplied as city gas.



Hatsukaichi LNG terminal

[In-pit method LNG storage tank]

[LNG vaporizer]



Supply area and organization

(As of March 31, 2020)

Supply area (7 cities and 4 towns within Hiroshima prefecture)

Hiroshima, Kure, Onomichi, Mihara, Hatsukaichi, Higashi-hiroshima, Fukuyama, Aki-gun Kaita-cho / Saka-cho / Fuchu-cho / Kumano-cho

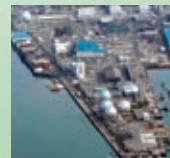
Number of customers
414,000

Hiroshima district

Number of customers
350,000



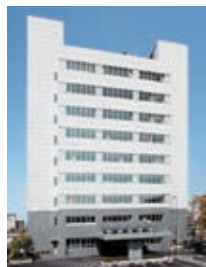
Kabe facilities



Kaita facilities



Higashi-hiroshima plant



Head office



Hatsukaichi LNG terminal

Kure district

Number of customers
47,000



Kure branch



Kumano facilities

Hiroshima Gas makes sure its energy supply system is stable and secure so that all of its customers can always use natural gas in a safe manner.

City gas supply

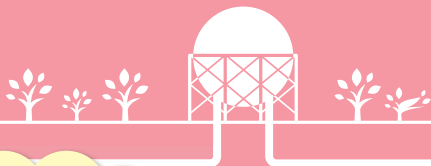
Delivery to customers

Gas is supplied to customers through 5,203km of underground piping (supply and service pipelines).



Gas pipe bridges

[Gas holder]



The gas that we supply can be used in a variety of applications.



Factories, etc.



Hotels, buildings, schools, etc.



Kitchens, hot water supply, etc.

[Industrial use]

[Commercial use]

[Residential use]



Natural gas is an environmentally friendly type of energy!



Hiroshima prefecture



Bingo plant

Wholesale supply (Hiroshima Gas)

Wholesale supply utilizing equipment from Setouchi Pipeline Co., Ltd., a consolidated subsidiary



Mizushima station (Setouchi Pipeline Co., Ltd.)



Mizushima LNG terminal (Mizushima LNG Co., Ltd.)

Okayama prefecture

Mizushima station
Mizushima LNG terminal

Fukuyama Gas Co., Ltd.

Energy plays an important part in every part of our lives.



Bingo plant

Onomichi branch

Onomichi/Mihara district

Number of customers

17,000



Onomichi branch

Legend

Supply area (Hiroshima district)		Gas holder	
Supply area (Kure district)		Gas production plant	
Supply area (Onomichi/Mihara district)		Head office/Branch/Facilities	
Pipeline (Hiroshima Gas)		Proposed pipeline	
		Pipeline (Setouchi Pipeline)	

Hiroshima Gas Group 2030 Vision

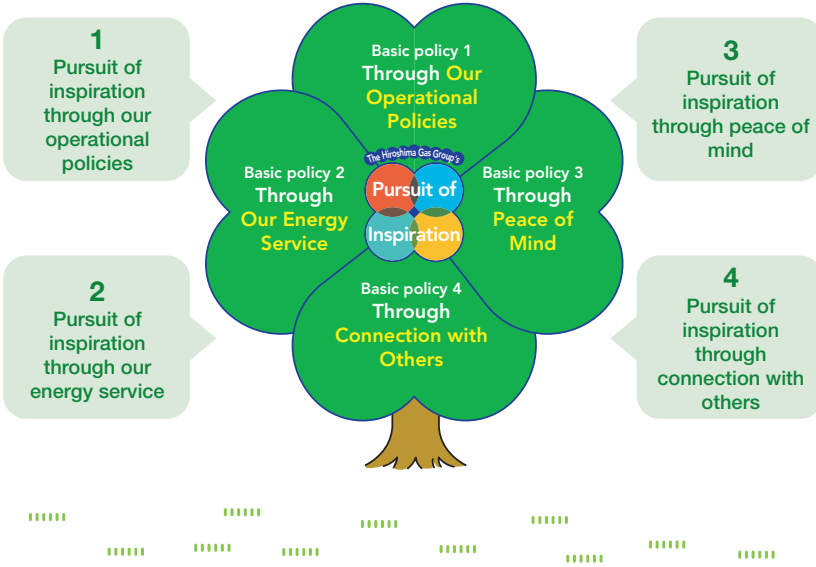
1 Slogan for Hiroshima Gas Group 2030 Vision

Sending moving messages that make us happy

Three Basic Values Our Slogan Represents

- 1 The Hiroshima Gas Group grows with the community
- 2 Energy that truly benefits communities
- 3 To pursue inspiration and send moving messages that we can share with the entire community

2 Basic Policies for 2030 Vision

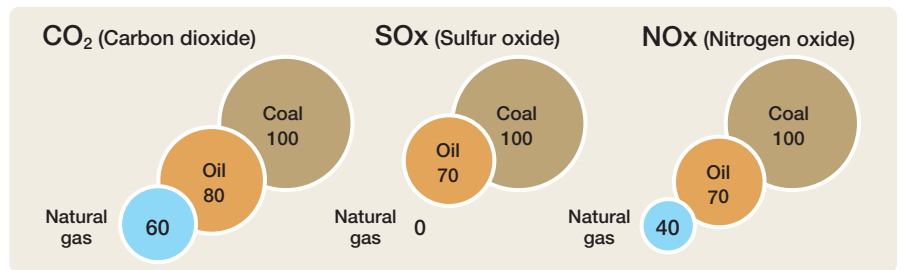


3 Basic Strategies for 2030 Vision

- Challenge 1** Through expansion of our total energy business, we'll support the vitality of our community.
- Challenge 2** We'll develop businesses that contribute to the environment, and we'll conduct research on next-generation energy technologies.
- Challenge 3** By making the most of digital technologies, we'll create high added values that are useful for society and our way of life.
- Challenge 4** We'll become a professional group that will develop human resource and add strength to the community.
- Challenge 5** Setting "always safe and worry-free" as our goal, we'll look for "what other things can we do," find them, and execute them.
- Challenge 6** We'll help local residents create their "ideal town."

Characteristics of natural gas

Natural gas is a type of fossil fuel that was created when ancient flora and fauna were buried underground for many thousands of years. It is mainly composed of methane which contains only a small amount of carbon. This means that it is a relatively clean form of energy that emits only a small amount of CO₂ or other pollutants during combustion. Unlike oil, which is mainly concentrated in the Middle East, natural gas is distributed all around the world and has excellent supply stability.



Source: "Energy White Paper 2013", Agency for Natural Resources and Energy

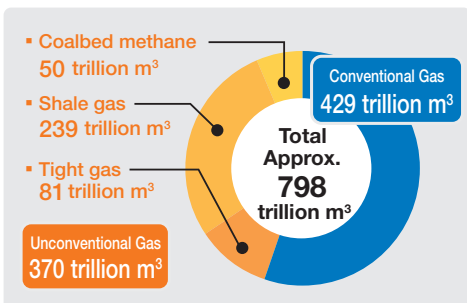
Supply stability

Natural gas is abundant around the world. Hiroshima Gas imports LNG (liquefied natural gas) extracted, refined, and liquefied in areas such as Sakhalin (Russia) and Malaysia, and receives it at our Hatsukaichi LNG terminal.

With the improvement of mining technology in recent years, unconventional natural gas sources that have traditionally been difficult to extract such as shale gas, coalbed methane, and tight gas can now be produced, with imports of shale gas produced in the USA to Japan having started in 2017.

In addition, there are methane hydrate deposits in the coastal waters of Japan equivalent to around 100 years worth of Japan's annual consumption amount. Government-led initiatives for development of these resources are currently being carried out.

Technically Recoverable Natural Gas Reserves



Source: IEA World Energy Outlook 2018

Composition of City Gas (Hiroshima Gas)

Hiroshima Gas uses liquefied natural gas to produce city gas which is delivered to customers through the gas piping network. We use non-poisonous colorless odorless methane gas which has been factory-odorized as our main gas.

[Characteristics of city gas] Composition and content (Natural gas supply area)

Components		Composition		
Name	Chemical formula	% (By volume)	Gas type	13A
Methane	CH ₄	91	Standard calorific value	45MJ/m ³ (10,750 kcal/m ³)
Ethane	C ₂ H ₆	5	Specific gravity (Air = 1)	0.639 (Lighter than air)
Propane	C ₃ H ₈	2	CO ₂ emission coefficient	2.29kg-CO ₂ /m ³ (60% of coal)
Butane	C ₄ H ₁₀	2		

Note: Gas composition shows a representative value.

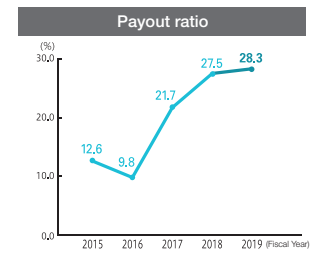
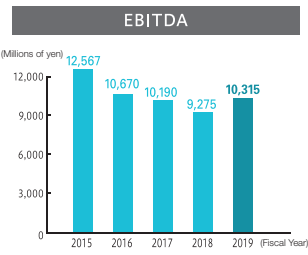
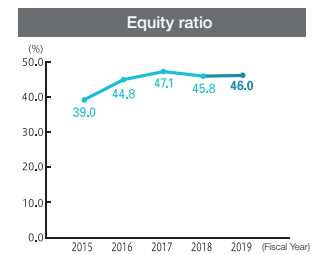
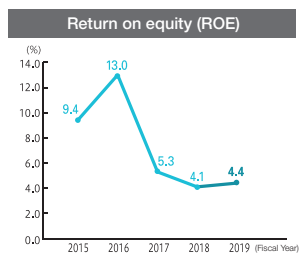
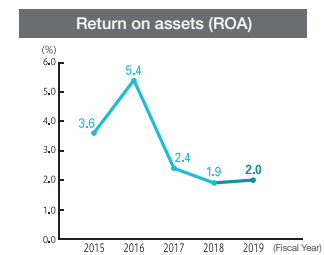
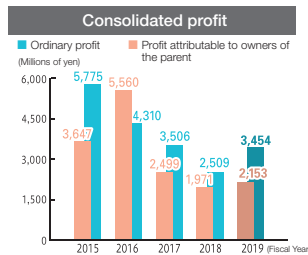
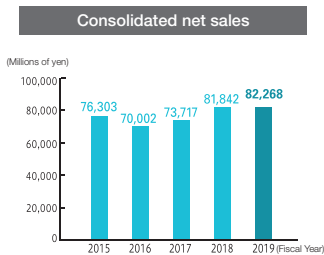
A comprehensive system has been put into place to ensure that gas is used in a safe and secure manner.



Company performance information

Third consecutive year of increase in revenue and first increase in ordinary profit in four years.

Due to an increase in gas sales of wholesale supply and other types, consolidated net sales in FY2019 totaled 82,268 million yen for an increase in revenue of 425 million yen (0.5%) when compared with the previous fiscal year. In regard to profits, ordinary profit was 3,454 million yen, an increase of 945 million yen (37.7%) compared to the previous fiscal year, due to increased sales and similar factors. Profit attributable to owners of the parents was 2,153 million yen, an increase of 182 million yen (9.2%).



Business segment information

	Net sales	Segment profit
Gas business	65,946 (0.8%)	2,119 (56.1%)
LPG business	14,362 (4.9%)	343 (147.3%)
Other	4,501 (13.4%)	147 (24.9%)
Adjusted values	△2,543 (0.5%)	360 (54.2%)
Consolidated	82,268	2,971

Figures in parentheses indicate change from the previous fiscal year.
Note: As figures for each segment are rounded down to the nearest million yen, the total of the adjusted value and each segment may not match the consolidated total.

*Return on assets = $\frac{\text{Profit attributable to owners of the parent}}{\text{Average total assets}} \times 100$ (ROA)

*Return on equity = $\frac{\text{Profit attributable to owners of the parent}}{\text{Average equity capital}} \times 100$ (ROE)

*Equity ratio = $\frac{\text{Equity capital}}{\text{Total assets}} \times 100$
*EBITDA = Operating profit + Depreciation cost

Business activities

LNG procurement and production

Based on long-term contracts with Sakhalin (Russia), Osaka Gas Co., Ltd., and Malaysia, it is possible to source 400,000 tons of LNG per year. This is the raw material used to create city gas.

City gas is produced at the Hatsukaichi LNG terminal, the Bingo plant, and the Higashi-hiroshima plant. Liquefied natural gas reception and the entire gas production process at these locations are tightly controlled via the central control room.



LNG ship entering port for loading or unloading and our Hatsukaichi LNG terminal



Central control room

Supply and distribution plants

In order to reliably supply customers with city gas produced in our factory, the security command center constantly monitors the gas pressure and supply state. To ensure adequate response in an emergency situation, we have established a system that allows quick 24-hour response and dispatch even during night hours and holidays.



Gas piping work



Security command center

Business

We have established a system to allow more customers to safely and reliably use environmentally friendly natural gas.



Meeting with housebuilders



Safety inspection of gas equipment



Maintenance of an "Ene-Farm" household fuel cell

Yearly overview

Number of customers

(Unit: Individual customer locations)

Fiscal Year	Number of customers
FY2015	408,490
FY2016	409,881
FY2017	411,080
FY2018	412,574
FY2019	414,396

Gas sales volume

(Unit: Millions of cubic meters, 45 MJ)

Fiscal Year	Residential use	Commercial use	Industrial use	Other	Wholesale supply, etc.	Total
FY2015	100	43	242	36	60	483
FY2016	99	44	255	38	56	494
FY2017	104	45	271	38	58	519
FY2018	98	43	326	36	77	583
FY2019	97	43	313	35	106	596

Note: As sales volume figures are rounded down to the nearest million cubic meters, there may be small discrepancies in the grand total value.

Environment

Actively working toward an expanded and full use of environmentally-friendly natural gas

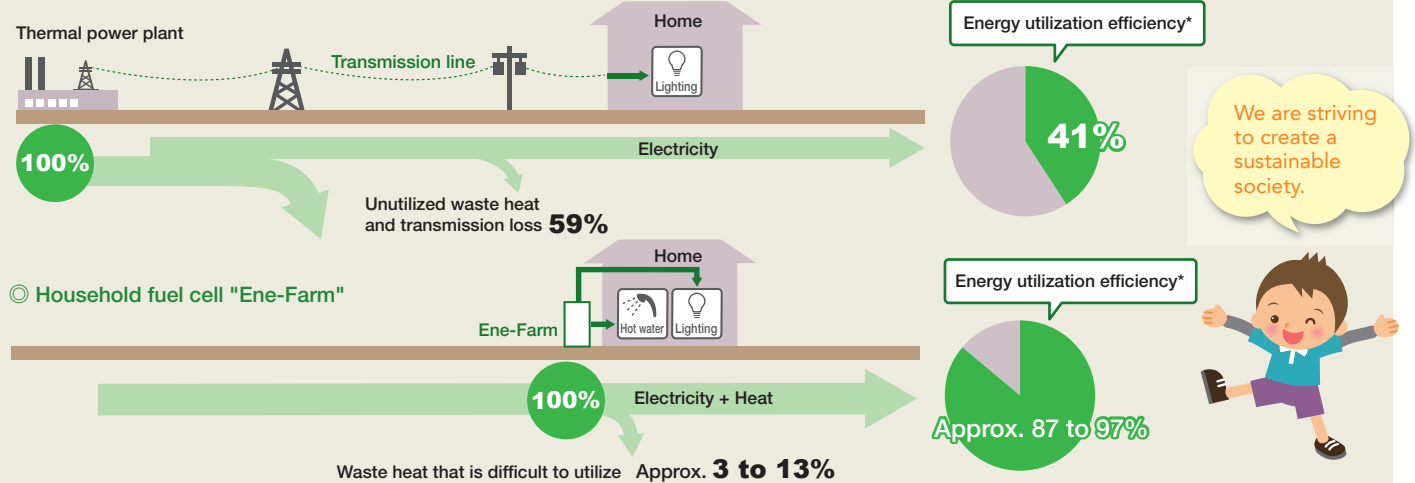
Promotion of high-efficiency natural gas applications

Rather than simply generating heat, natural gas can be used for a wide range of applications such as generating electricity (in gas cogeneration systems), cooling/heating, and powering natural gas vehicles.

Comparison of energy utilization efficiency

Most heat generated by power plants is discarded. Power transmission losses also occur during transmission to far away homes. Using our "Ene-Farm" household fuel cell (a household gas cogeneration system) allows users to create energy at the same location as where it is used. This reduces loss and enables effective use of waste heat. With an expected energy utilization efficiency of around 80 to 90%, it has superior energy savings and environmental friendliness.

Conventional power generation systems



* Based on LHV (Lower Heating Value: Calorific value not including latent heat of vaporization of water vapor generated during fuel combustion) criteria. Calculated using Ene-Farm manufacturer published values.

Source: The Japan Gas Association

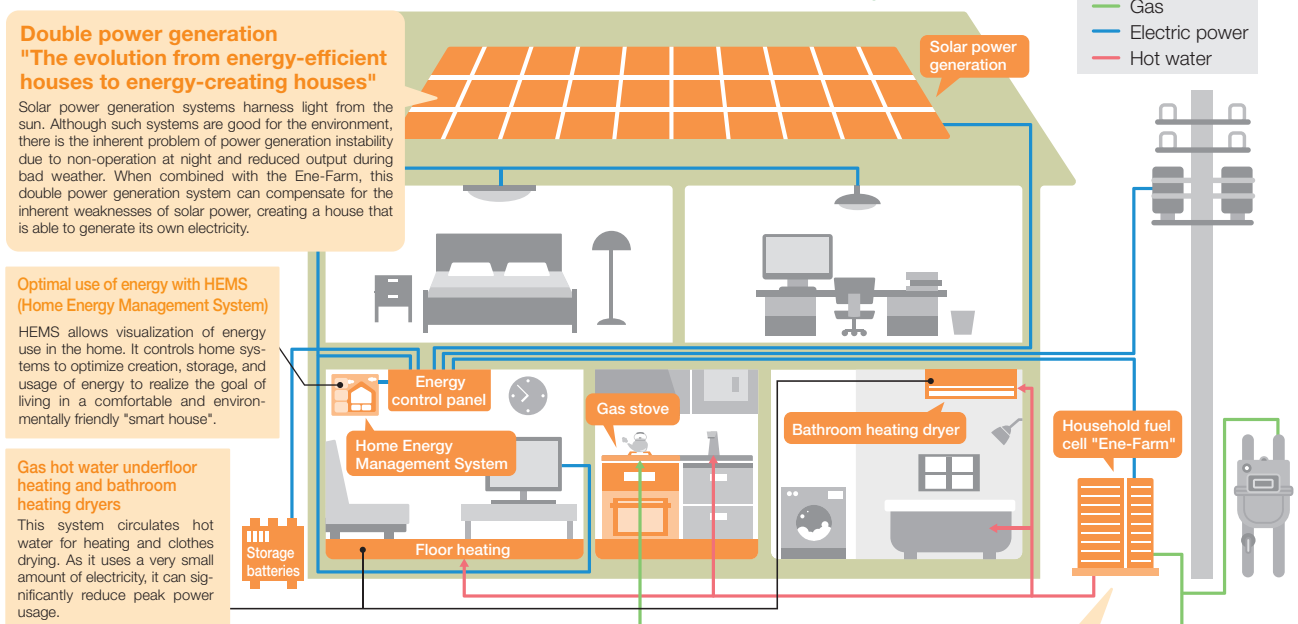
Residential use

While working to spread the use of natural gas, we are creating initiatives that can further conserve energy, reduce CO₂, and expand the use of ZEH* (net zero energy houses) to improve the standard of living for all people. These initiatives include promoting the full utilization of energy and using natural gas to compensate for fluctuations in the output of renewable energy sources such as solar power.

* ZEH: Home with an annual primary energy consumption balance of +/- zero.

The spread of highly efficient household equipment

Proposal for an environmentally friendly futuristic "Smart energy house"



High efficiency water heater "Eco-Jozu"
 (Cumulative sales of 55,341 units)
 (As of March 31, 2020)

This highly efficient water heater uses condensing technology to take advantage of previously unutilized waste heat in order to raise thermal efficiency from 80% to 95%.

High efficiency water heater "Eco-Jozu"

Household fuel cell "Ene-Farm"



Made by company "P" (Solid polymer type)



Made by company "A" (Polymer electrolyte type)

Household fuel cell "Ene-Farm"
 (Cumulative sales of 2,611 units)

(As of March 31, 2020)

An "Ene-Farm" is a device that reacts hydrogen extracted from sources such as natural gas with oxygen in the air to generate electricity. The heat from this chemical reaction is then utilized to make hot water. When compared with conventional water heating systems, this cutting-edge highly energy efficient power generation and water heating system can reduce annual CO₂ emissions in standard homes by around 1.2t to 2.3t.

▶ Industrial use

Around 50% of our natural gas sales at Hiroshima Gas are for industrial customers. The transition from petroleum-based fuel to natural gas enables a 25% reduction in CO₂ emissions.



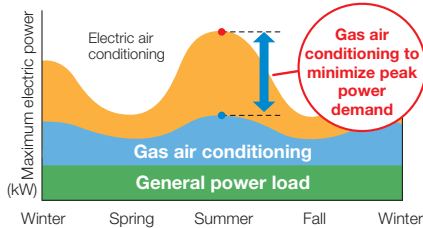
Gas industrial furnace

▶ Commercial use

● Promotion of gas heat pumps (GHP) and gas absorption chillers (natural chiller)

Gas heat pumps and gas absorption chillers for gas-powered air conditioning systems have a big impact in cutting summer and winter peak power demand.

[Leveling consumed power by GHP (Illustration)]



Gas heat pump (GHP)



Gas absorption chiller (Natural chiller)

Development of environmental technology (Hiroshima Gas Technical Research Institute)

● Development of energy-saving devices and systems

We have developed a power generation system that relies on differential gas pressure as an unused energy source. This system generates power by utilizing the expansion energy released when the city gas pressure drops. It requires no fuel, produces no CO₂ emissions, and has a simple structure that makes it suitable for small- and medium-sized gas providers as well as large customers.

The system is currently sold by Onsec Co., Ltd., our development partner in this project.



Power generation system based on differential gas pressure

Society We cherish the connections with our community

Relationship with local communities

▶ Educational support (Commitment to the next generation of education)

In order to help children have a better understanding of natural gas, we carry out educational activities regarding food education, fire education, energy / environmental education, disaster prevention education, and career education.



Hiroshima Gas disaster prevention classes

Next-generation educational programs

[Food education] Eco-cooking* classes, tasting classes

Note: "Eco-cooking" is a registered trademark of Tokyo Gas Co., Ltd.

[Fire education] Fire education classes

[Energy and environmental education]

Science shows, Technical Research Institute science experiment lessons

[Disaster prevention education]

Lifeline disaster prevention classes

[Career education]

Classes for building a future



We have all kinds of programs!



Next-generation educational programs pamphlet

▶ Promotion of arts, culture, community, and sport

Hiroshima Gas has a strong relationship rooted in the local area and conducts a wide range of social contribution activities.



● Holding the 33rd Hiroshima Symphony Orchestra Concert



Concert stage

Management philosophy

Striving to be a company trusted by the community

Based on our management philosophy that aims to create a company that is trusted by the local community, Hiroshima Gas wishes to continue carrying out business activities emphasizing on the stable supply of energy and ensuring the safety of all as our corporate social responsibility.



Hiroshima Gas Head Office Area

Head office address: 2-7-1, Minamimachi, Minami-ku, Hiroshima
TEL: 082-251-2151 (Switchboard)

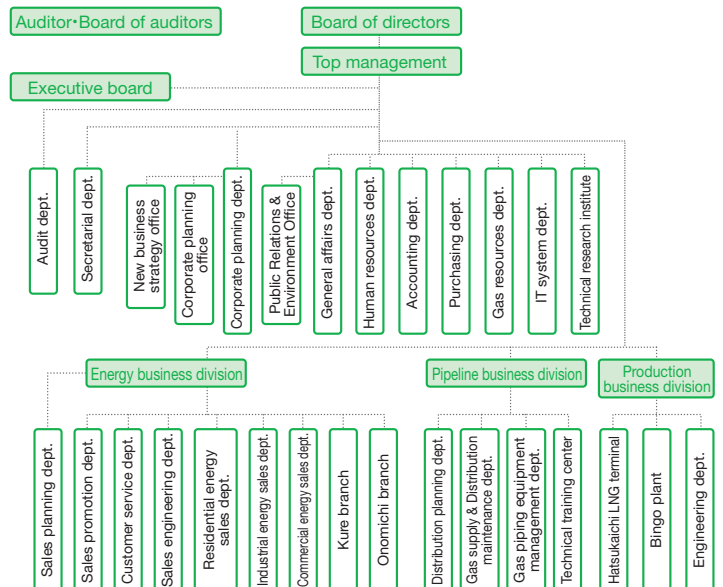
Established: October 1909
Capital: 5.181 billion yen
Number of employees: 672

Business field: 1. Gas business
2. Sales of gas appliances
3. Sales of liquefied natural gas

(As of March 31, 2020)

Hiroshima Gas organizational chart

(As of April 01, 2020)



Regional service representatives

Gas shop

Gas shop business hours: 9am to 5:30pm (Monday to Saturday)

1 Aki Gas Shop	TEL: 082-821-1055	3-1-14, Funakoshiminami, Aki-ku, Hiroshima
2 Ujina Gas Shop	TEL: 082-253-1261	2-12-19, Ujinakanda, Minami-ku, Hiroshima
3 Itsukaichi Gas Shop	TEL: 082-922-3670	2-7-43, Kairoen, Saeki-ku, Hiroshima
4 Furue Gas Shop	TEL: 082-272-0050	6-4, Furueshinmachi, Nishi-ku, Hiroshima
5 Takanobashi Gas Shop	TEL: 082-243-7520	5-10-19, Otemachi, Naka-ku, Hiroshima
6 Hakushima Gas Shop	TEL: 082-228-1000	17-17, Higashi-hakushima-cho, Naka-ku, Hiroshima
7 Gion Gas Shop	TEL: 082-850-3505	5-13-1, Nishihara, Asaminami-ku, Hiroshima
8 Koyo Gas Shop	TEL: 082-842-4433	1-3-10, Ochiaiminami, Asakita-ku, Hiroshima
9 Kure Gas Shop	TEL: 0823-23-5050	1-6-16, Chuo, Kure
10 Onomichi Gas Shop	TEL: 0848-22-4378	3-2, Tenma-cho, Onomichi
11 Kabe Gas Shop	TEL: 082-814-3322	9-13-7, Kameyama, Asakita-ku, Hiroshima
12 Saijo Gas Shop	TEL: 082-493-8801	4-38, Saijogojo-cho, Higashi-hiroshima

Showroom

Experience the latest gas equipment and the sheer warmth provided by gas.

Examples of exhibition equipment

- Household fuel cell (Ene-Farm)
- Floor heating and bathroom heater comparison rooms
- Mist sauna experience room
- Try it! Kitchen activities (Kitchen comparison)
- Solar power generation
- Renovation materials



Gastopia Center
1-30, Minamitakeya-cho, Naka-ku, Hiroshima
TEL: 082-240-8888



Gastopia Itsukaichi
2-7-43, Kairoen, Saeki-ku, Hiroshima
TEL: 082-923-5678



Gastopia Gion
5-13-1, Nishihara, Asaminami-ku, Hiroshima
TEL: 082-850-3506



Gastopia Aki
3-1-14, Funakoshiminami, Aki-ku, Hiroshima
TEL: 082-821-1130



Gastopia Kure
1-6-16, Chuo, Kure
TEL: 0823-22-1262



Gastopia Onomichi
3-2, Tenma-cho, Onomichi
TEL: 0848-22-2161

Overview of main subsidiaries

(As of March 31, 2020)

HIROSHIMA GAS PROPANE Co., Ltd.

•Capital: 300 million yen •Established: March 1969 •Sales: 10,138 million yen •Number of employees: 88

HIROSHIMA GAS TECHNO-SERVICE Co., Ltd.

•Capital: 80 million yen •Established: June 1998 •Sales: 10,663 million yen •Number of employees: 207

HIROSHIMA GASMATE Co., Ltd.

•Capital: 20 million yen •Established: April 1975 •Sales: 913 million yen •Number of employees: 152

HIROSHIMA GASLIFE Co., Ltd.

•Capital: 15 million yen •Established: June 2018 •Sales: 3,561 million yen •Number of employees: 155

BE-SMILE Co., Ltd.

•Capital: 50 million yen •Established: June 2001 •Sales: 173 million yen •Number of employees: 24

SETOUCHI PIPELINE Co., Ltd.

•Capital: 150 million yen •Established: May 2003 •Sales: 1,117 million yen •Number of employees: 10

HG LNG SHIPPING CORPORATION

•Capital: 1 million yen •Established: February 2005 •Sales: 3,445 million yen

HIROSHIMA GAS Co., Ltd.

2-7-1, Minamimachi, Minami-ku, Hiroshima, 734-8555

General Affairs Department, Public Relations & Environment Office: 082-252-3154 (Direct line)

Hiroshima Gas Website

<https://www.hiroshima-gas.co.jp/>