

Strategy of Toho Gas Group

Toho Gas developed a medium-term management plan (FY2014 to FY2018) in March 2014. The concepts of this plan are “Build a robust gas business” and “Realize further growth.” In April 2017, the gas market was fully liberalized, following the complete liberalization of the electricity market in April 2016, and the business environment surrounding our company has been changing dramatically. By precisely and flexibly responding to the changes in the business environment, the Toho Gas Group will strive to attain sustainable growth while aiming to achieve the two concepts in the era of liberalization.

In order to build a robust gas business, we will enhance the Group’s comprehensive business capability through “ensuring stable energy supply, safety and security,” “strengthening our relationship with customers” and “strengthening competitiveness.” Accordingly, we will work toward achieving a liberalization of the gas market which is truly beneficial to customers, and aim to become a company that continues to be trusted and chosen by customers. In order Toho Gas Group achieve further growth, we will expand our gas business service area and scope of business.

Actions for Full Liberalization of Gas Market



Management Goals in Medium-term Management Plan

		FY2013	FY2018 Projection	FY2013 to FY2018 Average Annual Rate of Increase	FY2022 100th Anniversary
Number of Gas Meters	Natural Gas	2.36 million	2.46 million	0.8%	2.5 million
	LPG*1	0.44 million	0.48 million	1.8%	0.5 million
Gas Sales Volume	Natural Gas*2	4.0 billion m ³	4.5 billion m ³	2.2%	5 billion m ³
	LPG	421 thousand tons	470 thousand tons	2.3%	500 thousand tons

*1 Including the number of gas meters based on commissioned business for delivery

*2 Including the number of gas sales volume of LNG

	FY2009 to 2013 Average	FY2018 Projection	FY2022 100th Anniversary
Operating Cash Flow	48.2 billion yen	58 billion yen	60 billion yen
Debt Equity Ratio	0.7	1.0 and under	1.0 and under
ROA	2.1%	About 3%	3% and over

Strategy of Toho Gas Group

Ensure Stable Energy Supply, Safety and Security

We make sure of stable energy supply by promoting security and disaster-prevention measures. In addition, we strengthen our efforts to ensure the safety of our customers so that they choose us as we provide sense of security even after the gas market was liberalized completely.

◆ Measures to Ensure the Safety and Security of Customers

Whenever an emergency occurs, our staff will be immediately dispatched to the site. This is our way of doing business, which we have inherited over generations. We ensure the safety and security of our customers through about 180 service outlets set up in the service areas, including sales offices and “ENEDO” sales shops, and the approximately 3,000 security staff deployed in these areas.

We are working on reducing the use of gas equipment with no safety devices, and faulty gas supply and exhaust facilities. In addition, highly skilled staff of the Toho Gas Group respond expeditiously and appropriately to any emergencies, under our call center at any time in 24-hour, 365-day.

◆ Promotion of Security and Disaster-prevention Measures

Based on the large-scale earthquake scenarios published by the national and local governments, we take necessary anti-quake, anti-tsunami and anti-liquefaction measures. We also strive to strengthen our disaster control organizations. For example, we also have a system that can quickly stop city gas supply by remote control in accordance with the damage conditions at each respective location, so as to prevent secondary disaster. Moreover, to minimize inconvenience to gas consumers and ensure no interruption of the city gas supply to less-damaged areas, we have divided our gas pipeline network into 72 small blocks, which we will further divide into much smaller blocks.

In February 2017, a building that serves as an anti-disaster center was completed on the premises of

the head office building. We will use the building to respond expeditiously and appropriately to the occurrence of a disaster, as well as an existing anti-disaster facility. Inside the new building is a second customer center, which we will use as a call center in charge of receiving phone calls from customers affected by natural disasters as part of our efforts to strengthen our disaster response.

Moreover, we conduct maintenance and replacement of production and supply facilities. For example, to further increase the safety of our gas facilities, we are now replacing gas pipes with quake-resistant and anti-corrosive gas piping materials (such as polyethylene pipes), in accordance with our plan.



Automatic supply management system



Replace aging gas pipes with polyethylene pipes



Anti-disaster Center

Strengthen Our Relationship with Customers

We help customers lead a comfortable life and support their product manufacturing activities by providing various services to them and meeting their needs and demands in energy use.

◆ Residential Use

We work together with ENEDO sales shops in providing highly energy-efficient gas equipment and various services in response to customer needs. In particular, we have made efforts to spread cogeneration for residential use (fuel cell system “ENE FARM” and residential gas engine cogeneration system “ECO WILL”). Cogeneration is efficient system, generates electricity by city gas. The exhaust heat discharged as a by-product can be used for heating and water heating. ENE FARM generates electricity by chemical reaction between hydrogen (retrieved from city gas) and oxygen in the air, and the exhaust heat discharged as a by-product is used for water heating. The rate of primary energy used by ENE FARM is a high 95%*. It is therefore capable of reducing CO₂ emissions significantly. ENE FARM has increased the number of installed units because of its environment-friendliness and economic efficiency, and the

cumulative sales total of ENE FARM reached 13,000 units in February 2017.

“Club TOHOGAS” is a membership website service that enables customers to earn points, called “Gasuteki Point.” In April 2017, we launched a new service linked to the current point service, which enables customers to pay gas and electricity fees using the points earned. Moreover, we will make efforts to enlarge our service providing range, including “Raku Raku Maintenance” (a gas equipment maintenance service), “Raku Raku Kurashi Support” (a service aimed at making customers’ lives comfortable, including provision of solutions to housing-related problems), proposal for the optimal use of energy through sales of electricity and an energy-saving software system, and proposal for house renovation.

*LHV. Figure attained by the fiscal 2017 Panasonic model

Topics Toho Gas began buying surplus electricity generated using ENE FARM Type S and launched sales of new type of ENE FARM that can be attached to an existing water heater

In June 2017, Toho Gas began buying surplus electricity generated at households using ENE FARM Type S, manufactured by Aisin Seiki. In the past, households had to consume surplus electricity generated using a cogeneration system only to power devices and equipment installed in-house. But now such electricity is subject to buyback by Toho Gas for secondary use.

In April 2017, we launched a new ENE FARM that can be installed in water heaters already in use as a

strategy of proposing ENE FARM not only for newly built houses but also for existing houses.



ENE FARM Type S

Strategy of Toho Gas Group

◆Industrial/Commercial Use

We have promoted the use of clean natural gas, encouraging customers to change their industrial furnaces such as thermal treatment furnaces and drying furnaces and boiler fuel from oil to city gas. The policy contributed to stimulating demand for city gas while reducing CO₂ emissions on the customer side. Industrial furnaces using city gas demonstrate excellent controllability and energy-saving property and are used in the production processes of many industries, including transportation machines, steel and other metals, foods, and glasses, etc.

We have also spread distributed energy systems which generates electricity at the user site. The exhaust heat discharged as a by-product can be used for air-conditioning and water heating, thereby contributing to efficient energy use. Gas cogeneration systems, for example, can achieve a high coefficient of performance (COP) of 70-90%*, a level believed very effective in curbing CO₂ emissions and promoting energy saving by cutting peak electricity demand. We will improve the efficiency of the cogeneration system and reduce its cost, aiming to increase the installed capacity from the current 756,000 kW to 800,000 kW by the final year of the medium-term plan.

We will continue proposing the optimal use of energy to

customers while meeting their business needs such as conversion to city gas from other fuels, an energy-efficient gas air-conditioning system, more energy-efficient cogeneration systems, and highly convenient commercial kitchen appliances. We will also promote sales of electricity. Furthermore, we will provide high-quality energy-related engineering services, including comprehensive utility services which consist mainly of construction of gas facilities, their operation, maintenance and management, and evaluation of each client's energy-saving efforts using simulation technologies.



Fuel conversion in an industrial furnace

Goal of installed capacity of distributed energy system

	End of FY2016	End of FY2018	End of FY2022
Distributed energy system (Installed capacity)	756 thousand kW	800 thousand kW	1,000 thousand kW

*Source: Natural gas cogeneration system equipment data 2016 (2016), Japan Industrial Publishing

Strengthen Competitiveness

We ensure stable energy procurement at reasonable cost by diversifying our LNG procurement and enhancing the flexibility of LNG terminal operations. We also work incessantly to achieve more efficient business operations.

◆Procure Energy Sources at Reasonable Cost

We purchase 3 million tons of LNG each year from five countries (Indonesia, Australia, Malaysia, Qatar and Russia (Sakhalin)) under long-term supply contracts. In procuring LNG, we endeavor to diversify types of contract, the price index and supply sources. We also invest in operations of LNG tankers, a step aimed at procuring LNG both stably and at reasonable cost.

As part of our further efforts to diversify LNG procurement, we started purchasing LNG from Petronas LNG Ltd. under a portfolio contract in 2017, and plan to start purchasing LNG from North America in FY2018. Also, we will respond flexibly to diversification of LNG procurement and operate our LNG terminals more efficiently by effectively using a Chita-Midoriham Works No.3 LNG tank, which was completed in 2016.

Topics Joint ownership of a new LNG carrier for delivery of LNG from the U.S. Cameron Project ~ The 4th joint ownership of LNG carrier ~

Toho LNG Shipping Co., Ltd. ("TLS"), a 100% subsidiary of Toho Gas, will jointly own a new LNG carrier for delivery of LNG from the U.S. Cameron Project. The vessel will be owned

by Diamond LNG Shipping 3 Pte. Ltd., a ship-owning joint venture formed between TLS, Mitsubishi Corporation, Nippon Yusen Kabushiki Kaisha and Tohoku Electric Power Co., Inc.

◆ Promote Business Efficiency

We strive to establish an efficient business operation system by streamlining the operations of each business segment and redistributing business resources across the Group. Specifically, we set up business facilities in an

efficient manner, carry out business duties efficiently, promote efficient manpower deployment in nonmanufacturing sections, and implement cost-cutting measures in each business segment.

Supply sources



Expand Gas Business Service Area

We will continue to reinforce and extend our gas pipeline network to diffuse city gas and strengthen our sales of LPG and LNG in areas surrounding our city gas supply area.

◆ Diffuse City Gas and Ensure Stable Energy Supply

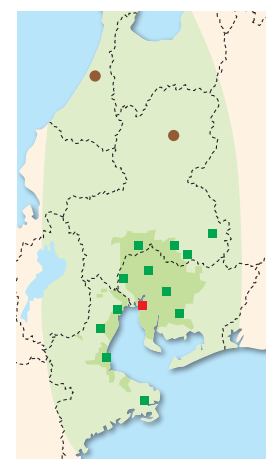
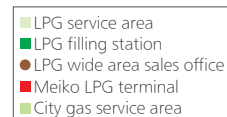
By continuing to reinforce and extend our gas pipeline network, we will enhance our supply stability in the entire service area while expanding our supply areas of city gas. As a way of stimulating gas demand from industrial customers, we will continue to work on the Mie trunk line

(from Yokkaichi to Tsu), already under construction. In the eastern Mino region of Gifu Prefecture, we will also extend our pipeline networks by building new gas lines between Toki and Kani and between Ginan and Kakamigahara.

◆ Provide Energy to Customers in Broader Areas

We will strengthen our sales of LPG and LNG to customers across broader areas. Especially, as for the LPG business, we own the Meiko LPG Terminal, one of the largest secondary terminals in Japan, as a core terminal of our group, and we boast the largest sales in the Tokai area, covering the supply of LPG in the area through the network of company-owned LPG filling stations. We are one of Japan's largest LPG providers, also selling the product across a wide region including the Hokuriku area, Shizuoka Prefecture and Shiga Prefecture. We will further strengthen the LPG business as another pillar of the “robust gas business,” following the city gas business, to expand demand in a wider area.

LPG service area



Strategy of Toho Gas Group

Expand Scope of Business

Seeing changes in the business environment as providing business opportunities, we will expand the scope of our business, while taking advantage of the Group's strength, which has been fostered through the gas business, and evaluating the feasibility of the new business, its risks, and possible synergy effects.

◆ Expansion of the Group Business and Peripheral Businesses

We strive to expand our services for customers in the service area by mobilizing the Group's entire business resources covering the LPG business, the house renovation business, comprehensive utility services and property holdings, while ensuring to increase the Group's overall business efficiency.

Our overseas projects include an investment in

Australia's Ichthys project, under which LNG production will begin in 2017, and an investment in October 2016 in a natural gas distribution company in Portugal. By taking advantage of the knowledge and business resources the Group has built up through its past business operations, we will expand the scope of the business both in Japan and abroad.

◆ Strengthen Sales of Electricity

Regarding the sales of electricity, a business we launched in April 2016, subscriptions have grown smoothly. We aim to achieve 100,000 kW of electricity sales at the end of FY2020 by continuing to step up our marketing in the power business through contact with customers.

In power procurement, a power source adjustment facility with an output capacity of 16.5 MW being constructed at the Yokkaichi Works will begin operating in the autumn of 2017. In the future, we will continue to diversify our procurement sources to secure electricity stably and at reasonable prices.

◆ Develop Smart Towns

A smart town named "Minato AQUUS" is under development in Minato ward, Nagoya city. By the scheduled official opening of the smart town in the autumn of 2018 when a shopping mall called LaLaport is

constructed, we will realize a smart town as a model of comprehensive energy business by developing supply system in which we supply gas, electricity and heat throughout the area in an integrated manner.

Topics Completion of "Minato AQUUS Energy Center"

We completed construction of Minato AQUUS Energy Center in March 2017 and the center began supplying energy in April the same year. An energy system established at "Minato AQUUS" is designed to provide in an integrated manner low-carbon energy to buildings that were constructed inside each zone of "Minato AQUUS." Electricity is generated using environment-friendly energy sources, including renewable energy sources and NAS (sodium-sulfur) battery, a large-scale storage battery based on a gas cogeneration system known to have a high COP. The energy system is intended to promote the efficient use

of heat by combining binary generators and heat source equipment which consists of one using waste heat generated through gas cogeneration systems, and one using unused energy sources such as canal water.



Minato AQUUS Energy Center