# Challenge 2020 Vision

### Overview

### The Tokyo Gas Group's Vision for Energy and the Future

Debate over the nature of Japan's energy supply continues unabated. Against this backdrop, Tokyo Gas has long played a key role in the supply of energy in Japan, with a focus on the Tokyo metropolitan area. In order to address the challenges posed by new energy issues, we put in place "Challenge 2020 Vision," our vision for energy and the future. Recognizing the growing need to enhance energy security, reduce energy costs, and promote energy system innovation that helps to conserve energy and curtail CO<sub>2</sub> emissions, we will continue to hone our technologies and expertise in LNG and natural gas while working to address the needs of each era.

### **Enhancing the LNG Value Chain**

### Increase in value added

Low prices and stable procurement · Diversification and expansion of upstream activities

Supply security, security enhancement

**Energy solutions content upgrading and scale expansion** 

**Procurement and transport** 

**Production and supply** 

**Energy solutions** 

### **Area expansion**

Expansion of the LNG value chain from Japan to overseas

- •Overseas Natural Gas-fired thermal power generation
- Overseas city gas supplyOverseas engineering
- ·Overseas energy services

Expansion of the Natural Gas value chain from the Tokyo metro area to the whole of Japan

Spread and expansion of natural gas use
Engineering
Energy services

### **Action Plan**

# Strive to reduce raw material prices and expand overseas operations

- Obversify and expand raw materials procurement and overseas upstream projects
- Oconstruct an overseas LNG value chain
- OPursue overseas expansion of energy services and engineering

### ②Deliver a safe and stable supply of energy

- OStrengthen resistance to disaster and ensure safe supply
- Upgrade and expand optimal infrastructure in step with the spread and expansion of natural gas use

### OProvide energy solutions adapted to a variety of needs

- OPromote the spread and expansion of distributed energy systems
- Promote the spread and expansion of gas equipment that contributes to peak saving, energy conservation and CO<sub>2</sub> emissions reduction
- OBuild a "smart energy society" that uses energy wisely

- Expand the electric power business (natural Gas-fired thermal power generation)
- Olmplement renewable energy initiatives
- Promote advanced utilization of natural gas and fuel conversion
- OPromote the spread and expansion of natural gas use and nationwide development of energy services

### Pursue technical development and IT utilization with a focus on the future

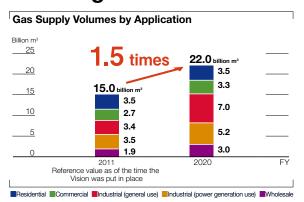
- OEngage in technical development with a focus on the future
- Ouse IT to enable closer communication with customers
- **G**Realize a leaner, stronger business structure

Hop (FY2012-2014)

Ste

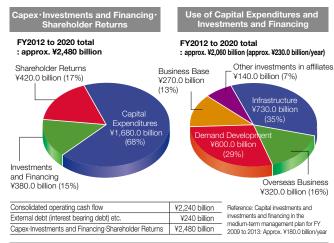


# **Challenge Performance Indicators**



			Billion m
	Fiscal 2011 Outlook (Reference value as of the time the Vision was put in place)	FY 2020	Annual Average Growth rate
Residential	3.5	3.5	0%
Commercial	2.7	3.3	2%
Industrial (general use)	3.4	7.0	8%
Industrial (power generation use)	3.5	5.2	4%
Wholesale	1.9	3.0	5%
Total	15.0	22.0	4%

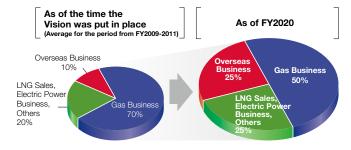
Tokyo Gas will actively invest capital to prepare for sustained growth and has established the following performance indicators, taking into consideration investment efficiency, financial position, and shareholder returns.



# Business Structure (Consolidated Net Income Ratio by Business)

Tokyo Gas will grow the LNG sales, power generation, other, and overseas businesses while expanding the domestic gas business. We will aim to change the current 7 to 2 to 1 ratio of net income from the Gas Business, LNG Sales, Electric Power Business and Others, and Overseas Business to a ratio of 2 to 1 to 1 while at the same time increasing the total amount of earnings.

#### Financial Performance Indicators As of the time the Vision was put in place As of FY2020 (Average for the period from FY2009-2011 Consolidated operating Approx. Approx. ¥210 billion/year ¥250 billion/year cash flow ROE 7.3% Approx. 8% ROA 3.3% Approx. 4% Approx. 0.8 D/E ratio 0.7 (each fiscal year) Approx. 60% Total payout ratio 60.6%



(FY2015-2017) Jump (FY2018-2020)

Steady Path from Fiscal 2012 to Fiscal 2014 toward Realizing Our "Challenge 2020 Vision"

# Making Inroads into the Procurement of Raw Materials and Expanding Overseas Business while Upgrading and Expanding Infrastructure Development and Energy Solutions

In its effort to realize its "Challenge 2020 Vision," the Tokyo Gas Group has identified the three hop (FY2012-2014), step (FY2015-2017), and jump (FY2018-2020) periods. During the three-year period from fiscal 2012 to fiscal 2014, we took a positive step forward in each of the raw materials procurement, overseas business, infrastructure development, and energy solution fields.

# 1 Efforts to Date

### (1) Diversification and Expansion of Raw Materials Procurement and Overseas Business

In line with the increase in LNG demand, the risk of rising raw materials costs is a major concern. Against this backdrop, the Tokyo Gas Group has worked diligently to procure resources from and acquire interests in existing large-scale LNG projects and to purchase shale and other unconventional gas resources while taking into consideration the balance between supply stability, price, and flexibility. Every effort was made to further diversity and expand supply sources as well as overseas upstream projects and to lower raw materials prices.



2012 :	3	<b>4</b> April	2
	development of an LNG value chain in Vietnam	<b>5</b> July	2
2012 :	Entered the energy service business in Brazil	- ,	
2014:	Established an energy services business company in		
	Malaysia	6Septemb	er 2
2013 :	Decided to participate in the U.S. Cove Point LNG		
	Project; contracted for the purchase of 1.4 million tons per year of LNG		
	2012 : 2014 :	2012 : Entered the energy service business in Brazil 2014 : Established an energy services business company in Malaysia 2013 : Decided to participate in the U.S. Cove Point LNG	PetroVietnam Gas regarding cooperation in the development of an LNG value chain in Vietnam  2012: Entered the energy service business in Brazil  2014: Established an energy services business company in Malaysia  2013: Decided to participate in the U.S. Cove Point LNG Project; contracted for the purchase of 1.4 million tons

 2013 : Joined a shale gas development joint venture in the U.S. Barnett Basin

**3**July 2014: Contracted for the purchase of approximately 0.52 million tons per year of LNG from the U.S. Cameron LNG Project

September 2014: Signed a Memorandum of Understanding with Korea Gas Corporation regarding the optimization of LNG inventories, joint LNG procurement, and joint

investment in upstream businesses

### (2) Safe and Stable Energy Supply

2016)

The Tokyo Gas Group endeavored to put in place an optimal infrastructure in step with the spread and expansion of natural gas use by constructing the Hitachi LNG Terminal and establishing trunk line loops. At the same time, we put in place a variety of disaster prevention countermeasures to address the risks of a wide range of contingencies including earthquakes, tsunamis and blackouts and to ensure the safe and stable of gas through a framework that is less susceptible to damage and interruption.

• Infrastructure Improvements to Respond to Demand Increases and Boost Supply Stability

### [North Kanto Area]

November	2011:	Began construction of the Saito Line (operations
		scheduled to commence from October 2015)
January	2012:	Began construction of the Ibaraki-Tochigi Line
		(operations scheduled to commence from March
		2016)
June	2012:	Completed construction of the Kashima Waterfront
		Line and commenced supply to the Kashima Thermal
		Power Station of Tokyo Electric Power Company
July	2012:	Began construction of the Hitachi LNG Terminal
		(operations scheduled to commence from March

January 2014: Began construction of the Koga-Moka Line (operations scheduled to commence from March 2018)

### [Bay Area]

November 2013 : Began use of Ohgishima LNG Terminal No. 4 LNG Tank

2Preparedness for Earthquakes and other Disasters

June 2012 : Concluded an agreement with Shizuoka Gas Company
Ltd. and INPEX Corporation for the reciprocal backup
of natural gas in an emergency

May 2014 : Subdivided the number of low-pressure pipeline blocks into 207 blocks to minimize the areas affected by supply failure during and after an earthquake disaster

(140 blocks in 2011)

Hop (FY2012-2014)

Step



### (3) Energy Solutions that Meet Customer Needs

The Tokyo Gas Group released the world's first ENE-FARM residential fuel cell system for housing complexes. In addition to securing power sources in a bid to expand its electric power business, the Group also worked to expand nationwide LNG sales.



**1**ENE-FARM

April 2014: Released the world's first ENE-FARM residential fuel cell system for housing complexes

2 Expansion of the Electric Power Business

June 2013: Began construction of Ohgishima Power Station Unit 3 (operations scheduled to commence from February

2016)

September 2014: Signed an agreement with Kobe Steel, Ltd. for the supply of electric power from the Shinko Moka Power

Plant (supply scheduled to commence from fiscal

2019)

March 2015: Reached an agreement with Idemitsu Kosan Co., Ltd. and Kyushu Electric Power Company Inc. to consider

and Kyushu Electric Power Company Inc. to consider the joint development of a coal-fired power plant; May 2015: Established Chiba-Sodegaura Energy Co., Ltd. 3 Nationwide Development of LNG Supply

October 2012: Began LNG supply to Hokkaido Gas Co., Ltd. via

ocean liners

September 2014: Began construction of the Onahama Satellite Terminal

with a view to supply that meets industrial demand in lwaki City, Fukushima Prefecture (supply scheduled to

begin from January 2016)

October 2014: Commenced supply of LNG to Saibu Gas Co., Ltd.



(FY2015-2017) Jump (FY2018-2020

Main Policies for FY2015-2017 toward Realizing "Challenge 2020 Vision"

# Evolve the Total Energy Business and Accelerate Global Business Development

The Tokyo Gas Group has moved smoothly throughout the hop period in its efforts to realize its "Challenge 2020 Vision." The Group is now poised to enter the step period from fiscal 2015 and to lay the groundwork by advancing a variety of measures. Here we provide details of our three main policies for the step period: "evolving the total energy business," "accelerating global business development," and "constructing a new group formation."

## 2 Main Policies from Fiscal 2015 to Fiscal 2017

### (1) Evolve the Total Energy Business

In order to evolve the total energy business, the Tokyo Gas Group will work to further diversify the procurement of raw materials and upgrade and expand infrastructure in step with the spread and expansion of natural gas use. At the same time, the Group will expand electric power sales, bolster competitive generation capacity, and provide optimal energy solutions that combine gas, electricity, and value added while ensuring safe and stable supply.

### **O**Further Diversify Raw Materials Procurement

Further advance diversification of procurement sources, price indices and destinations, and flexibly form alliances not only with domestic companies but also with Korea Gas Corporation and other diverse foreign players, depending on the contract conditions and trading timing, for joint procurement, optimization, and sales of LNG.

### Oupgrade and Expand Infrastructure in order to Spread and Expand the use of Natural Gas

The Tokyo Gas Group will look to construct the Hitachi LNG Terminal LNG Storage Tank No. 2 as well as Ibaraki Trunk Line with a view to completion by 2020. Steps will also be taken to pursue the construction of the Hitachi-Onahama Line by the 2020s. For this purpose, we will advance more detailed studies on various aspects of the undertaking including demand trends and route selection. In addition, operations will commence at the Hitachi LNG Terminal, Ibaraki-Tochigi Line, pipeline for the Mito area, and the Saito Line as a part of efforts to address natural gas demand in the northern Kanto area focusing mainly on Ibaraki and Tochigi prefectures.

### **⑤**Ensure Safe and Stable Supply

The Tokyo Gas Group will aim to ensure zero major accidents and realize an earthquake resistance ratio of 90% by the mid-2020s by accelerating measures for aged gas pipes and carrying out other initiatives.







Hop (FY2012-2014)

Step



#### **@**Expand Electric Power Sales

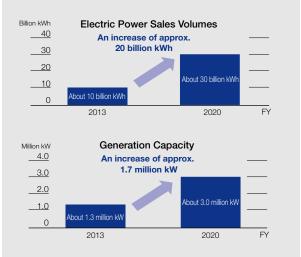
With the complete liberalization of retail electric power in 2016, the Tokyo Gas Group will deliver electricity to residential and commercial customers and expand sales to around 30 billion kWh (about 10% of Tokyo metropolitan area demand) by 2020 in addition to servicing the needs of existing wholesale and large-lot customers

### **19** Increase Competitive Generation Capacity

The Tokyo Gas Group will expand generation capacity from the present level of approximately 1.3 million kW (company equity) to around 3.0 million kW by 2020.

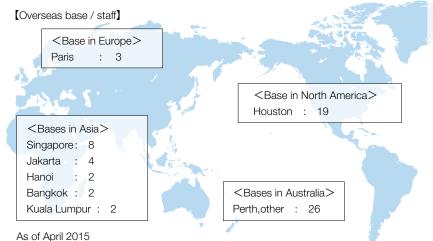
### ⑤Provide Optimal Energy Solutions by Combining Gas, Electricity, and Value Added

The Tokyo Gas Group will deliver the best mix of gas and electricity services. Every effort will be made to boost and create value added through partnerships between the Tokyo Gas Group and companies in diverse industries such as housing, construction, facilities, communications, and information services. We will also push forward smart energy trends and advance finely tuned energy solutions utilizing feedback from customers.



### (2)Accelerate Global Business Development

The Tokyo Gas Group will expand and diversify upstream businesses while at the same time specifying regions and focusing on midstream and downstream businesses. Moreover, we will upgrade and expand overseas bases in order to strengthen our overseas operations.



### **1** Develop Upstream Businesses

The Tokyo Gas Group will acquire interests in gas fields in North America and elsewhere without procurement, participate in small and medium-scale LNG projects, and otherwise work toward the diversification of participation formats aimed at further expansion.

### 2 Develop Midstream and Downstream Businesses

The Tokyo Gas Group will harness its technologies and know-how to intensively develop businesses in specific areas of Southeast Asia and North America.

### **O**Upgrade Overseas Base Functions

The Tokyo Gas Group will build local networks in Singapore, Jakarta, Hanoi, and Bangkok. The Group will also put together projects that make the most of the Group's comprehensive strengths and promote commercial business opportunities. Moreover, we will increase the number of business development personnel to around 200 (compared with the present number of approximately 100) over the next three years, and otherwise examine upgrading overseas base functions.

(FY2015-2017)

Jump (FY2018-2020)

Main Policies for FY2015-2017 toward Realizing "Challenge 2020 Vision"

# Evolve the Total Energy Business and Accelerate Global Business Development

The Tokyo Gas Group has positioned efforts to construct a new Group formation as one of its main policies during the step period. Moving forward, we will work to lay a foundation for the jump period from fiscal 2018 to fiscal 2020 during which we will realize our "Challenge 2020 Vision"

### (3) Construct a new Group formation

In order to "evolve the total energy business," we will further expand the electric power business while fostering and strengthening businesses that help realize added value. In addition to fostering businesses that have the potential to become pillars of Group revenues through the selection and concentration of businesses, we will construct a new Group formation to accelerate global development.

### Organizational Systems and Structure

The Tokyo Gas Group will work to gain a consensus regarding the selection and concentration of businesses. In addition to promoting specific measures including the reorganization and consolidation of subsidiaries and affiliates, we will put in place and carry out appropriate growth strategies.

### 2Management Systems

The Tokyo Gas Group will introduce personnel programs that cover the entire Group as well as operating and management systems that help to accelerate the pace at which it a dedicated organizational structure is established, take full use of diverse human resources, and foster businesses that have the potential to become earnings pillars.

### **3**Address the Shift to Full Gas Deregulation

In the lead-up to full gas deregulation, the Tokyo Gas Group is putting in place a dedicated organizational structure and reviewing its operating and IT systems to secure a finely tuned framework that is capable of addresses gas system reform. Every effort is also being made to generate added value by utilizing data. In addition, the Group will work to secure fairness and transparency in the use of pipelines while increasing convenience by ensuring the proper application of its dedicated organization.

# Milestones in the Lead-Up to Realizing "Challenge 2020 Vision"

