



The LP Gas Industry in Japan

International LP Gas Seminar 2018

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Chairman,
Japan LP Gas Association

About Japan LP Gas Association

- **Chairman: Seisuke IWAI**
(Representative Director President, ENEOS GLOBE Corporation)
- **Founded in 1963**
- **Mission: Securing stable supply, safety measures, demand development, environmental protection, public communications, statistics, policy proposals and other LP gas related activities**
- **Members (11 primary distributors producing/importing LP gas in Japan)**

Astomos Energy	ENEOS GLOBE
GYXIS	Itochu
Iwatani	JAPAN GAS ENERGY
JAPEX-SKS	Kygnus LP-Gas
National Federation of	Taiyo Oil
Agricultural Co-operative Association	Tokyo Gas

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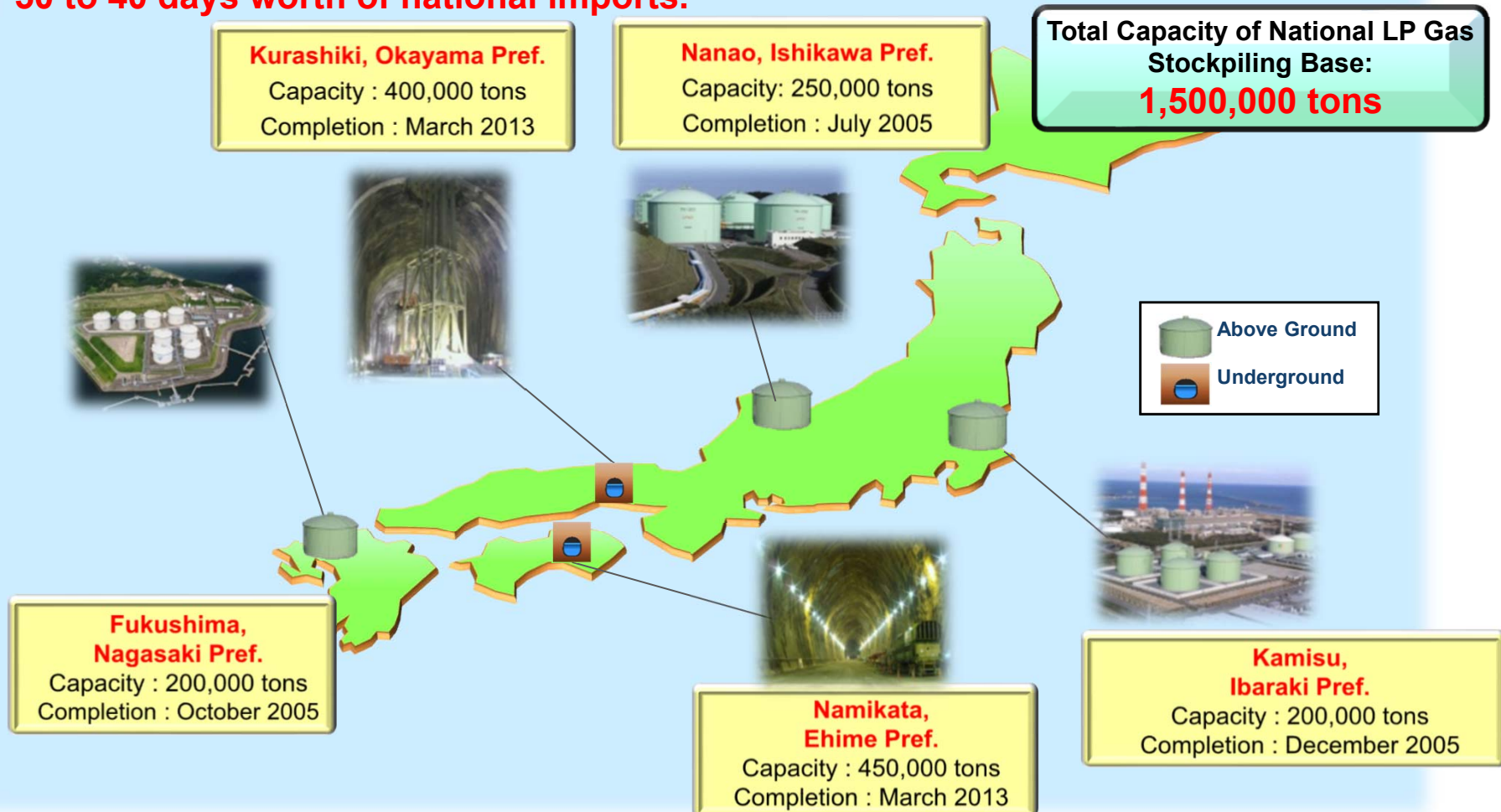
Chapter 1

Lowering of the mandatory stockpile level, plus other current topics

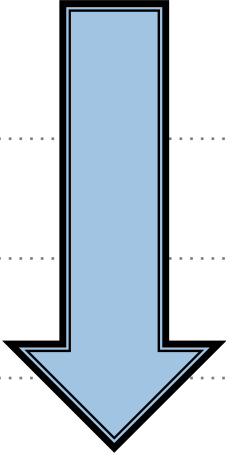
Building up national stockpile scheme completed

→ lowering of the mandatory stockpile level for the private sector

- **National stockpile target to last 50 days achieved** in November 2017 (stored in five locations).
- **After February 2018, the mandatory private sector stockpile level was lowered from 50 to 40 days worth of national imports.**

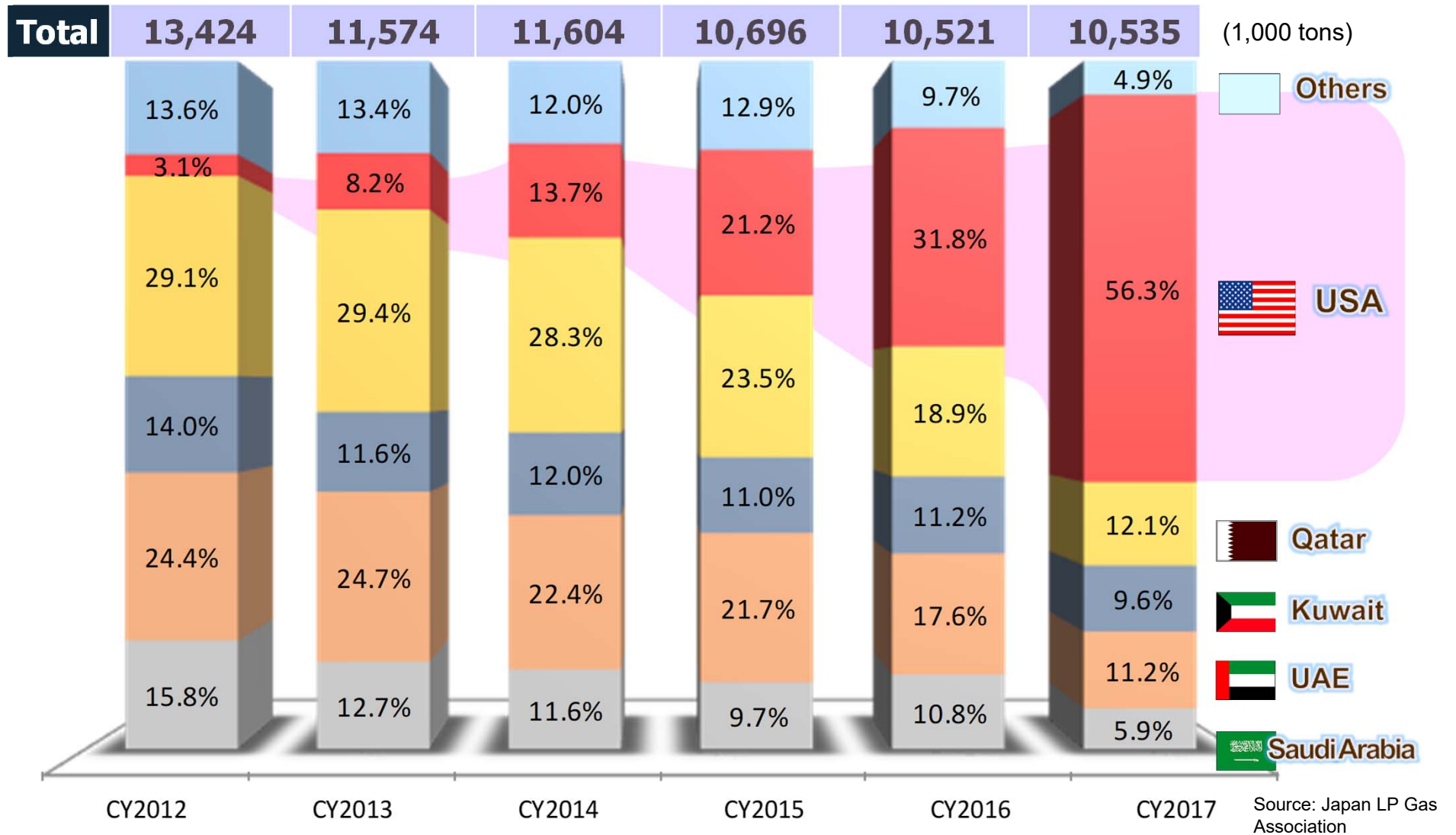


Japan's LP gas stockpile framework - timeline

Year	Mandatory private stockpile	National stockpile
1981	LP gas stockpiles made mandatory with the revised "Oil Stockpiling Act".	
1989	Private sector stockpiles of 50-days worth achieved in March.	
1991		National LP gas stockpile target was developed to mitigate supply disruption risk after the Gulf War : (1.5 million tons / worth 40 days by 1991 standards).
2005		Nanao Base, Fukushima Base and Kamisu Base completed.
2011		40,000 tons of propane released after the March 11 disaster (replaced by private sector stockpiles).
2013		Kurashiki Base and Namikata Base completed in March.
2016		Government panel proposed to lower stockpile levels.
2017	Relevant ministry ordinance revised in December.	National stockpile target achieved in November 2: 50-days worth, or 1.4 million tons.
2018	Private sector stockpiles reduced to 40-days worth effective from February.	

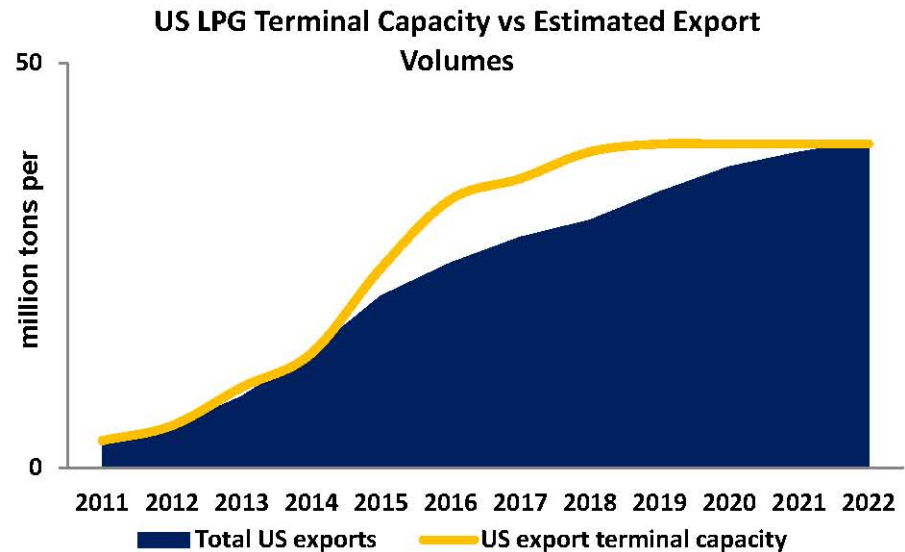
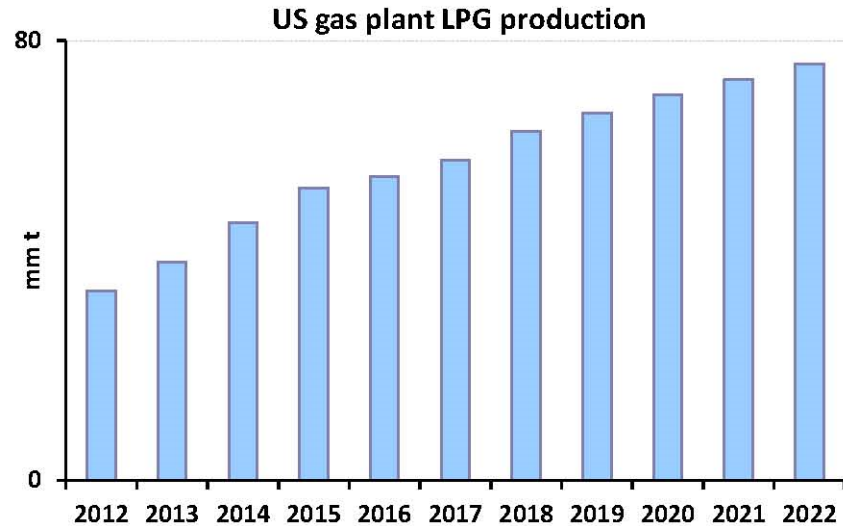
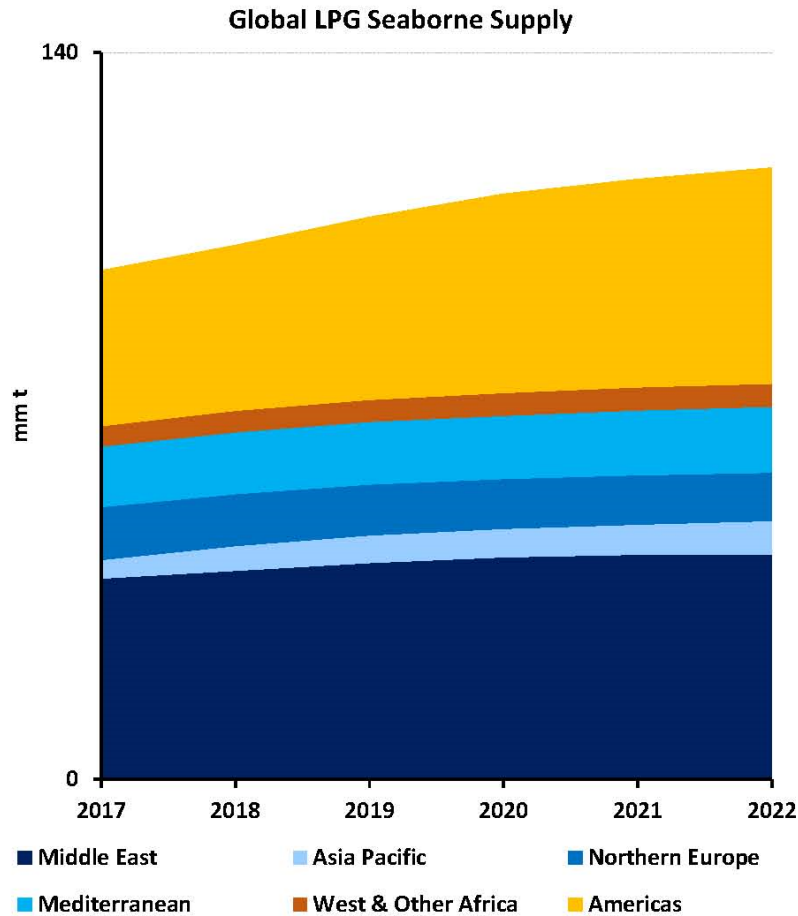
LP gas import sources by country (propane and butane)

➤ US import share in Japan rose significantly in line with the US LP gas output growth.



Key LP gas exporting countries – actual and forecast volumes

➤ LP gas seaborne supply is expected to grow further, notably from the US.

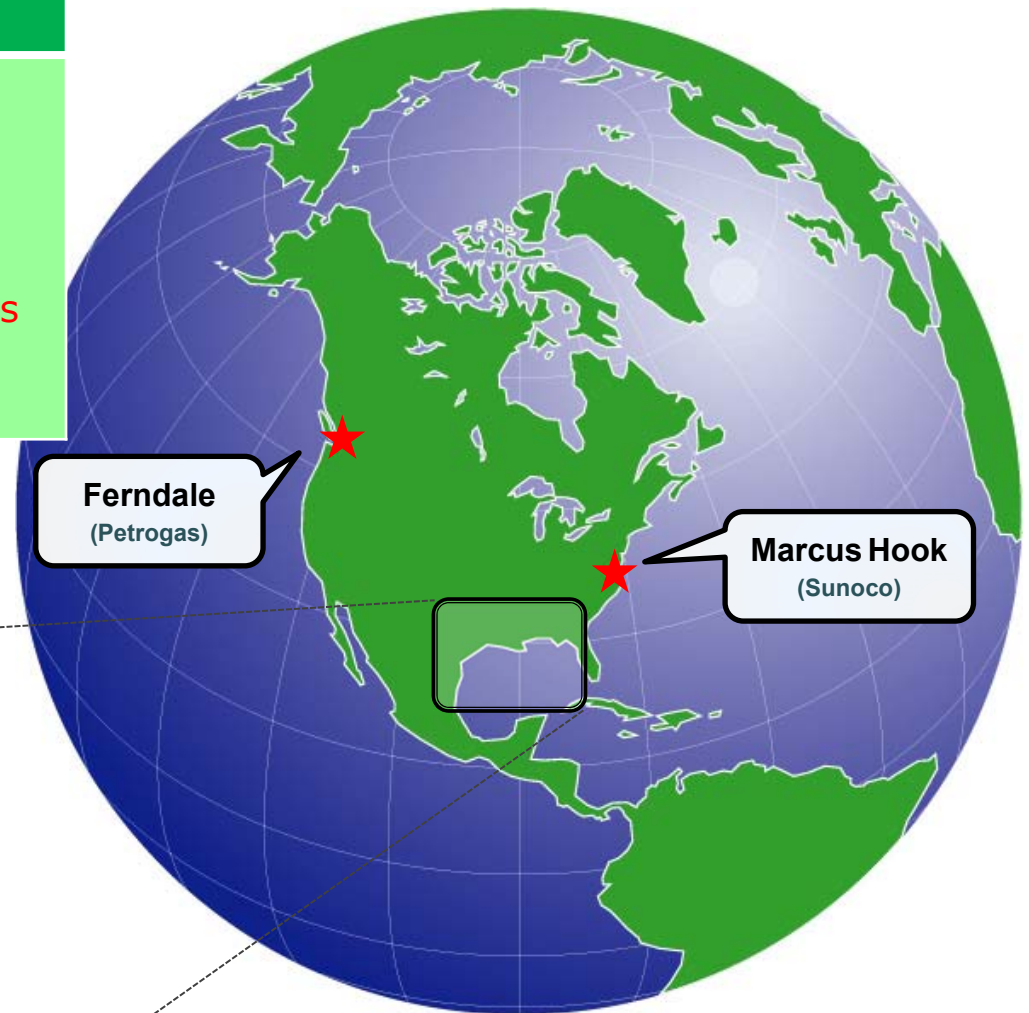


Source: Poten & Partners

US shipping points

Location	Started	Capacity
Enterprise	2013*	Total 30 million tons
Targa	2013	
Nederland	2015	
Free Port	2016	
Marcus Hook	2016*	
Others		

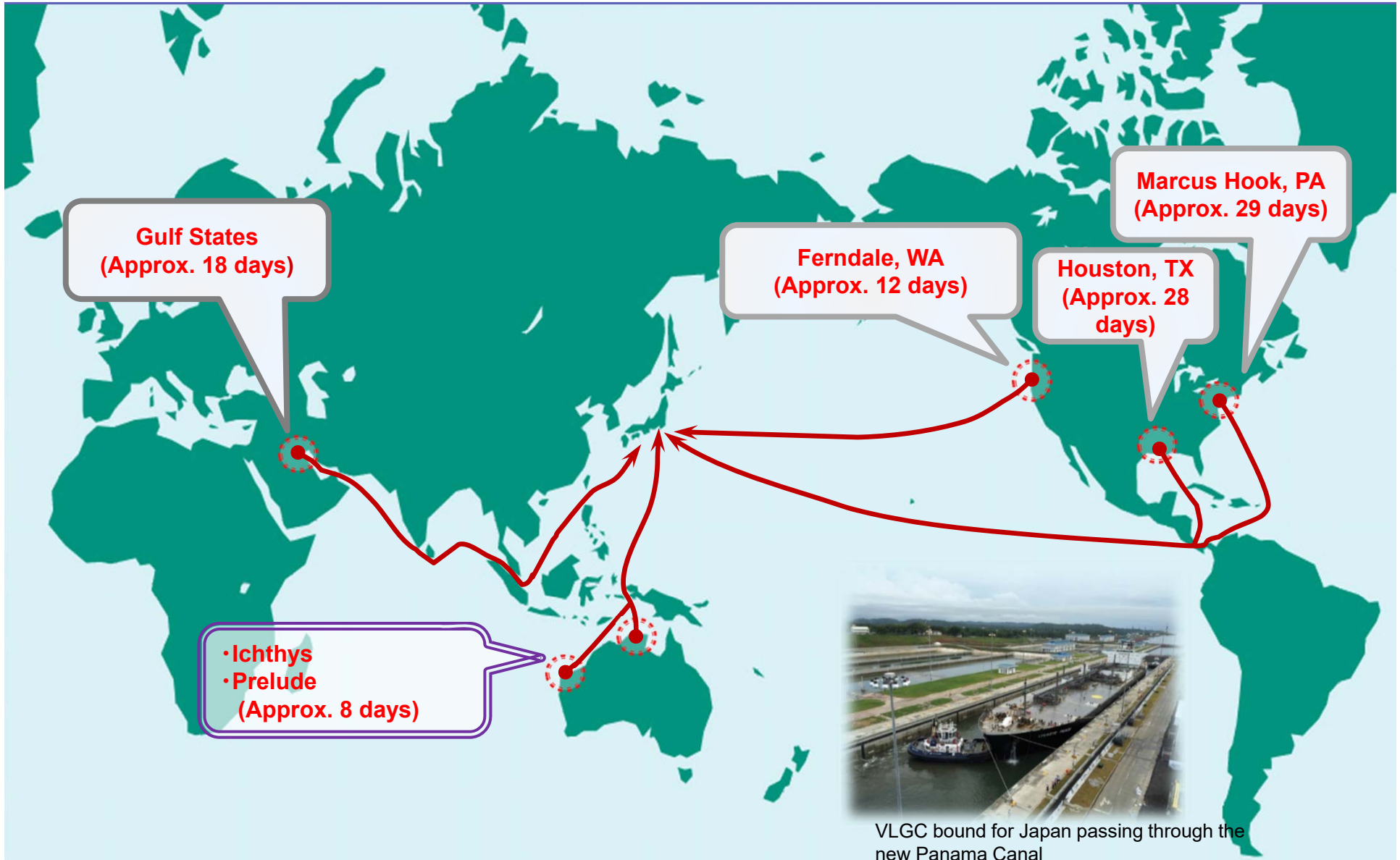
*At the time of initial expansions.



<Inside the Gulf of Mexico>



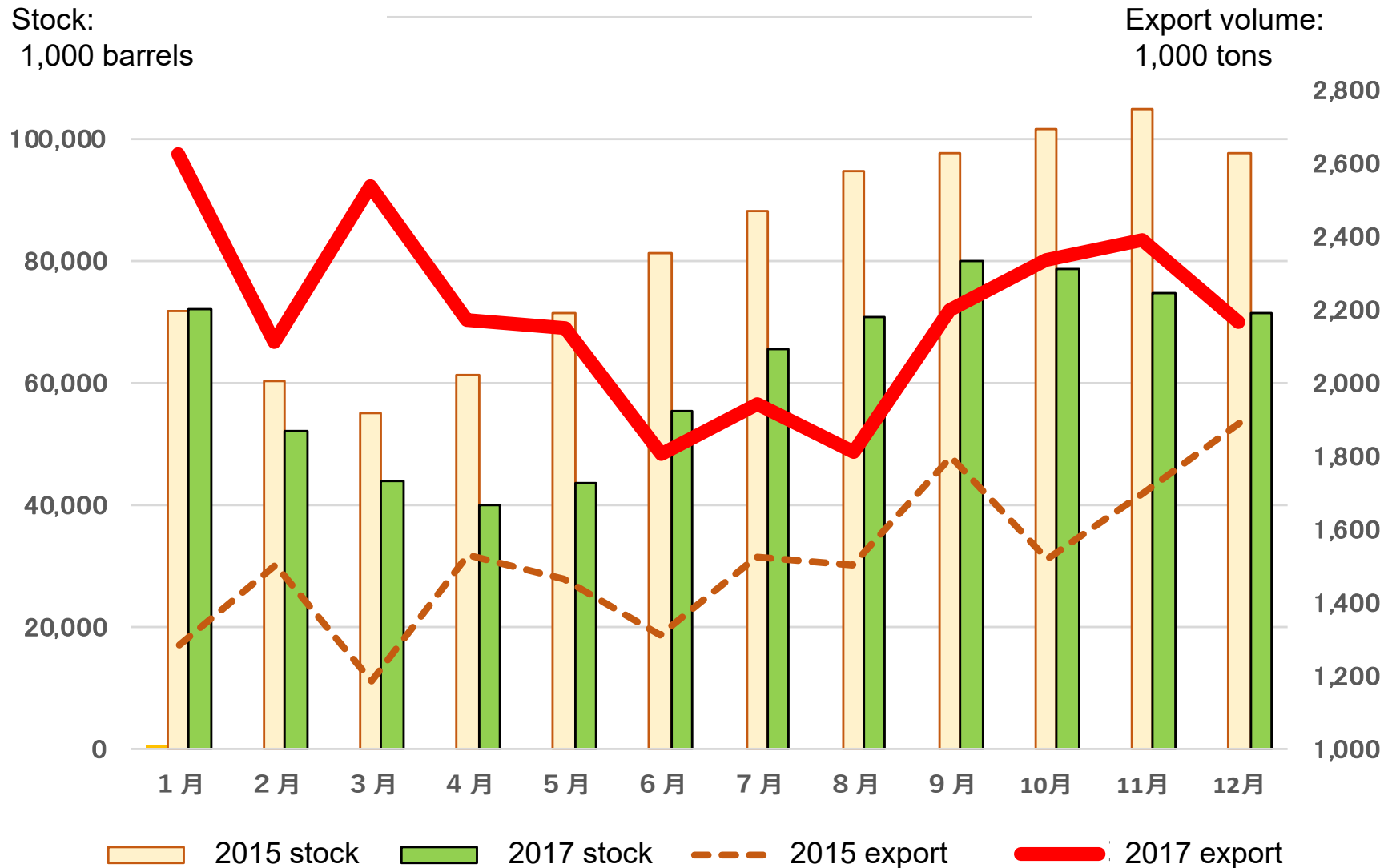
Efforts to diversify import sources



VLGC bound for Japan passing through the new Panama Canal (June 27, 2016)

US propane export volumes vs. inventory levels

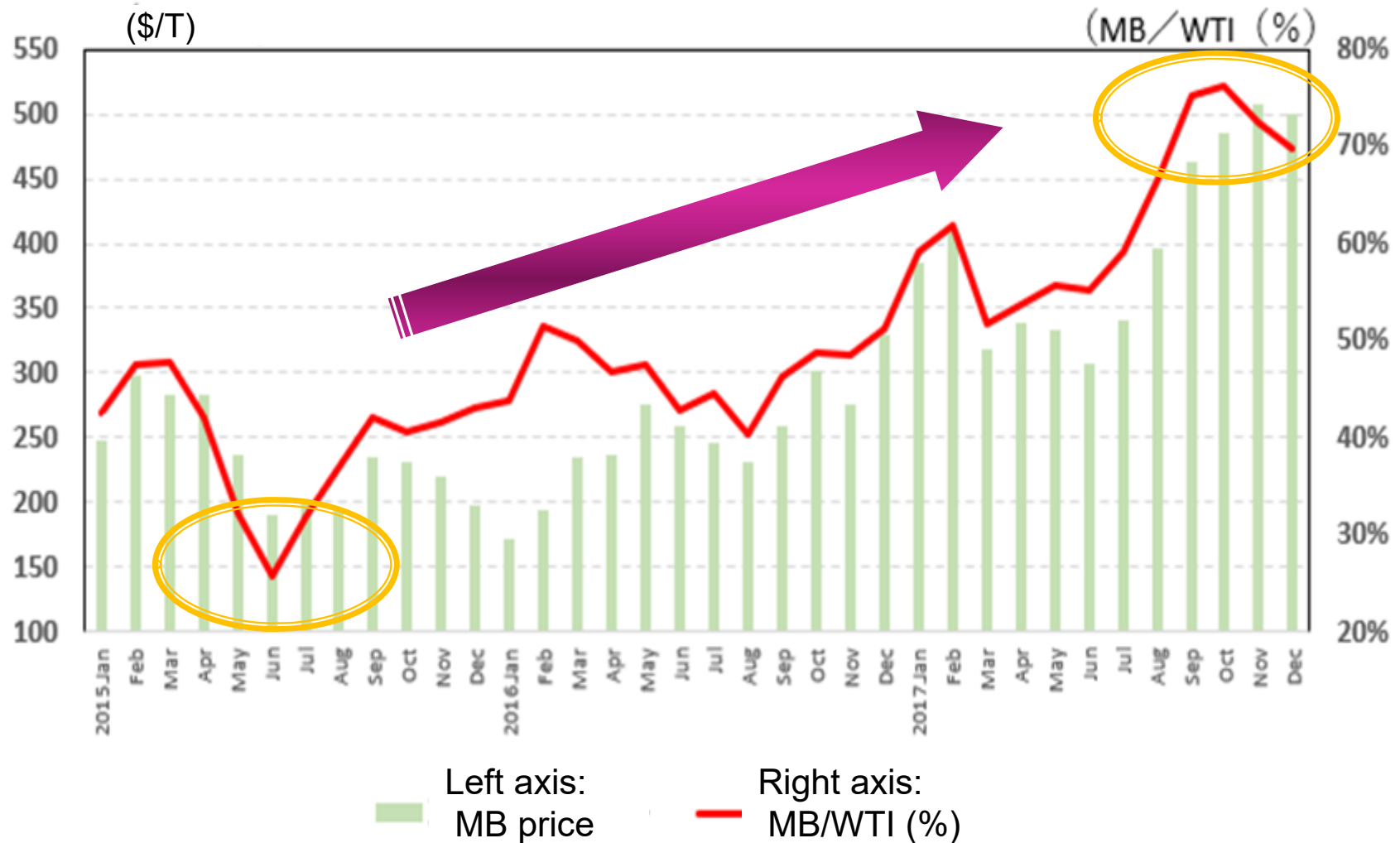
➤ US domestic inventories decrease as export volumes grow in 2017.



Source: EIA

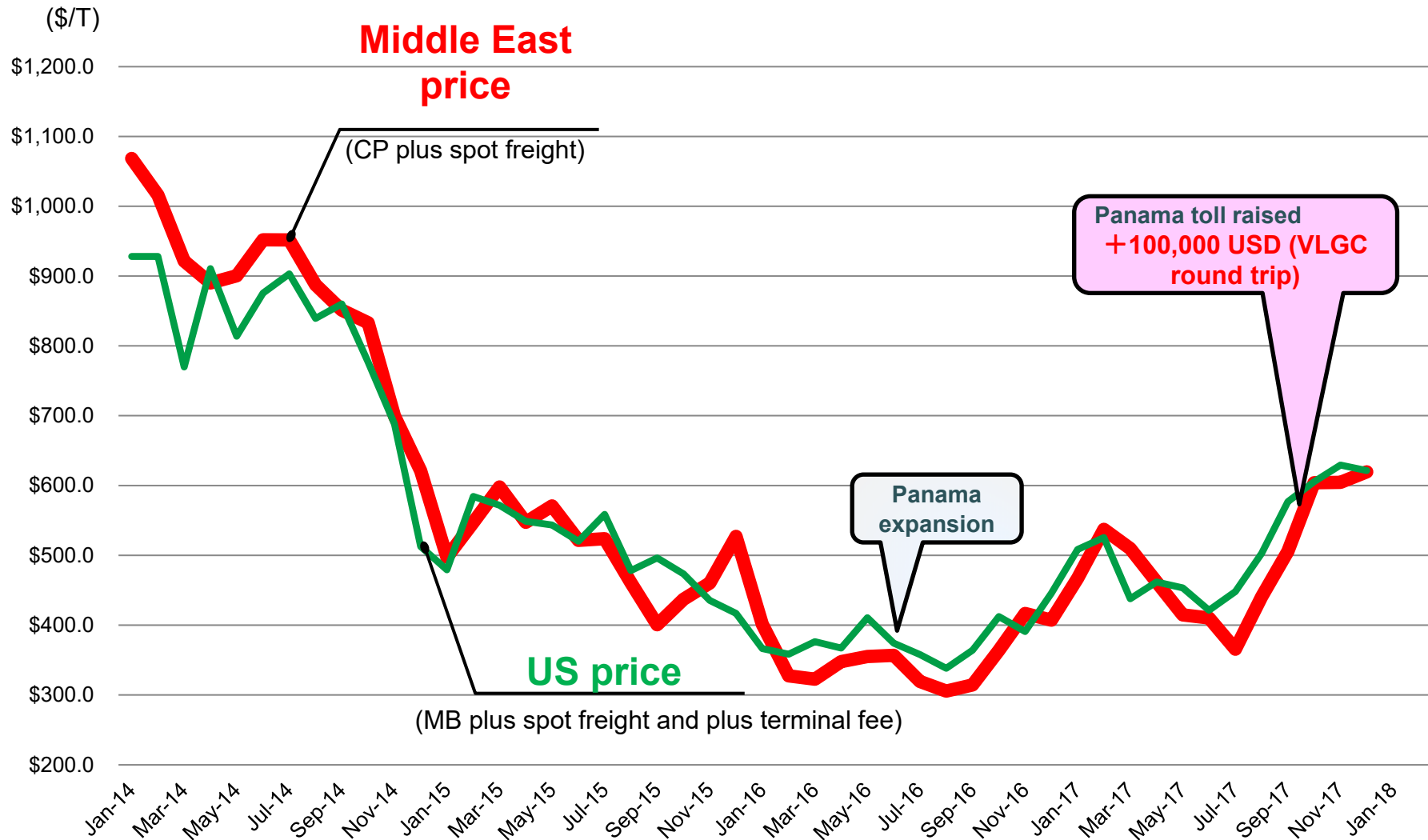
Trend of Mont Belvieu price compared with crude oil (WTI)

- MB price went up against crude oil in 2017, followed by tight LP gas supplies due to lower inventory levels.

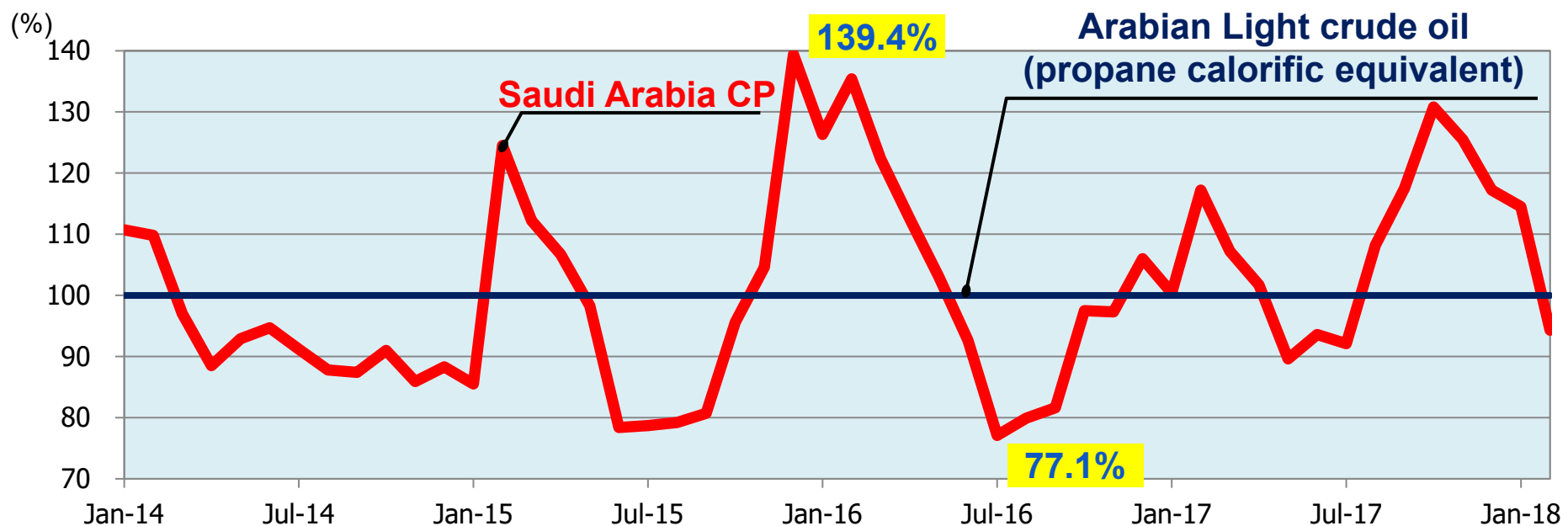
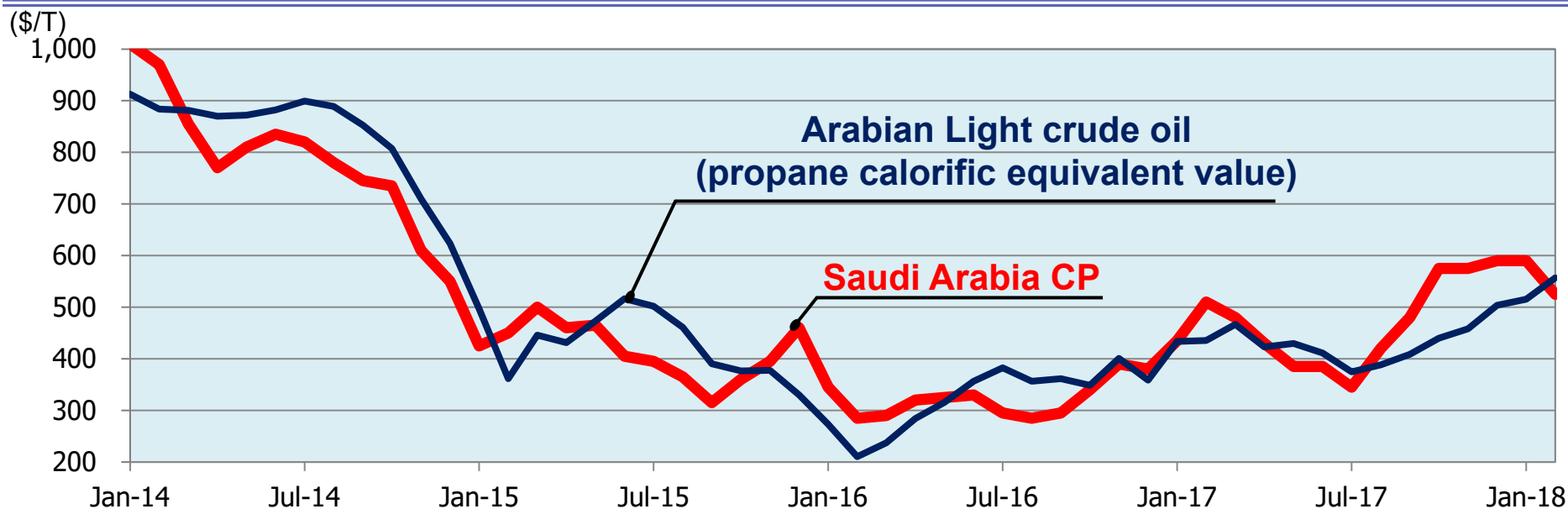


Trend of LP gas price produced in the Middle East vs. US (Japan arrival basis)

- Middle East price is strengthening its correlation with MB since 2014.
- Both CP and MB on the rise in 2017, together with oil prices increase.



Trend of crude oil price (AL) and CP (propane)

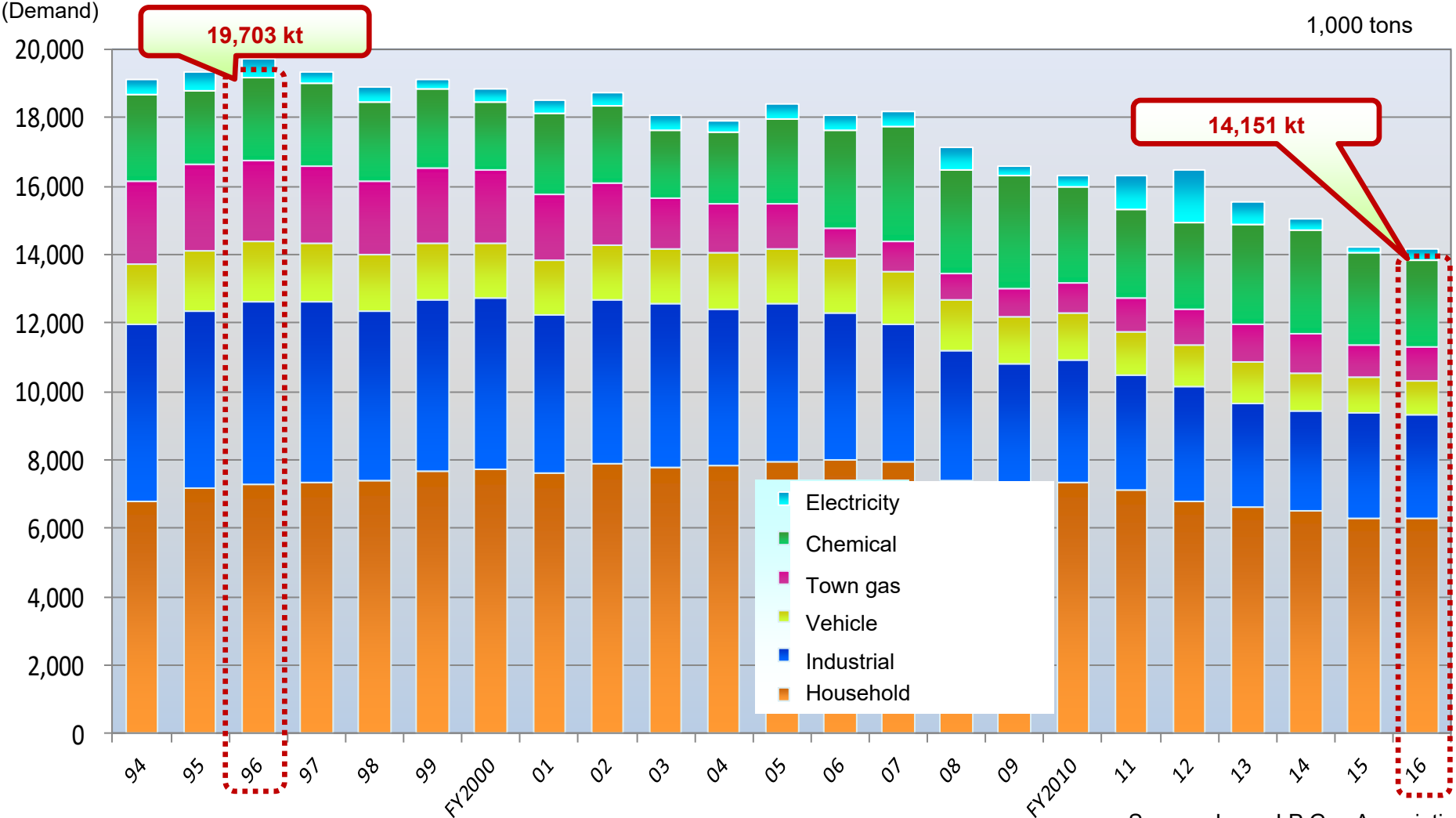


Chapter 2

The LP gas industry's initiatives in Japan

Trend of LP gas demand in Japan

➤ Peaking in 1996, LP gas demand has been in decline and continued to do so in FY2016.

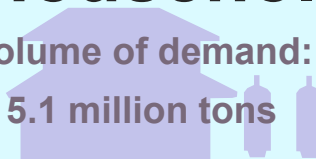


Source: Japan LP Gas Association

Demand creating initiatives of each sector (year 2030 target)

Household

Volume of demand:
5.1 million tons



Commercial

Volume of demand:
2.2 million tons



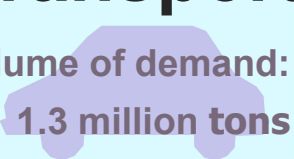
Industrial

Volume of demand:
6.2 million tons



Transport

Volume of demand:
1.3 million tons



High-efficiency water heaters

16 million units




Fuel cells for homes

1.5 million units




FRP containers

Expand usage



GHP

Equivalent to
1,200,000 kW




Disaster response bulk supply system

Facilitate installation



Fuel conversion

1,580,000 tons



Industrial LPG furnace

Cogeneration

Equivalent to
1,600,000 kW



LPG vehicles

560,000 units



LPG taxis



LPG trucks

Source: Medium to long-term outlook, second revision, Japan LP Gas Association, November 2015

Standardization of technology for producing FRP containers and acceleration of their usage

➤ **Fiber Reinforced Plastics – FRP container advantages**

- Pressure resistance performance is 100% higher than iron containers, it **does not explode in fires, it is very safe.**
- **Half the weight of steel**, highly portable (reduce freight workload).
- **Colorful and aesthetic**, blends well with indoor and outdoor **scenes**.
- Plastic **does not rust**, suitable for boats and use in coastal areas.

Technology standardization

< 10 kg or lighter containers:
From 2016>



<20 kg containers:
From spring 2018>



Promotion of installation of GHP and cogeneration systems

- Support the conversion to a diversified energy system, considering the energy-saving measures and utilizing the experience of disasters.



Gas heat pump (GHP)



Cogeneration system

- Advanced Greenhouse



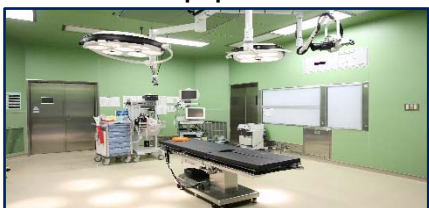
- Power demand peak control



- Workable also in cold district

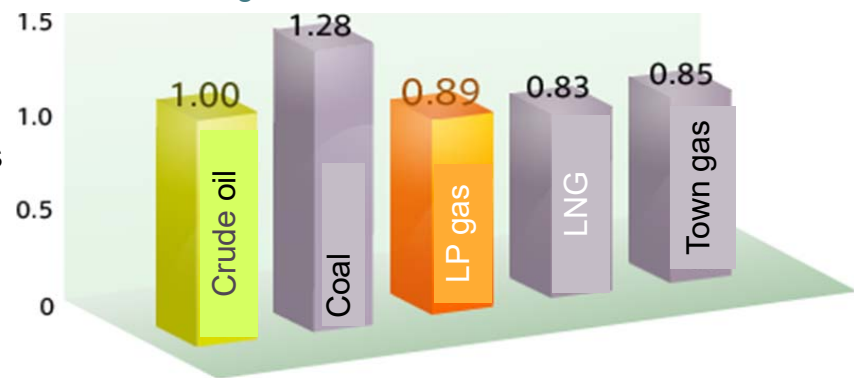


- Backup power for hospitals

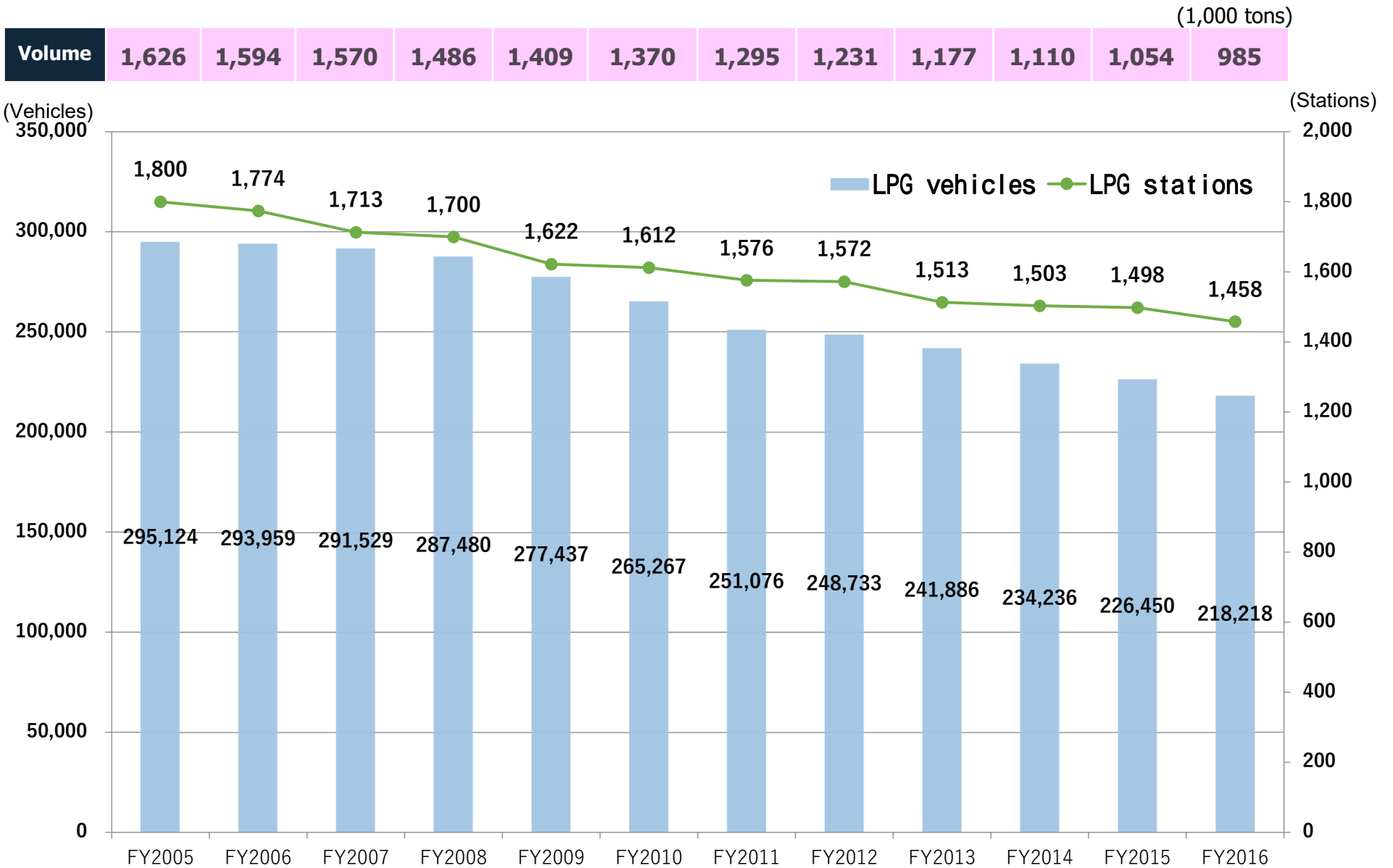


➤ **CO₂ emission coefficients comparison**

Index of emission factors per unit calorie is calculated as crude oil being 1



Trend of automotive LP gas consumption and the number of LPG vehicles



Acceleration of the spread of LPG vehicles to respond to disaster-recovery and care-giving needs

GOOD DESIGN
AWARD 2017



Toyota Motor

JPN-TAXI <LPG hybrid>

<Available since October 2017>



Nissan Motor

NV200 <LPG bi-fuel>

<Taxi available since July 2015>

<Standard passenger vehicle available since June 2017>

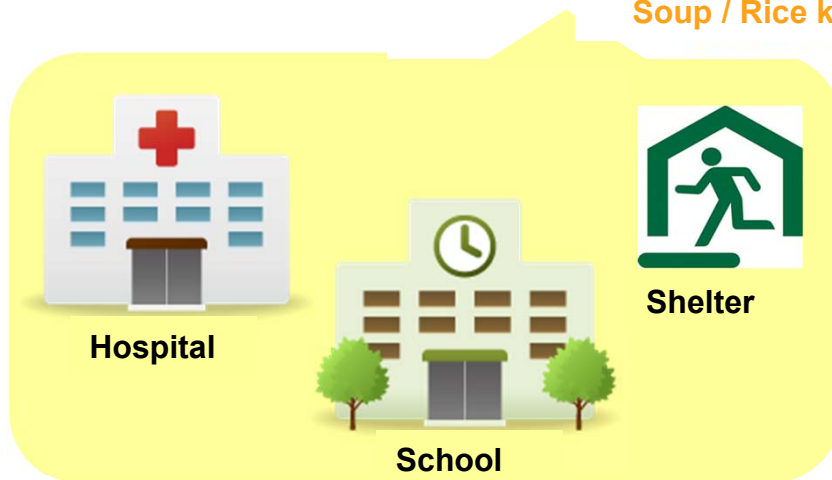
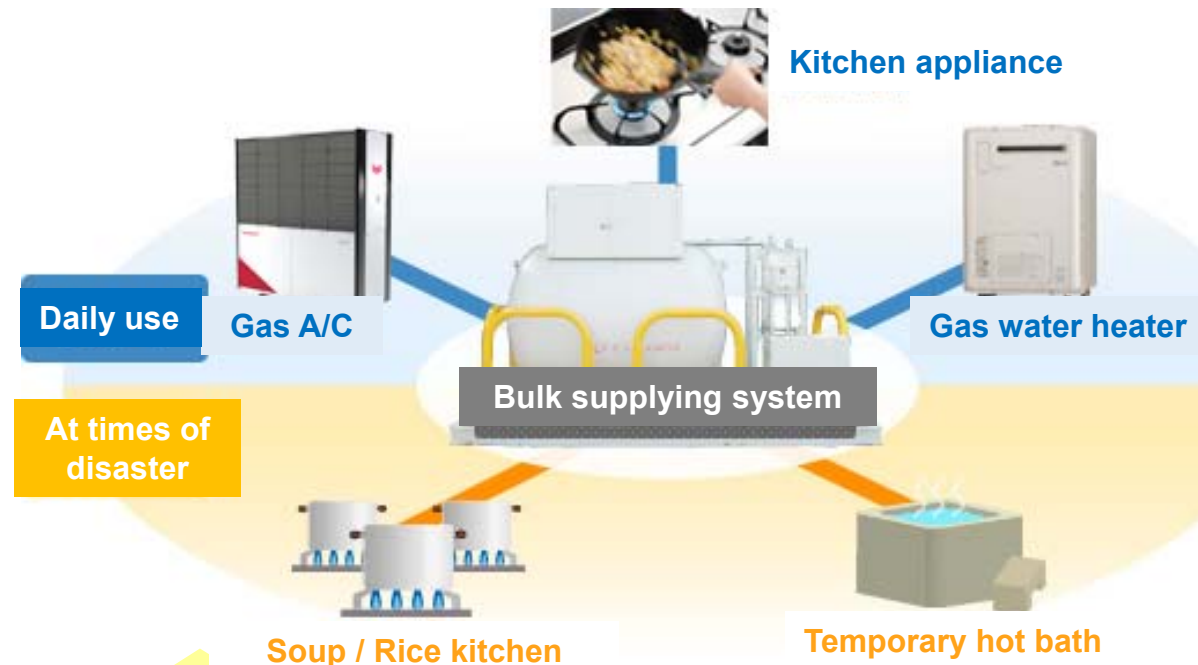
- For care-giving, **ready for wheelchairs and seniors**
- For diversifying fuel for official cars, **introduction to local governments**
- Certified for: **Eco-Car tax break (national tax) and special treatment of green vehicles (local tax)**



LPG taxis supported disaster recovery activities in 2011

Acceleration of the spread of Bulk-Supplying Systems responding to disasters

- Promoting supplying systems responding to disasters in public-private partnerships



➤ 2018 government subsidy program

Facility	Hospital, nursing home, permanent/temporary public shelter
Budget	JPY 600 million
Subsidy ratio	1) Private facility: 66% 2) Public facility: 50%
Total subsidized systems	391 units (as of January 2018)

Improving supply-side resiliency measures

Strengthening shipping terminals

- Generator cars deployed **in four import terminals** to maintain shipping functions during blackouts at times of disasters
- Connectors for generator cars at **seven import terminals**

Generator car and connector

Kawasaki, Nanao, Yokkaichi, Fukushima

Connector

Aomori, Niigata, Chiba



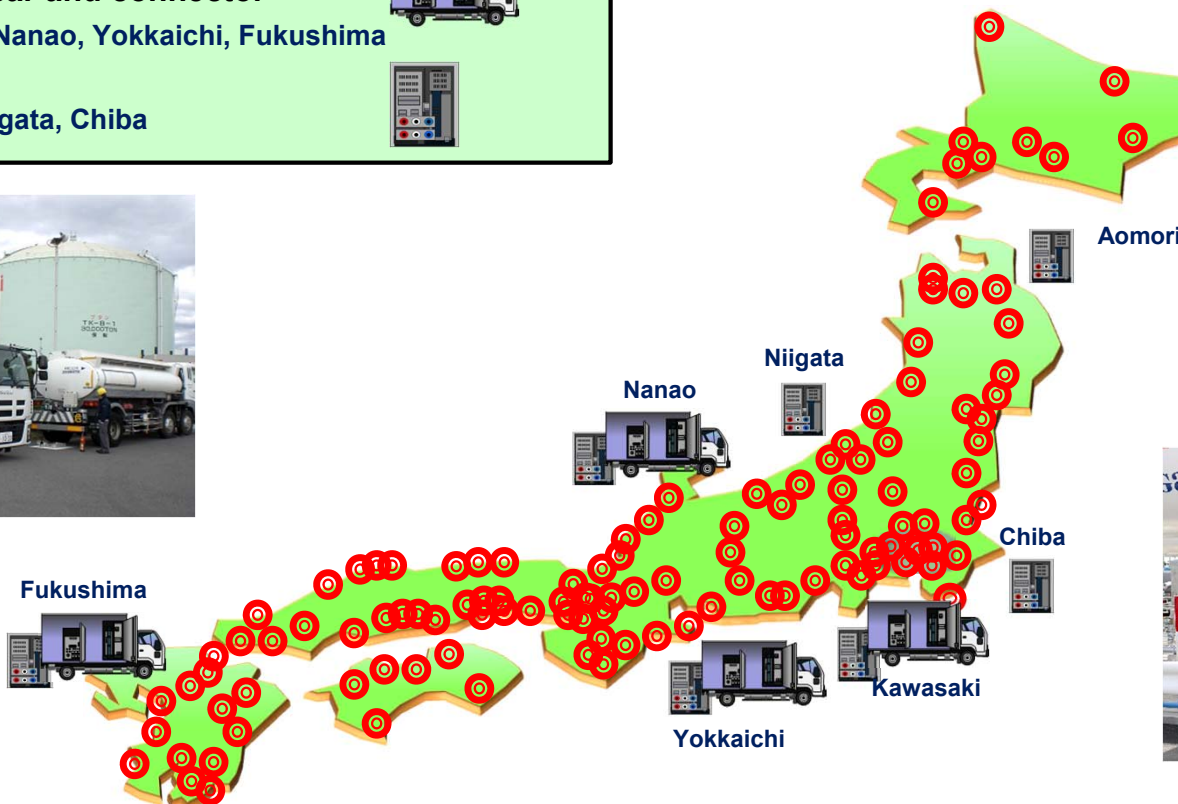
Improving core filling stations

- Designating **344 stations** as “core filling stations” with enhanced capabilities
 - 🌿 Installation of private LP gas generators
 - 🌿 Installation of LP gas dispensers
 - 🌿 Deployment of LP gas vehicles and LP gas delivery vehicles
 - 🌿 Deployment of satellite communication systems

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Core filling stations



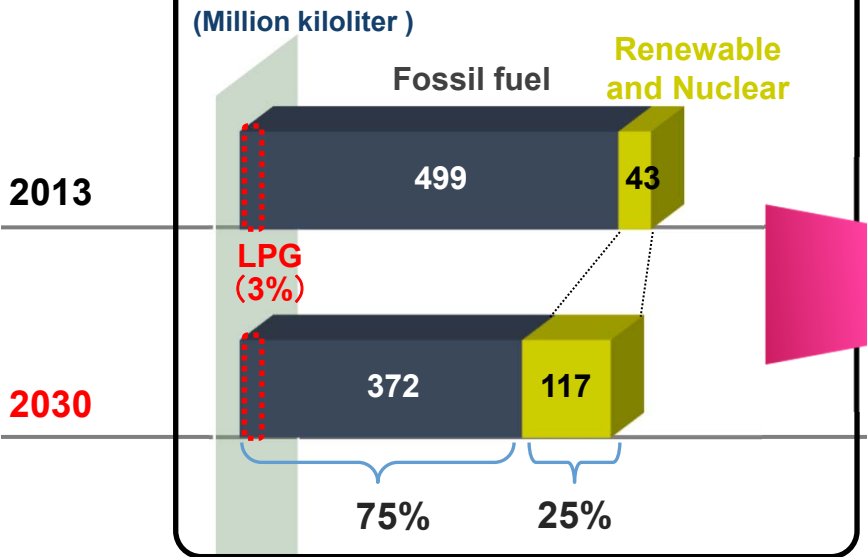
Chapter 3

Challenges and efforts of the LP gas industry over the coming years

Japan's energy policy from a long-term perspective

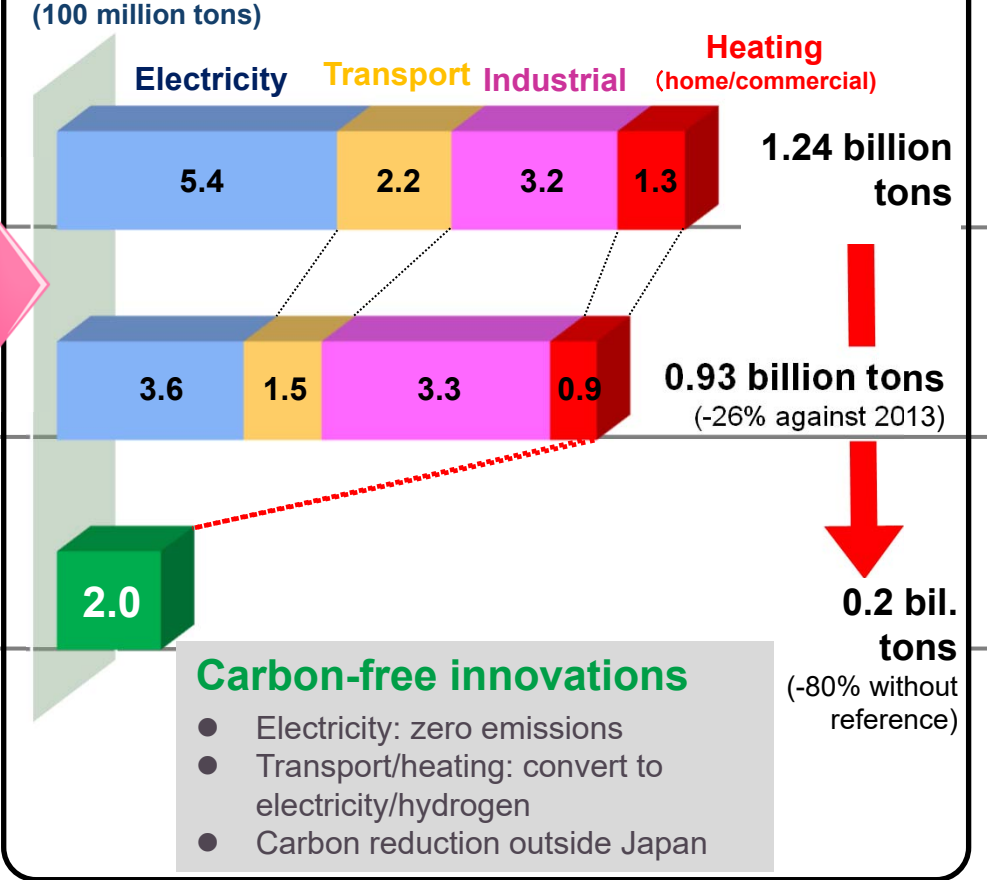
Long Term Energy Outlook (2014 published version)

Primary energy supply



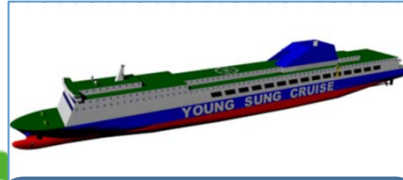
Revision in line with the Paris Agreement

CO₂ emissions



Source: document from the 23rd meeting of the Natural Resources and Fuel Committee of the Advisory Committee for Natural Resources and Energy, METI etc.

LP Gas as potential fuel for ships

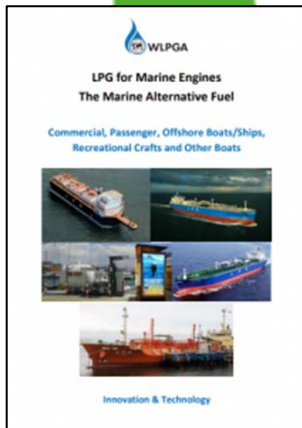


Fuel of Korean ferry converted to LPG (GE Group)



Development of LPG vessel, VLGC (Mitsubishi)

World LPG Forum (Marrakesh, Oct 2017)



WLPGA report on LPG for marine engines

<Challenges and efforts to spread LP Gas>

Global LP gas demand outlook

Borderless collaboration between LP gas business operators: still lacking leaders

Establish supplying framework, partnership with current bunker operators

CO2 reduction as well as Sox control expected

Deregulation of Japan's domestic energy market

Electricity market

Town gas market

Conventional regional monopolies

FY2016

Retail market: completely deregulated

FY2017

Retail market: completely deregulated

FY2020

Transmission and distribution sectors separated

FY2022

Pipeline sector separated

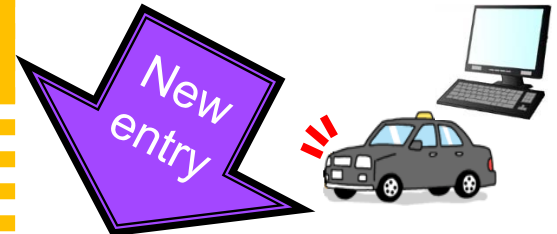
Current number of households

Total number of households	53 million households*
Electricity only	6 million
Town gas	25 million
LP gas	24 million

*incl. overlaps

New players

- ICT
- Automotive industry, etc.



<<<< **Breaking down market borders** >>>>

Competition between energy sources accelerated by new market entries

Price transparency and normalization of business practices

- To make LP gas more attractive to consumers and win the competition between energy sources, business operators are required to align with government guidelines, “**disclosing the standard fee menu**” and the “**clear indications of the fee structure on utility bills**”, in an effort to enhance price transparency and normalize business practices.

<Government decisions>

(1) <Establishment of guidelines for normalizing LP gas retail business practices>

Effective from February 22, 2017 (revised in February 2018)

In the same manner as electricity and town gas, guidelines for normalizing business practices (e.g. announcing a standard fee menu and monthly payments, explaining the reasons before raising prices, and responding appropriately to customers' inquiries) have been created.

(2) <Partial revision of the Ordinance for the Enforcement of the LP Gas Act>

Effective from June 1, 2017

Disclose the LP gas fee structure to consumers.

(3) <Partial changes to the operation and interpretation of the Ordinance for the Enforcement of the LP Gas Act>

Effective from June 1, 2017

Disclose the fee structure to residents in rental homes.

Clarify interpretation of the Ordinance to avoid problems when removing the existing LP gas supply systems.

Summary: future efforts of the LP gas industry

- Maintain affordable and stable supply by exploring **further diversification of supply sources**.
- **Enhancing the disaster response capability** as the disaster resistant energy.
- **Creating demand** in line with government targets with an emphasis of the eco-friendly superiority of LP gas.
- In the deregulated energy market environment, improve existing market conditions by enhancing **price transparency** and **normalization of business practices** in collaboration with relevant parties.
- By building upon our historical experience in maintaining safety and security, **establish stronger ties with countries outside Japan** in Southeast Asia and other regions, to help member companies develop overseas markets through technological partnerships.



ご清聴ありがとうございました。
Thank you for your kind attention.

日本LPガス協会
Japan LP Gas Association

<http://www.j-lpgas.gr.jp>