



Paradigm Shift and Challenges of LP Gas

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Chairman
Japan LP Gas Association

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About the Japan LP Gas Association

Members	LP Gas importers and producers based in Japan
Chairman	Tatsuhiko Yamasaki (President, Astomos Energy Corporation)
Number of members	14
Established	1963



Member companies

- Astomos Energy Corporation
- Cosmo Petroleum Gas Co., Ltd.
- EMG Marketing Godo Kaisha
- ENEOS GLOBE Corporation
- Itochu Corporation
- Iwatani Corporation
- Japan Gas Energy Corporation
- JAPEX-SKS
- Kygnus LP-Gas Co., Ltd.
- National Federation of Agricultural Co-operative Association
- Showa Shell Sekiyu K.K.
- Sumitomo Corporation
- Taiyo Oil Co., Ltd.
- Tokyo Gas Co., Ltd.



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~ In response to the direction of the new energy policy ~

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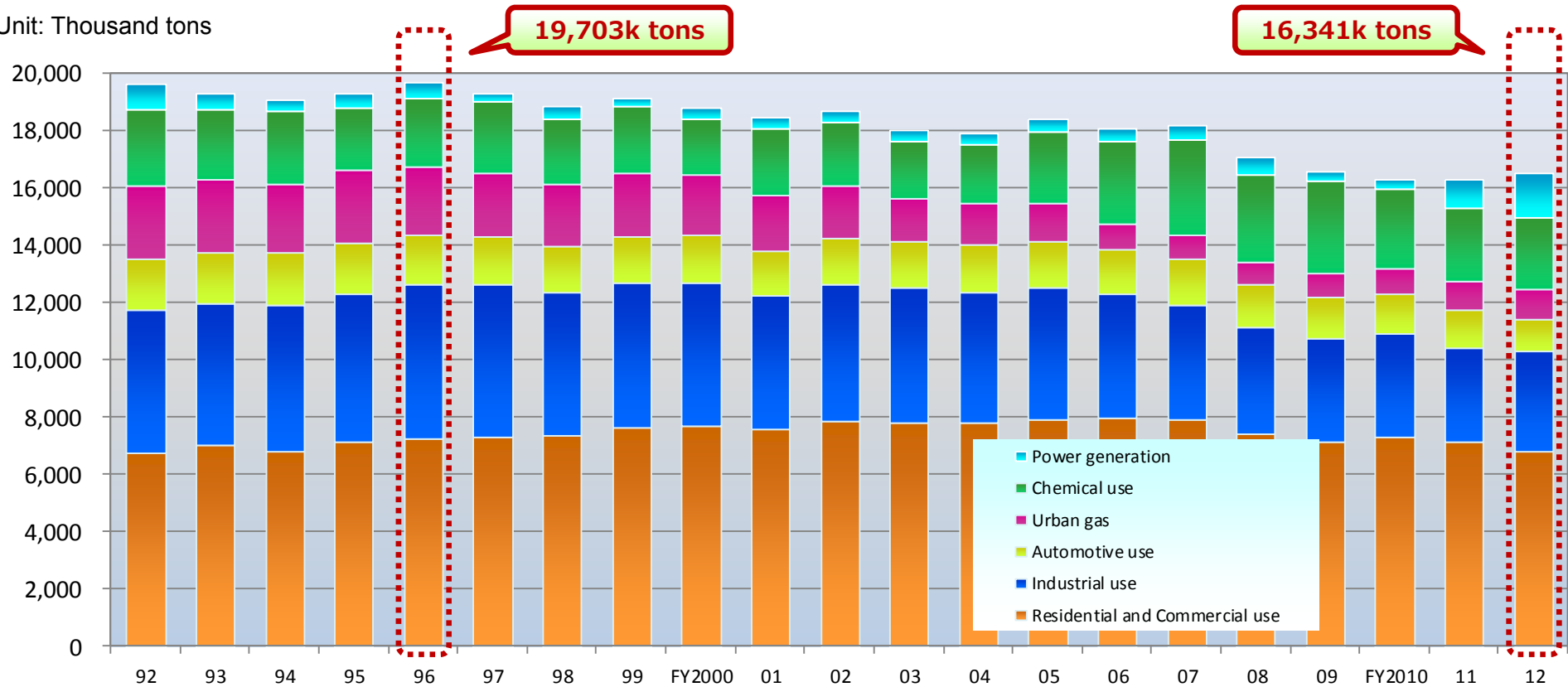
~ In response to the direction of the new energy policy ~

1.1 Trend of LP Gas Demand by Sector

Japan's LP Gas demand peaked in FY1996 and continued to make a gradual decline until FY2011. The figure edged up in FY2012 due to demand for power generation.

LP Gas Demand (FY1992 – FY2012)

Unit: Thousand tons



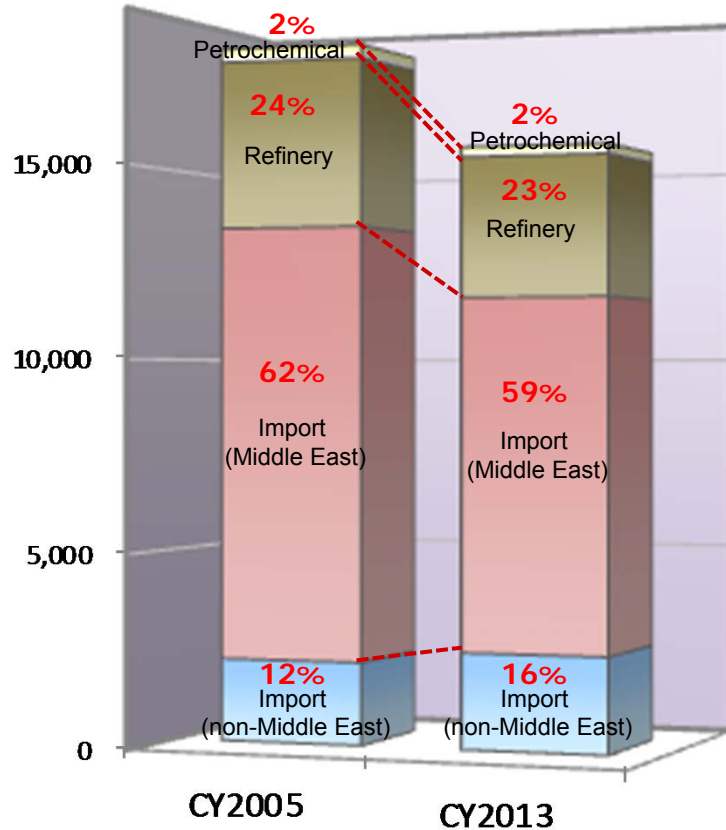
Source: "LP Gas Demand Outlook" by the Liquefied Petroleum Gas WG, Petroleum Products Demand Outlook Committee, METI

1.2 Comparison of Main LP Gas supplying countries to Japan

The amount of LP Gas supply is on the decline in line with the demand trend. Among LP Gas supplying countries to Japan, the ratio of the Middle East has reduced, while that of non-Middle East regions such as the United States is increasing.

**Change of the LP Gas Supply
(CY2005,2013)**

Unit: Thousand tons



**Quantity by supplying countries
(CY2005,2013)**

Unit: Thousand tons

Country	CY2005		CY2013		2013/2005
	Q'ty	Share	Q'ty	Share	
Saudi Arabia	5,136	38.2%	1,475	12.7%	28.7%
UAE	3,239	24.1%	2,861	24.7%	88.3%
Qatar	1,242	9.2%	3,402	29.4%	274.0%
(others)	1,677	12.5%	1,360	11.7%	81.1%
Middle East total	11,294	84.0%	9,098	78.6%	80.6%
USA	33	0.2%	952	8.2%	2907.0%
Australia	1,084	8.1%	585	5.1%	53.9%
East Timor	0	—	569	4.9%	—
(others)	1,029	7.7%	371	3.2%	46.0%
Non-Middle East total	2,145	16.0%	2,477	21.4%	115.5%
Total	13,440		11,574		86.1%

Source: Japan LP Gas Association

1. Supply and Demand of LP Gas

2. Price Trends of LP Gas

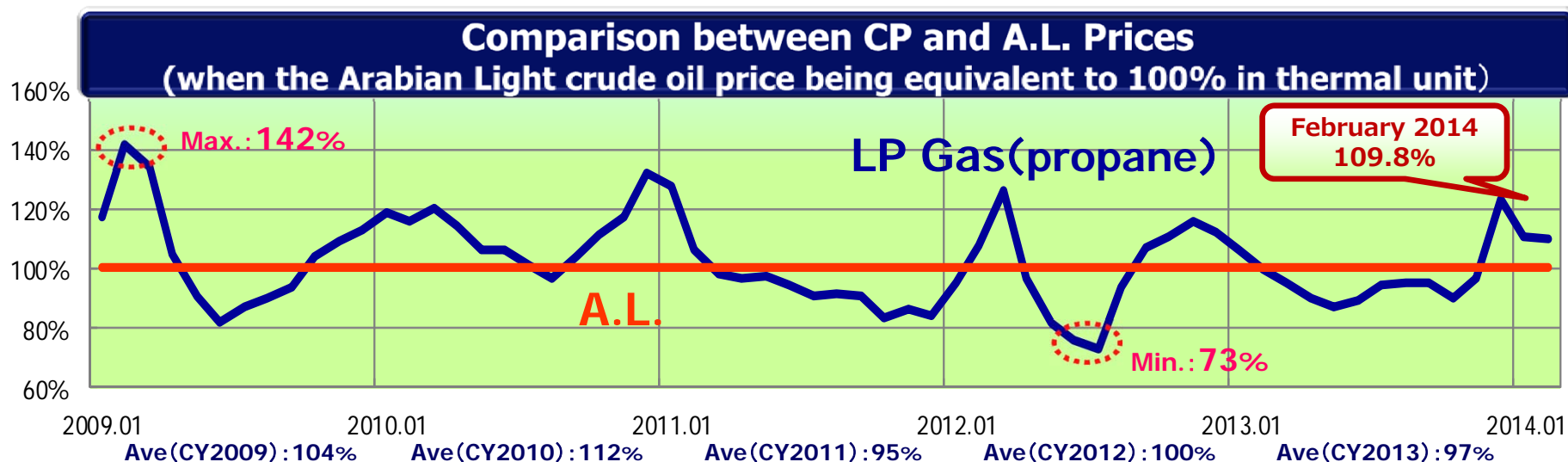
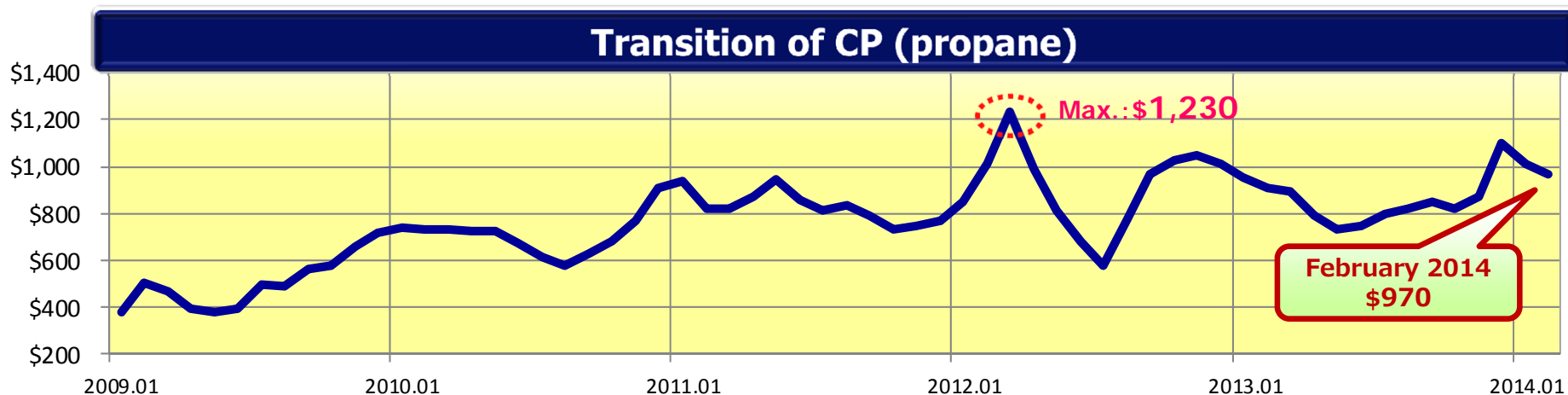
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2.1 Transition of CP and Comparison with A.L. Crude Prices

Increasing price fluctuations of LP Gas in recent years, showing an upward trend.

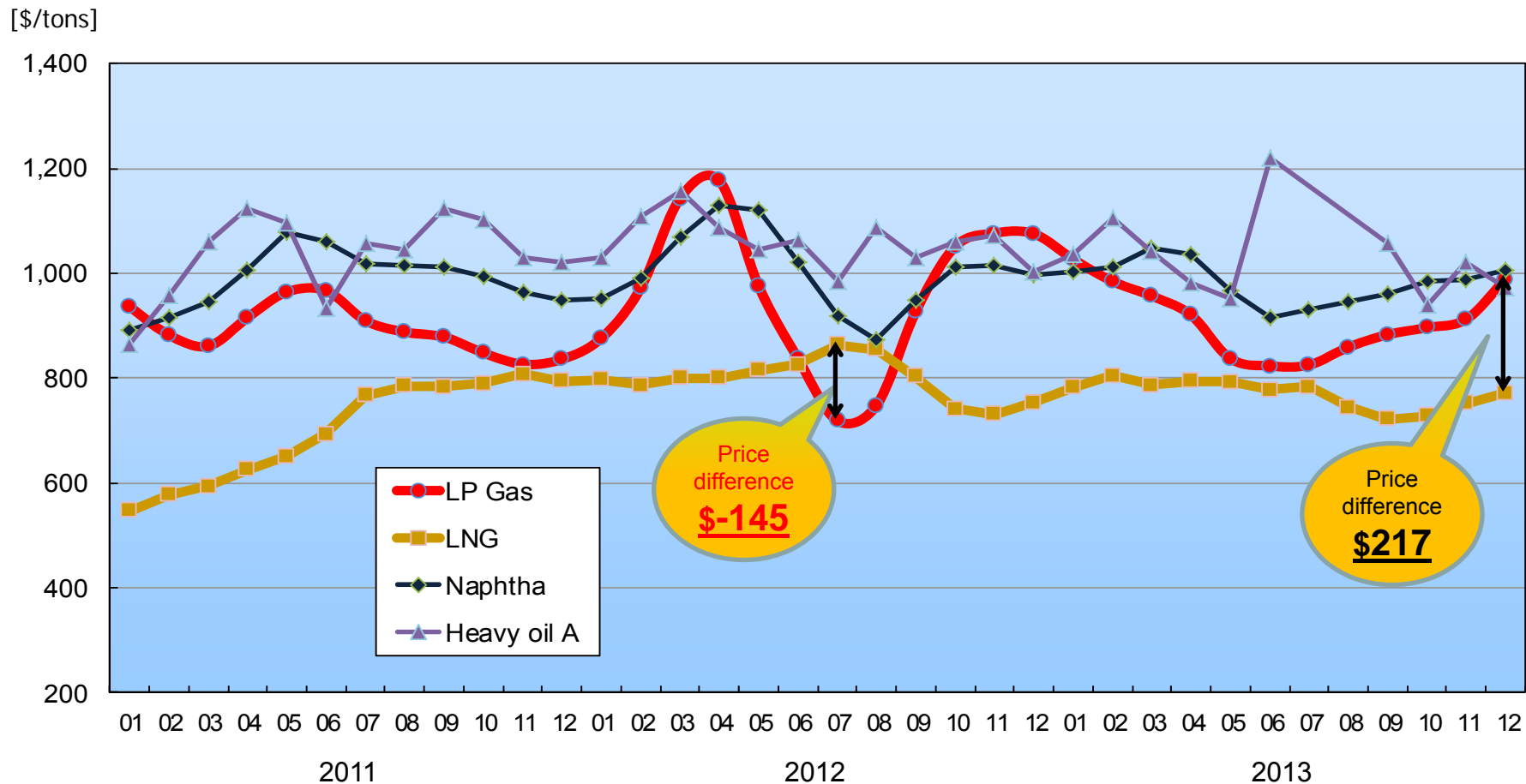


Source: Japan LP Gas Association

2.2 Transition of CIF Prices by Source

The prices of LP Gas and LNG reversed briefly, but LNG continues to stay more competitive.

Comparison of CIF prices between LP Gas, LNG and crude oil
 (CIF price comparison with the LNG, naphtha and heavy oil prices converted to LP Gas thermal equivalent)



Source: Compiled based on "Trade Statistics of Japan" by the Ministry of Finance

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3.1 New energy policy of the Japanese government

The government has reviewed “Basic Energy Plan” to promote the deregulation of the Electric utility industry and the Urban Gas utility industry as well.

Directions of New Basic Energy Plan

Improved Position of LP Gas

- **Diversified supply source of LP Gas** is reducing geopolitical risks
- Distributed energy with unique characters of portability and low greenhouse gas emissions
- Clean energy that is useful in emergency as well as in normal times

Policy direction

- “Last stronghold” energy supply in emergency
- **Further strengthening the supply** by increasing the national stockpiling and reinforcing the supply facilities such as core bottling stations
- **Promoting usages** of LP Gas by improvement of the local LP Gas supply system

Electric system deregulation

Full market liberalization leading up to the separation of power production and distribution / transmission

Urban Gas system deregulation

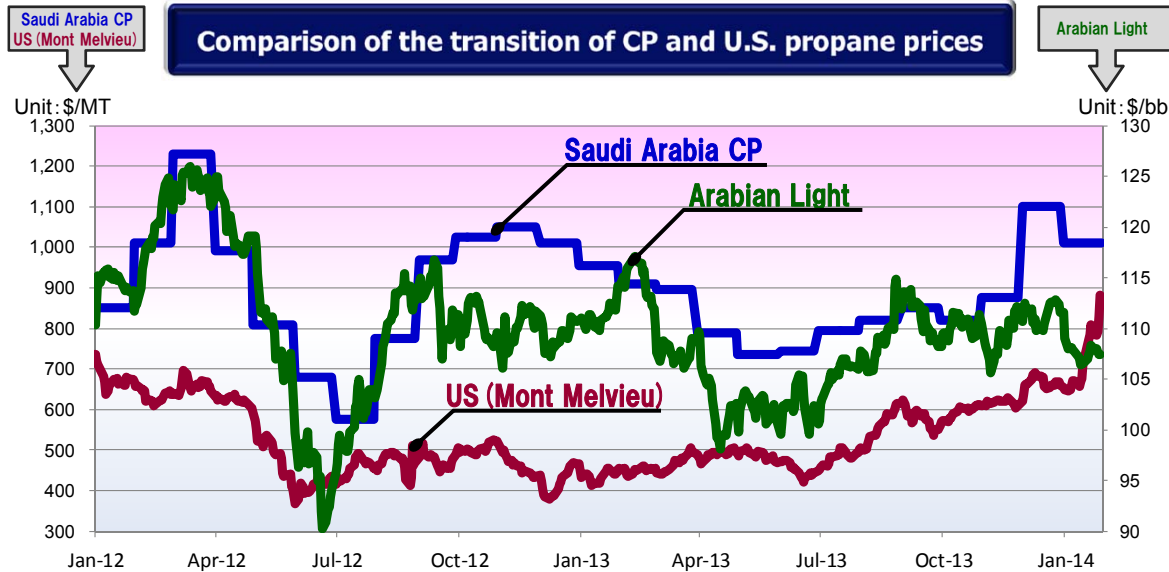
Debates commenced for full market liberalization

Intensifying competition among different energy

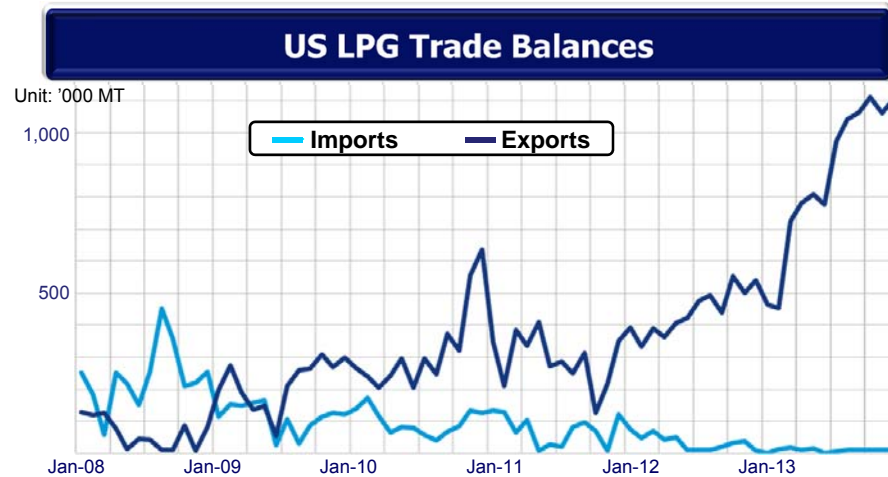
3.2 Diversified LP Gas procurement

~ increasing exportable availability of LP Gas in the United States ~

Due to Shale-associated LP Gas production in the United States, the supply sources of LP Gas to Japan can be diversified.



- Japanese companies have started to procure the shale-associated LP Gas on term basis at **U.S. prices**.
→ **LNG will be imported from 2017**
- LP Gas procurement from the United States is expected to reach **3 million tons** including spot purchases by **2017**.
(Equivalent to **approx. 25%** of annual import volume)



Outlook of term contracts of LP Gas ex-U.S.A.

Unit: 10,000 tons

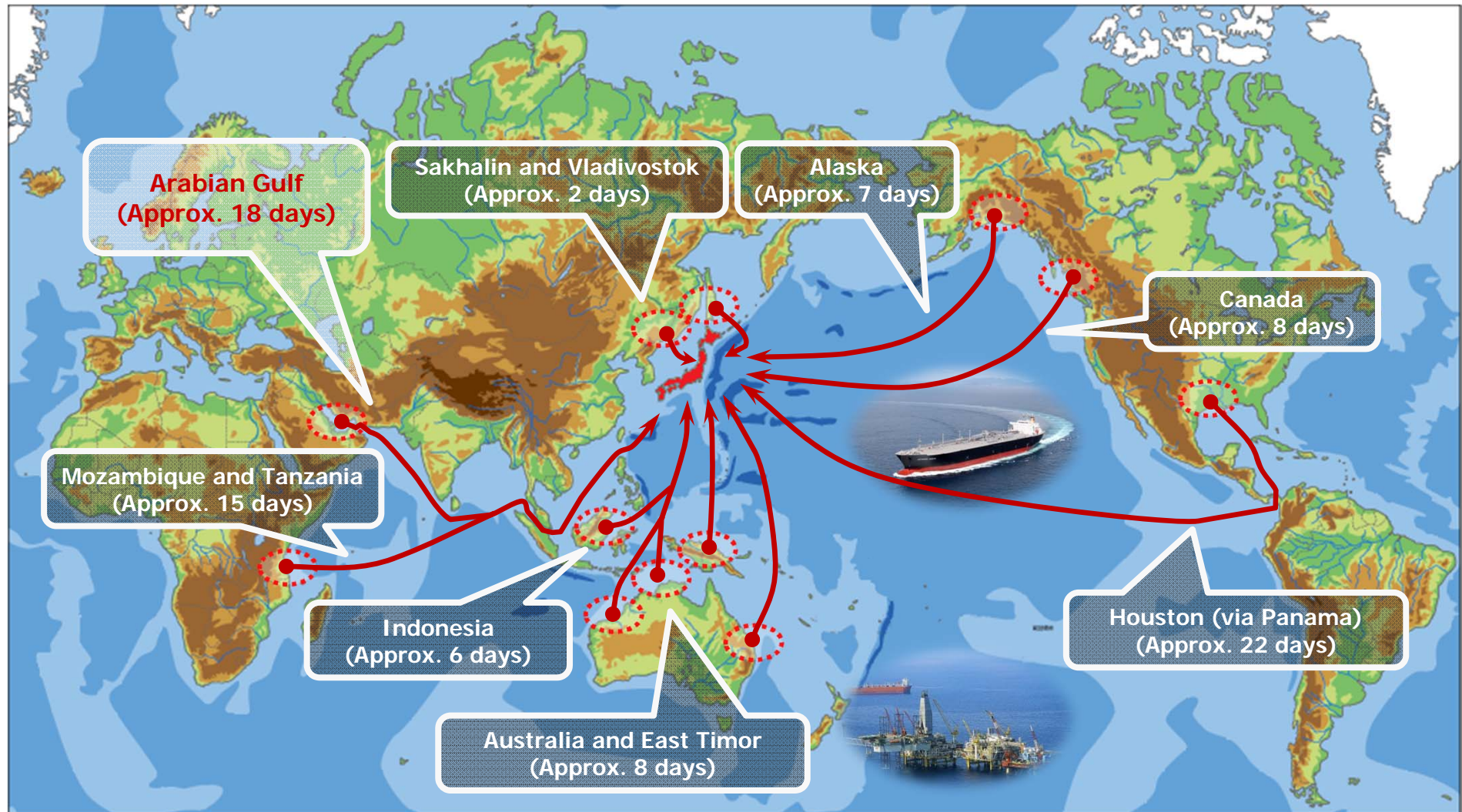
	CY2014	CY2015	CY2016	CY2017	CY2018	CY2019
Company A	40	40	60	80	80	Under negotiation
Company B	20	30	30	30	30	30
Company C		70	70	70	70	70
Company D		20	20	20		
Company E	8.8	8.8	8.8			
Total	68.8	158.8	188.8	200	190	100

Source: Clarksons Gas

Source: Natural Resources and Fuel Subcommittee, Advisory Committee for Natural Resources and Energy, Ministry of Economy, Trade and Industry

3.3 Diversified LP Gas procurement ~Development of new supply sources~

New supply sources in the Pacific Rim region, etc. being under development in association with the new natural gas projects.



3.4 Diversified LP Gas procurement ~after completion of the Panama Canal Expansion Project~

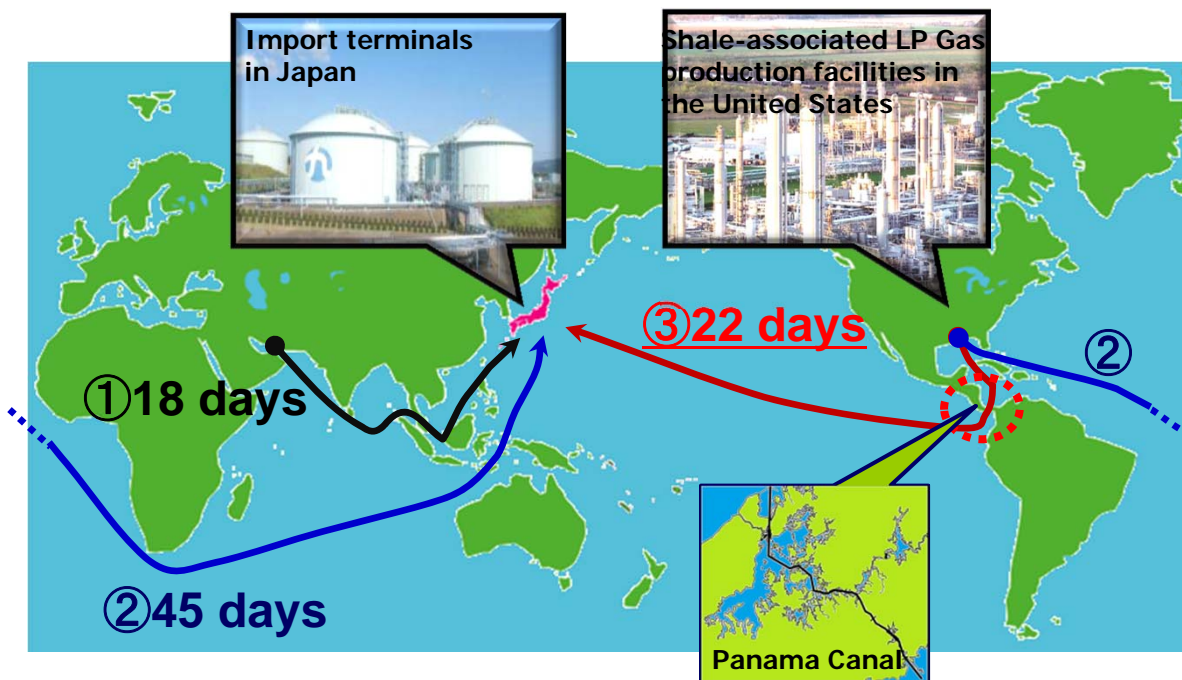
The completion of the Panama canal project will make LP Gas out of U.S Gulf easily accessible to Far East Asia.

Maritime route	One-way transportation duration	Freight rate
① AG / Far East	18 days	\$50/Mt (market rate)
② USGC/ Far East	45 days	\$156/Mt (market rate)
③ <u>USGC/ Far East (via Panama)</u>	22 days	\$83/Mt

As of February 2014



The completion of the Panama canal expansion project in 2015 will enable the use of the canal for LP Gas transportation. VLGC (LP Gas tanker) 47,000 tons



Photograph supplied by the Panama Canal Authority

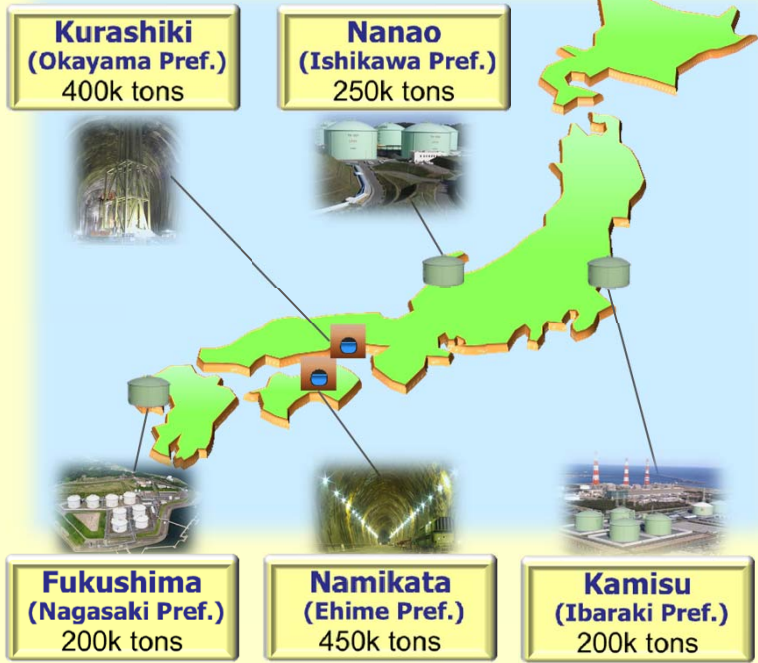
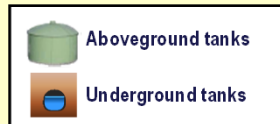
3.5 Supply-side reinforcement ~Strengthening the LP Gas reserve system~

Completion of national reserve bases for securing stable energy supplies.
 J-LPGA to start how the Japanese importers can contribute more effectively to secure LP Gas supply.

Development of national reserve bases

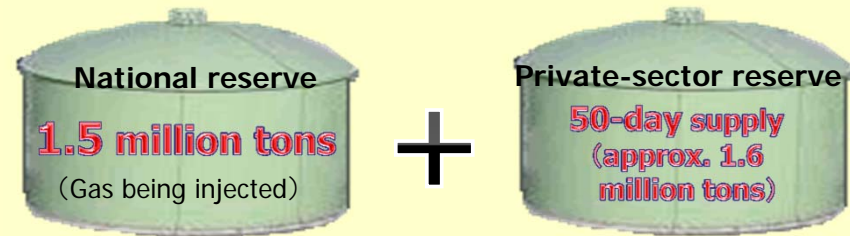
All the five bases have been completed and stockpile is building up to 1.5 million tons.

Current stockpile
822,000 tons
 (as of January 2014)



Japan's LP Gas reserve system

Legally obligated to secure stable energy supplies.



Effective use of private-sector reserve

Exploring specific options to make use of private-sector reserve to facilitate the diversified supply sources of LP Gas and to minimize the supply cost in line with the energy policy.

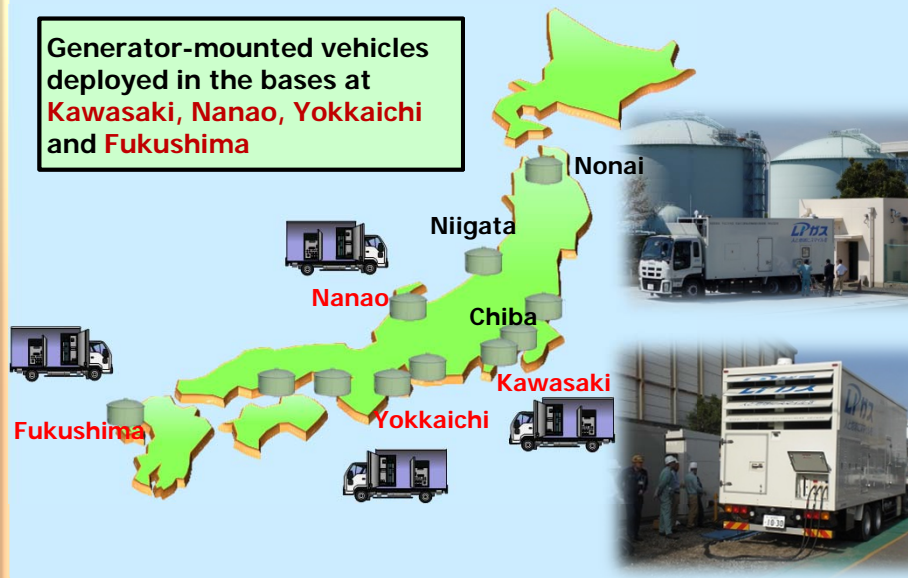
- Review the reserve system in response to the change of LP Gas demand
- Release the reserve at the time of market price hikes (flexible application of laws)
- Reduce the required private-sector reserve volume

3.6 Supply-side reinforcement ~Functions of the bases and the core bottling stations~

Enhancing the functions of the bases and the core bottling stations to ensure stable supplies of LP Gas even in emergency.

Enhancement of the bases' shipment function

Generator-mounted vehicles deployed in the bases at **Kawasaki, Nanao, Yokkaichi and Fukushima**



- Deploying the vehicle-mounted generators at the **four bases** to maintain delivering LP Gas by tank trucks even in the loss of grid power.
- Modifying electricity receiving system at Aomori and Niigata as well, in total **seven bases**, to accommodate the vehicle-mounted generators.
- Compiling the integrated database of tank trucks.

Enhancement of the core bottling stations



- Designating **344** bottling stations across the nation wide as "core bottling stations"
- Enhancing the functions of the core bottling stations
 - ✦ Installing LP Gas-fueled power generators
 - ✦ Deploying Autogas dispensers
 - ✦ Deploying Autogas fleets of the bottling stations
 - ✦ Installing satellite communications facilities

3.7 Demand-side reinforcement ~Partnership with local authorities~

Working with the local authorities to promote LP Gas to save lives at the disasters.

Partnership with local authorities

Emergency agreements signed ※As of October 31, 2013

Number of local authorities in Japan	Total number of agreements signed	Ratio of the agreements signed
1,789	890	49.7%

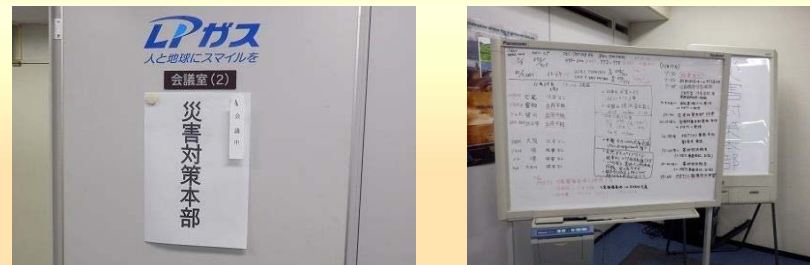


→ Installing bulk units and GHP at the shelters



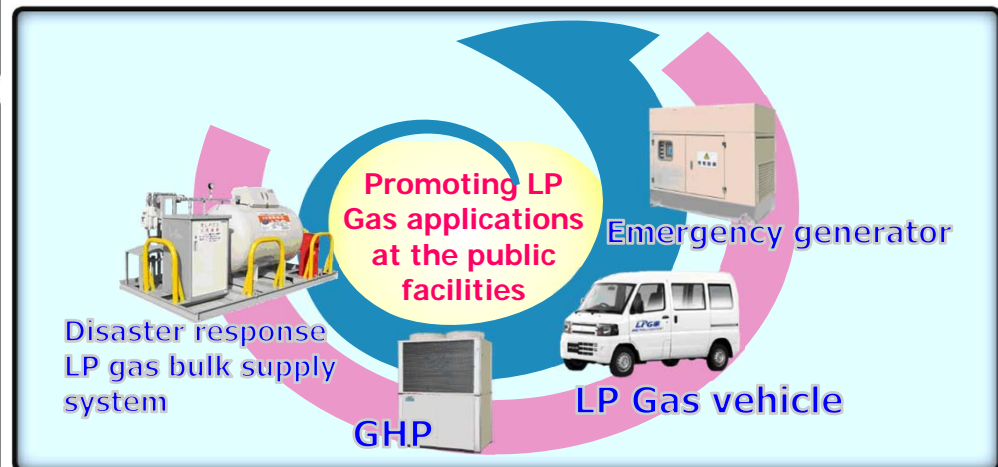
→ Offering LP Gas cookout kits and LP Gas generators for emergency

The supply cooperation scheme to secure LP Gas supply



- Dividing the nation into 9 blocks and drawing up the scheme for each block
- Implementing the supply trainings annually according to the law

Campaign by Japan L.P. Gas Sales Association



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~ In response to the direction of the new energy policy ~

4.1 In response to the direction of the new energy policy ①

The Japan LP Gas Association has reviewed the “Mid- to Long-Term Vision for the LP Gas Industries for 2030” and implemented the plans to create new LP Gas markets.

Residential sector

Energy efficient LP Gas water heater



Target: 14 million units

Proliferating to 70% of the LP Gas households.



FRP containers

Practical application

Promoting LP Gas markets by uniqueness of FRP containers.

Enhancing emergency response capability.



Residential fuel cells



Target: 1.5 million units

Proliferating to 7.5% of the LP Gas households.



Transportation sector

Advanced LP Gas vehicles

Target: 2.6 million cars

Promoting the advanced LP Gas vehicles to replace about 10% of the new passenger vehicles in Japan.



NV200 (Nissan)



JPN-TAXI (Toyota)

4.2 In response to the direction of the new energy policy ②

The Japan LP Gas Association has reviewed the “Mid- to Long-Term Vision for the LP Gas Industries for 2030” and implemented the plans to create new LP Gas markets.

Commercial and industrial sector

GHP



GHP X AIR
GHPプロセフ

Target: 1.8 million kW equivalent

Converting approx. 15% of the electric air conditioners at the office buildings into LP Gas-fueled GHP.

Co-generation



Co-generation in the industrial gas engine system

Target: 3.5 million kW equivalent

Proliferating the standalone distributed co-generation system including Fuel Cell fueled by LP Gas.

Fuel conversion



LP Gas tumble dryer

Target: 0.5 – 3.5 million tons

Convert approx. 15% of oil fuel for industrial-uses into LP Gas.

Residential sector

Commercial and industrial sector

Transportation sector

CO₂ volume reduced **14~16 million tons**
Total LP Gas demand **20~23 million tons**

Conclusion: In response to the direction of the new energy policy

REVIEW OF BASIC ENERGY PLAN

Improved position of LP Gas

- Reinforcing the supply structure
- Diversifying the supply sources

Intensifying competition among different energies

- Deregulation of
Electric utility industry
Urban Gas utility industry

Demand Creation

Energy saving / energy efficient; Distributed energy; CO₂ mitigation

J-LPGA urges gas producing nations to provide stable supplies at competitive and stable prices comparable to other types of fuel in order to ensure the continued development of Japan's LP Gas industry.

ご清聴ありがとうございました

Thank you for your kind attention.



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Japan LP Gas Association

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