

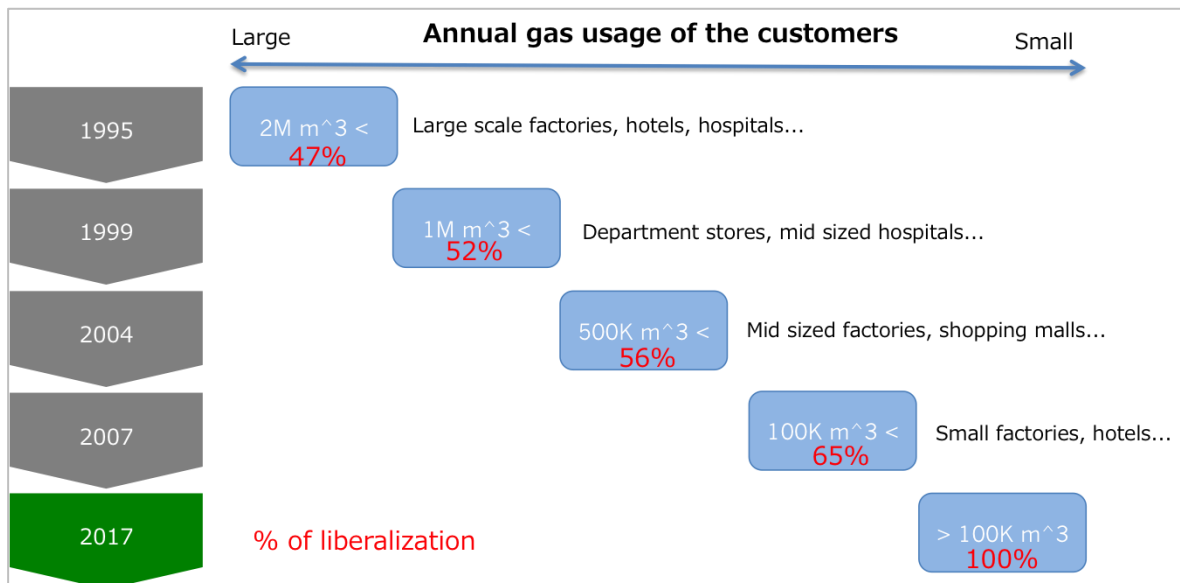
# Energy Sector Highlights

## (December 2014 – February 2015)

### Policies and regulations

#### Gas Market Liberalization

The retail gas market is moving toward liberalization. The Gas System Reform Subcommittee under the Ministry of Economy, Technology, and Industry, publicized a report in January, proposing that the market be fully liberalized by 2017. The aim of the government is to control the retail price of gas by encouraging new players to enter the market. If this happens, it will be the next significant step in a process of liberalization that was initiated in 1995.



**Figure 1: History of the liberalization of the gas system (Original source, METI)**

The committee estimates the market effect of full liberalization at JPY2.4 trillion, including access to 25 million households throughout the entire nation. Currently, gas providers are categorized as follows:

- **General Gas Utilities** handle both retail and supply pipes. 209 companies fit into this category in 2013.
- **Large Volume Gas Providers** sell only to large-scale customers.
- **Gas Pipeline Service Providers** are engaged with wholesale and large-scale retail sales.

As a result of the proposed reform, companies participating in the market will be categorized as Gas Pipeline Service Providers and Gas Retail Companies, regardless of the size of their customers.

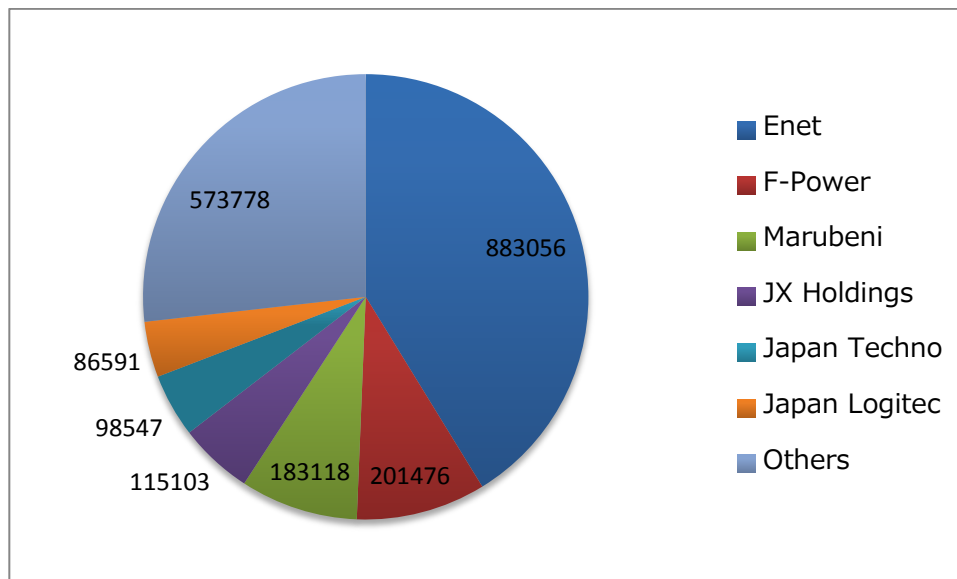
### **Reform of the Electricity System**

In addition to the reforms described above, the liberalization of the electricity market is also gradually proceeding. As the first step of this reform process, the Organization for Nationwide Coordination of Transmission Operators will begin its operations in April 2015. The organization's role involves supporting and smoothening "switching," which is when customers change electricity suppliers. When the application to switch is submitted, the customer's information (equipment, usage history, and the availability of a smart meter) will be provided to potential retail electricity suppliers. These retail providers will then propose an optimal contract plan based on the user's information. The processing of switching applications will begin in January 2016.

### **Competitive landscape**

Liberalization of the electricity market has been attracting a number of new entrants called Power Producer and Supplier (PPS.) 547 companies are registered as PPSs as of February 16, 2015. That number has tripled since 2013, although the share of PPSs within the liberalized electricity market was still 4~6%

as of November 2014. Enet, created by NTT Facilities, Tokyo Gas, and Osaka Gas, is the dominant PPS, and produces about 40% of the electricity produced by all of the PPSs combined. Other influential players include F-Power (financial), Marubeni (trading), Showa Shell (oil), and JFE (steel.) In addition to this, new PPSs are being created by players from other industries, such as Panasonic (consumer electronics), Toyota (automobile), Softbank (telecommunications), and Daiwa House (housing.)

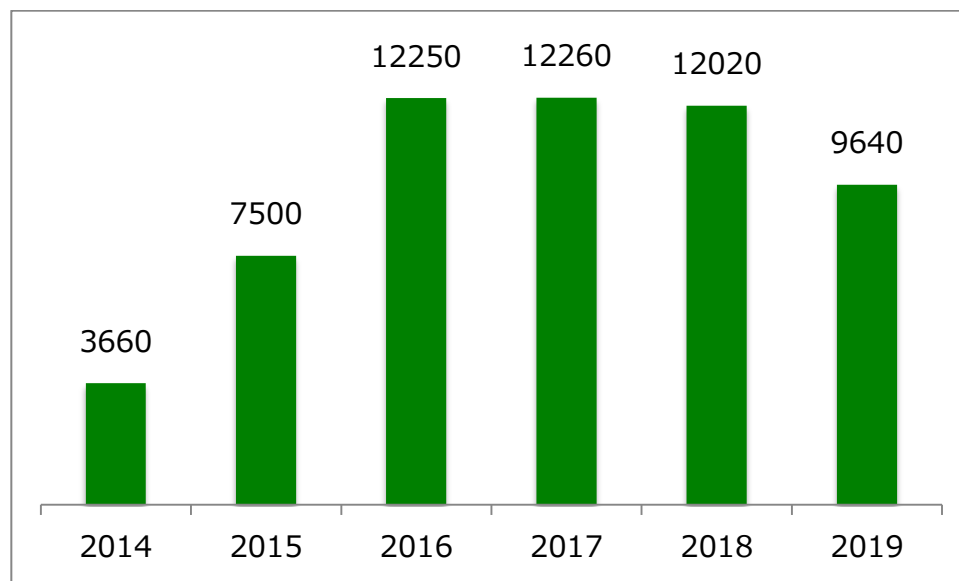


**Figure 2: The market share of PPSs in November 2014 (Source: J-Energy)**

## Adoption and development

### Adoption

The adoption of smart meters is accelerating as the liberalization of the electricity market approaches. METI expects that 80 million households (100% coverage) will have a smart meter installed by 2024.



**Figure 3: The number of smart meters installed in thousands of units**  
(Source: METI)

In this context, NTT East, the broadband service provider, announced that they would commence services associated with smart meters for its broadband subscribers. As an example, its set-top-box Hikari Box+ with an external USB dongle will directly communicate with smart meters installed in homes and allow remote control, and browsing of the status of, home appliances. These products adopt the domestic HEMS standard of ECHONET Lite as a communication protocol. NTT West intends to make this functionality available also to other service providers.

## Developments

We have recently seen announcements by the two largest convenience store chains in Japan.

Firstly, the chain Lawson has opened a new location that consumes only 60% of the electricity similar locations used in 2010. As many as 15 energy saving measurements have been implemented in the facility;

1. The front doors are fitted with double-layered glass, which is injected with waste hot air produced at the site.
2. The external walls are covered with tent fabric to prevent the entry of heat from the sun.
3. The roof is fitted with a layer of solar panels to protect it against direct sunlight
4. A part of the external wall is planted with greenery to reduce heat
5. Adiabatic materials have been used for the walls and the roof
6. There is an automatic ventilation system
7. The location features air conditioning utilizing geothermal heat
8. Heat accumulating radiation panel have been fitted
9. There is an earth tube (embedded underground), which collects heat from the ground
10. A gravity-based ventilation system has been employed
11. There are solar power generation and power storage systems in place

12. The site has a CO2 cooling case
13. There is a desiccant cooling system
14. The site uses LED lighting
15. Finally, there is an AI-based energy management system

7-Eleven Japan makes use of sensors to reduce energy consumption in its stores and offices, This includes the installation of Green MEMS Sensors, and autonomous small devices (of about 1 x 2 inches), created by two governmental research organizations called NEDO and NMEMS. The company has also installed 20000 sensors in 2000 locations in order to collect information regarding electricity use, humidity and temperature. By creating models of the status of doors and location equipment, the company has managed to reduce its energy consumption by 10%

## Sources/References:

### Policies and regulations

- [Ministry of Economy, Technology, and Industry](#) (Japanese)
- [Ministry of Economy, Technology, and Industry](#) (Japanese)
- [Smart Japan](#) (Japanese)

### Competitive landscape

- [PPS List by METI](#) (Japanese)
- [J-Energy](#) (Japanese)
- [J-Energy](#) (Japanese)

## Technologies and adoptions

- [Smart meter adoption - METI](#) (Japanese)
- [Smart meter adoption – Smart Japan](#) (Japanese)
- [Lawson](#) (Japanese)
- [7-Eleven – Smart Japan](#) (Japanese)