

Energy Market Reform in Japan

TATSUO HATTA

Chairman, EGC

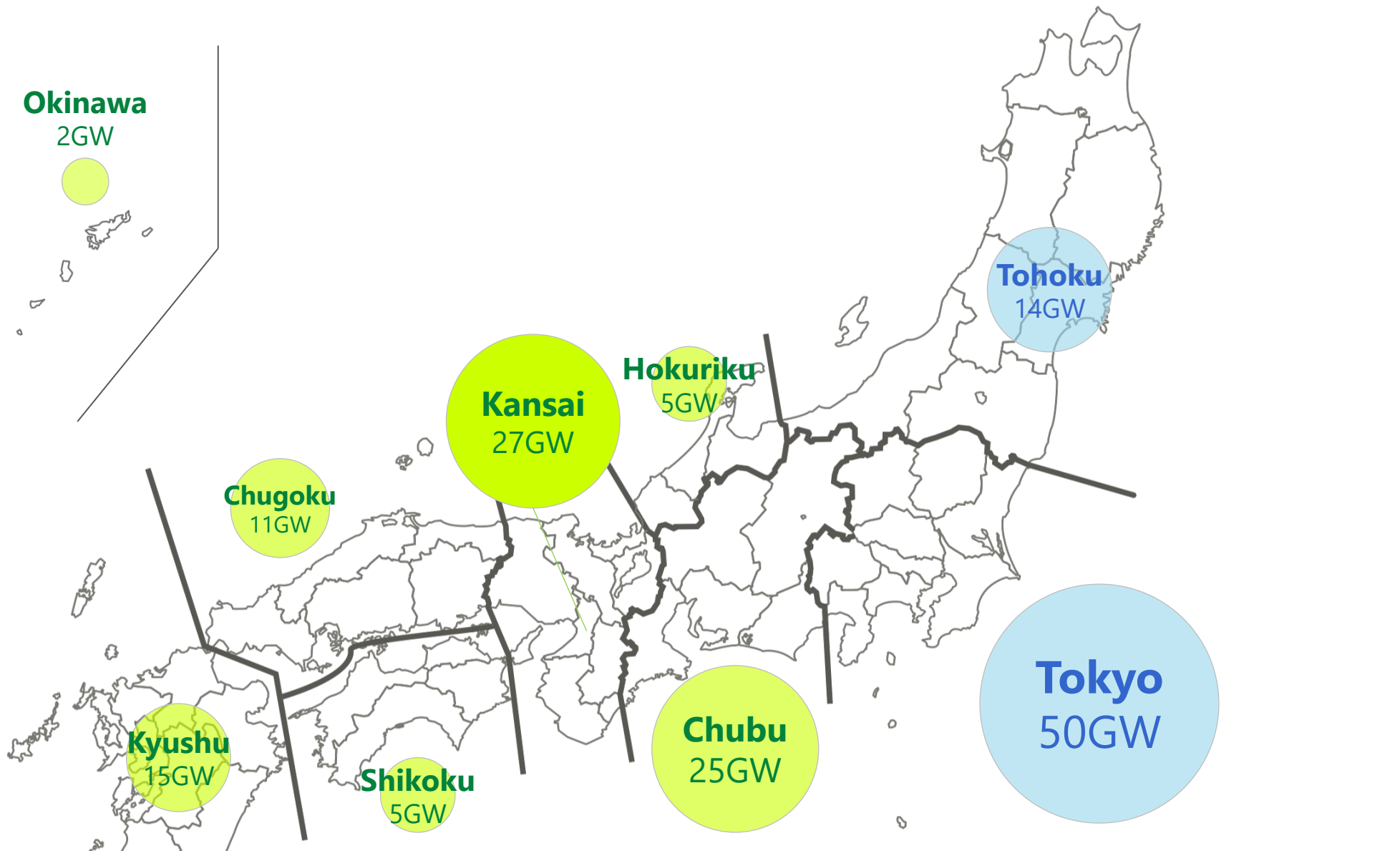
(Electricity and Gas Market Surveillance Commission)

I. State of Power Production in Japan

- II. Power Market Reform in Japan and EGC
- III. Partial Liberalization under Third Party Access in 2000
- IV. Full Liberalization under Imbalance Settlement in 2016
- V. Selected Agenda for Power Market Reform
- VI. Gas and Heat System Reform

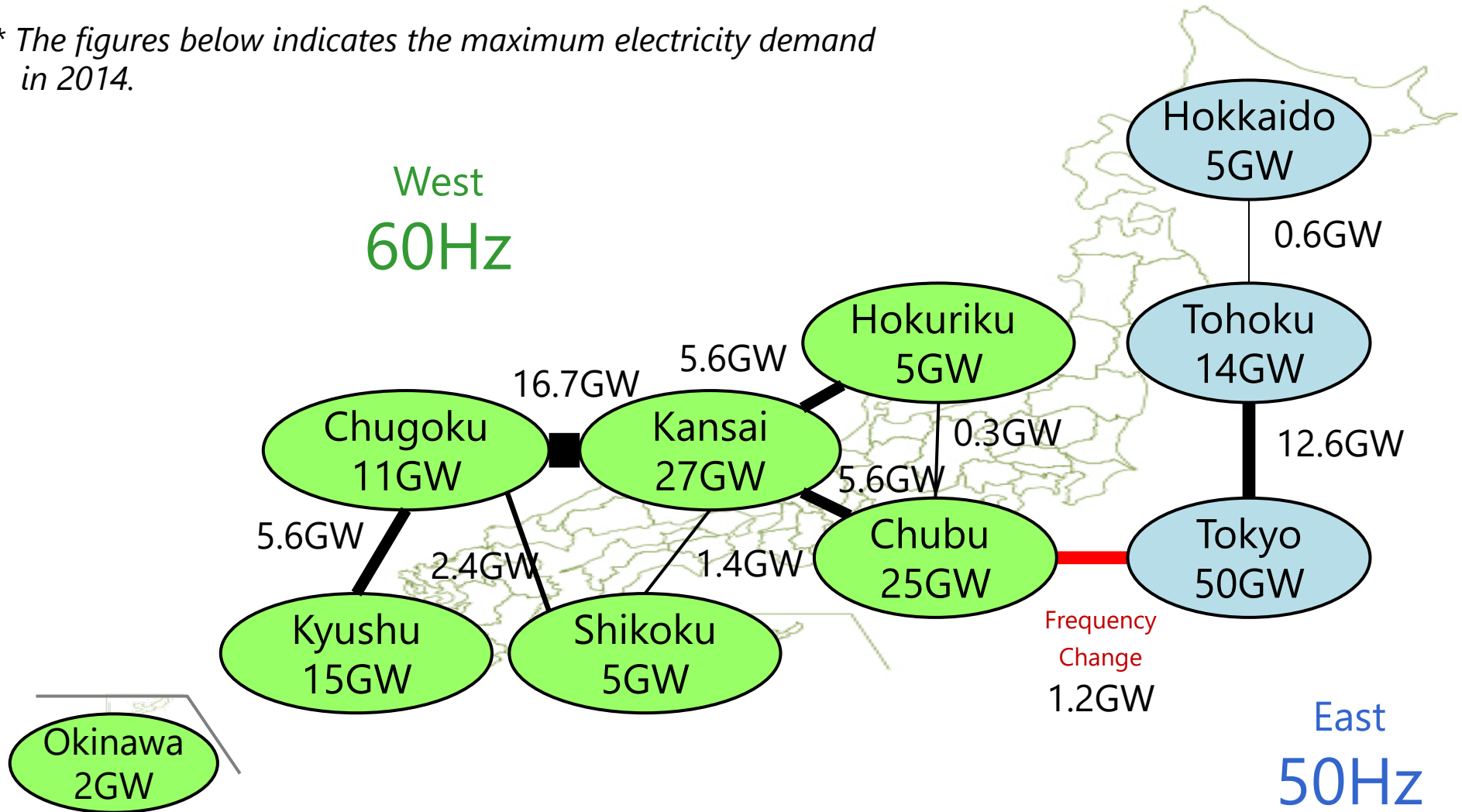
2. Map of 10 Utilities

* The figures below indicates the maximum electricity demand in 2014.

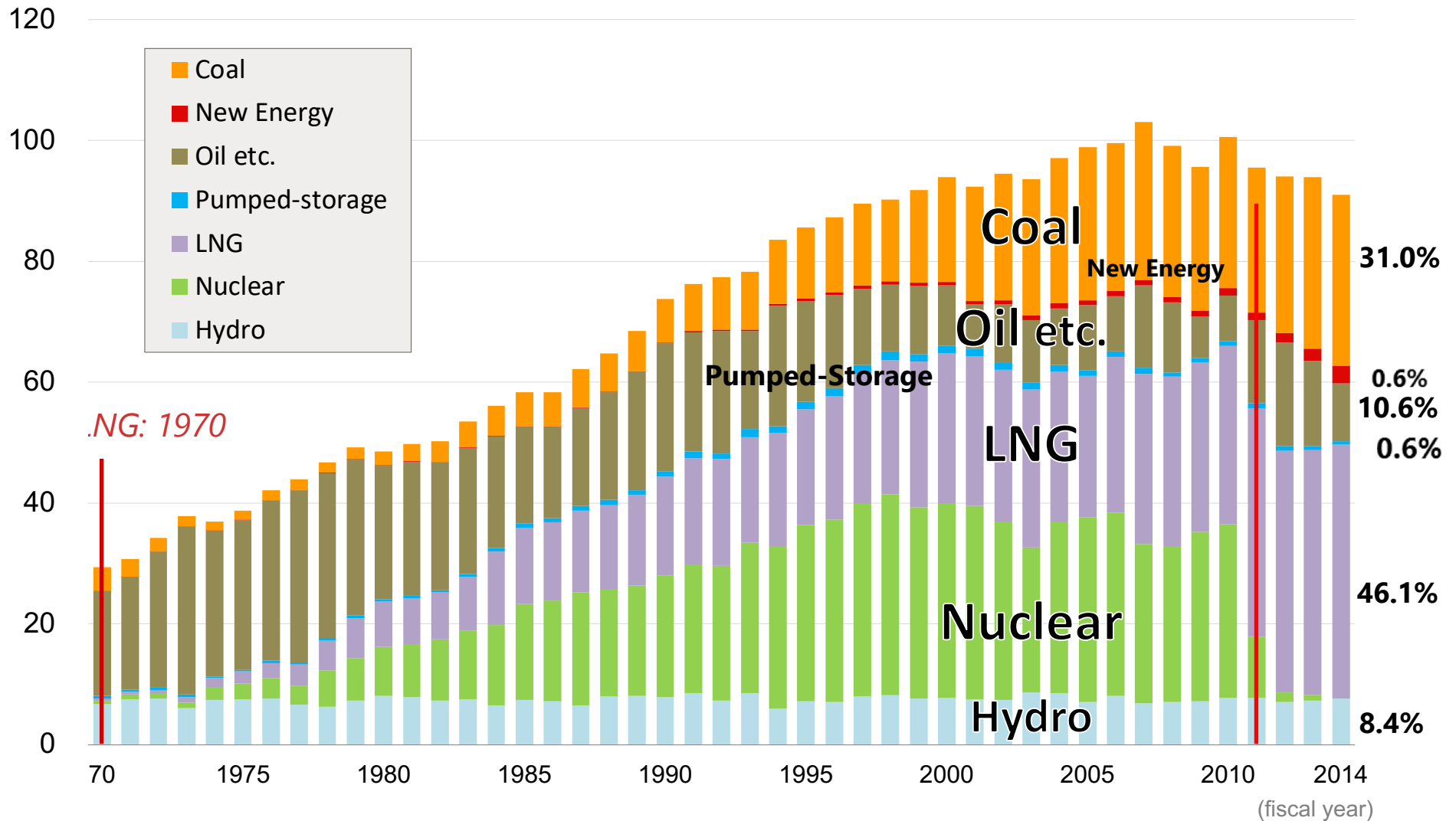


3. Interconnectors between Utilities

* The figures below indicates the maximum electricity demand in 2014.



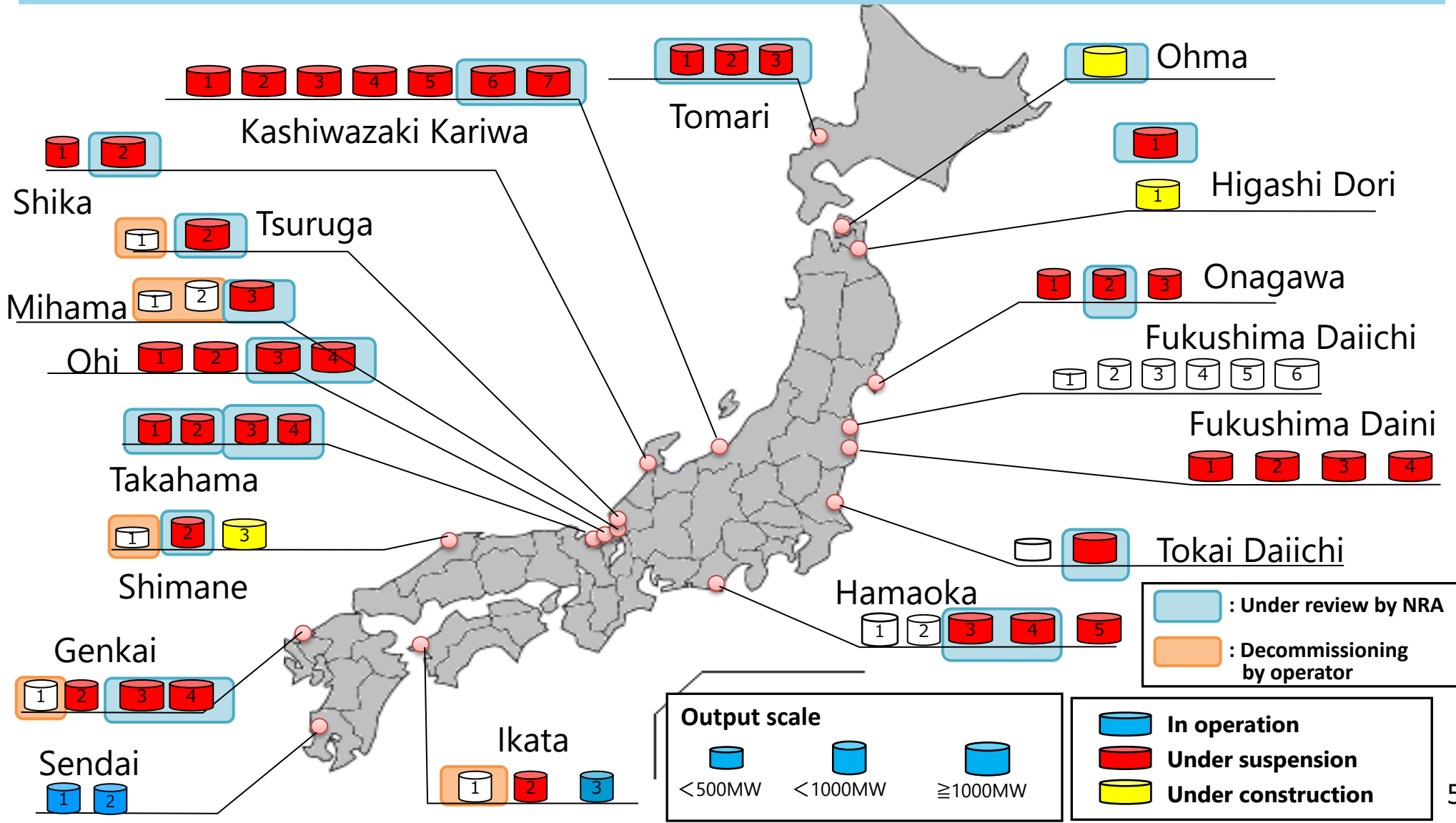
4. Power Production | 1970-2014



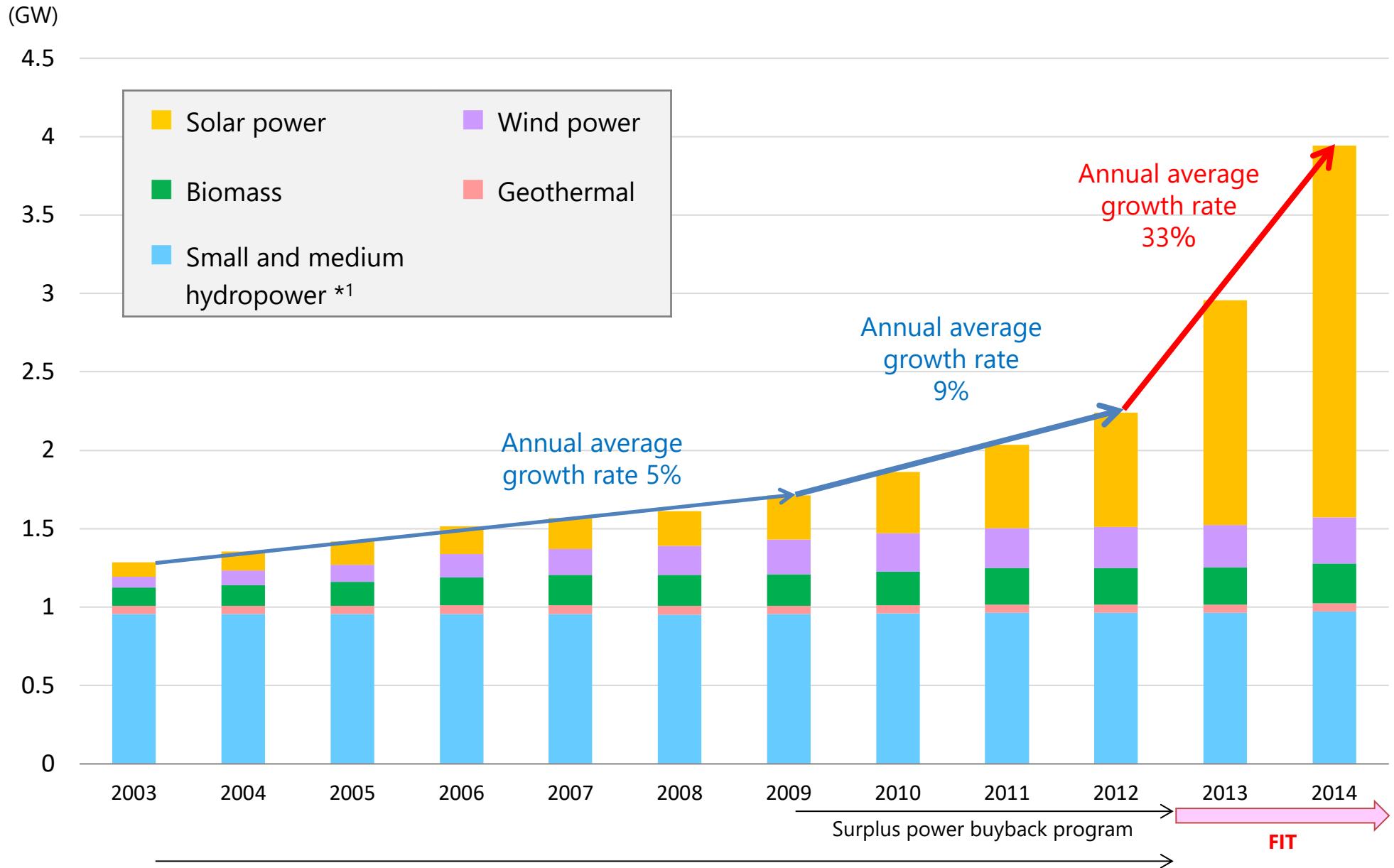
Source: Agency for Natural Resources and Energy

5. Nuclear Power Plants in Japan

- 26 applications have been submitted to the Nuclear Regulation Authority for review but only 3 plants are currently in operation. (As of 1st, Sep.)



6. Expansion of Renewable Energy Facilities



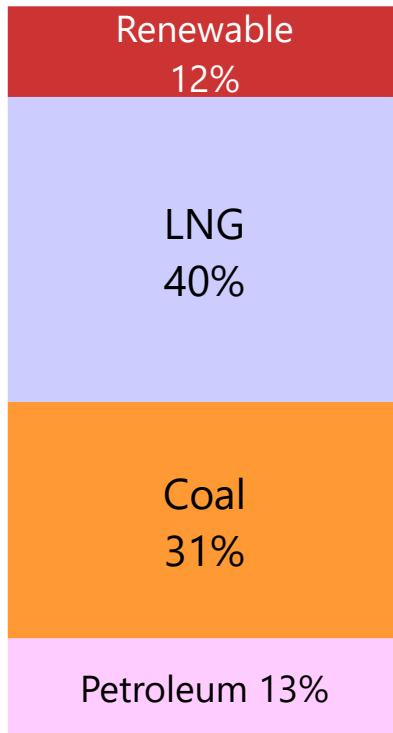
*1. except large-scale hydro power

Source: ANRE calculation based on several statistics such as JPEA, NEDO etc.

7. Energy Mix Target in 2030

Generation

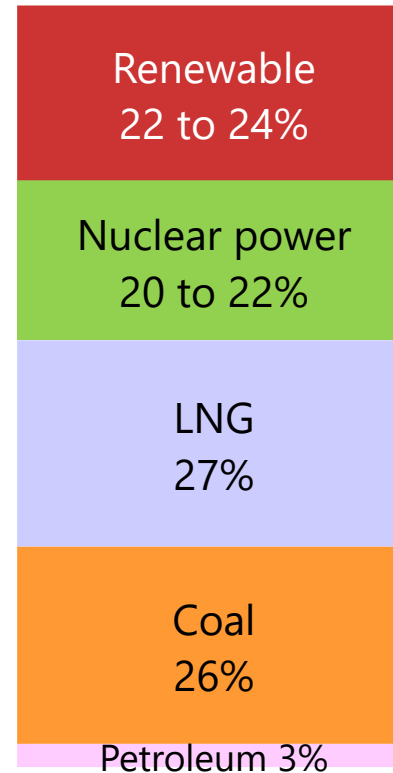
Total generated energy
966.6 billion kWh



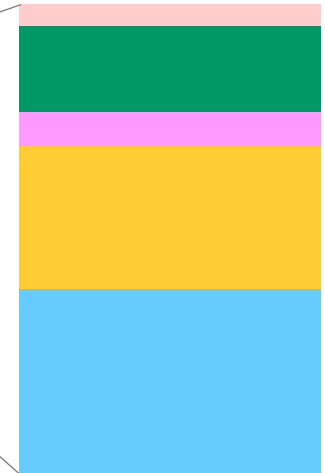
2013
(Actual Result)

Generation

Total generated energy
1,065 billion kWh



2030
(Target)



I. State of Power Production in Japan

II. Power Market Reform in Japan and EGC

III. Partial Liberalization under Third Party Access in 2000

IV. Full Liberalization under Imbalance Settlement in 2016

V. Selected Agenda for Power Market Reform

VI. Gas and Heat System Reform

9. History

1995 IPP

2000 Partial Liberalization under Third Party Access

2003 Japan Power Exchange established.

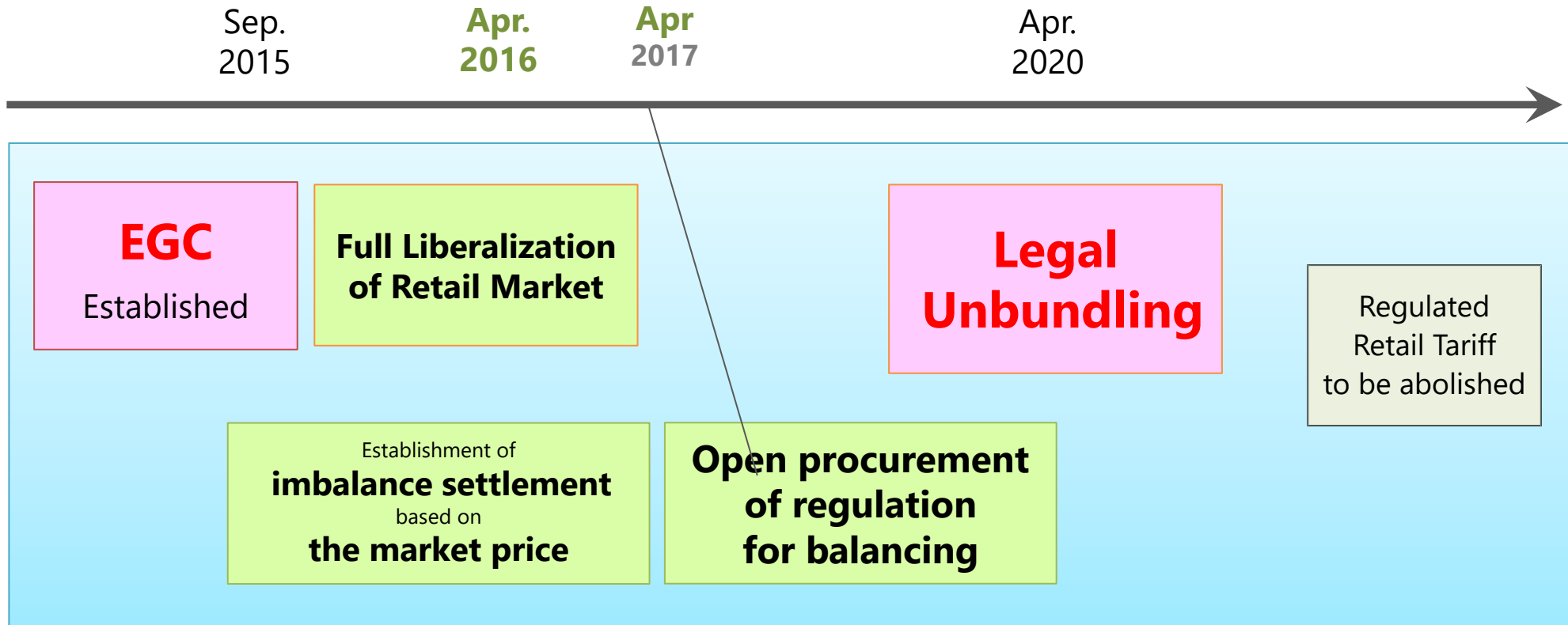
2011 Fukushima Accident

2013 Electricity Business Act revised,
which set the Roadmap for Power Market Reform.

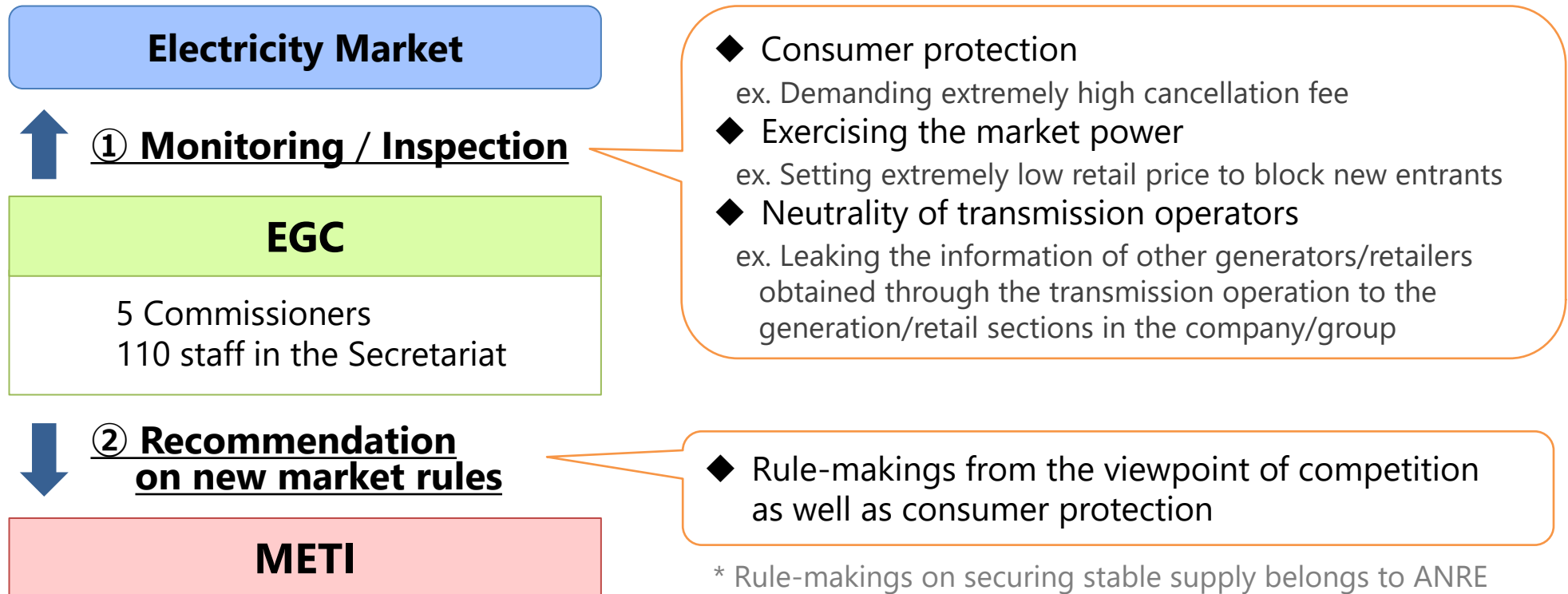
2015 Electricity (and Gas) Surveillance Commission established.

2016 Full Liberalization under Imbalance Settlement

10. Roadmap for Power Market Reform



11. The Role of EGC



- The Commission was established under the Minister of Economy, Trade and Industry in September 2015 in order to urge sound competition in the electricity market.
- EGC has started to watch gas and heat markets from April 2016.
- ◆ EGC also examine transmission tariffs applied by 10 regional transmission system operators and the registration of retailers.

12. The Commissioners

- Experts in the fields of Economics, Law, Engineering, Finance and Accounting are appointed by The Minister of Economy, Trade and Industry as the Commissioners of EGC.

Tatsuo Hatta,
Ph.D.
(Chairman)



【Economics】

President, Asian Growth
Research Institute/
Professor Emeritus,
Institute of Social and
Economic Research,
Osaka University

Ryuichi Inagaki
Attorney-at-law
(Acting chairman)



【Law】

Lawyer
Ryuichi Inagaki
Law Office

Yasuhiro
Hayashi, Ph.D.



【Engineering】

Professor, Graduate
School of Advanced
Science and
Engineering,
Waseda University

Masanori Maruo



【Finance】

Managing Director,
SMBC Nikko Securities
Inc.

Emiko Minowa



【Accounting】

Certified Public
Accountant
Partner at Deloitte
Touche Tohmatsu LLC

I. State of Power Production in Japan

II. Power Market Reform in Japan and EGC

III. Partial Liberalization under Third Party Access in 2000

IV. Full Liberalization under Imbalance Settlement in 2016

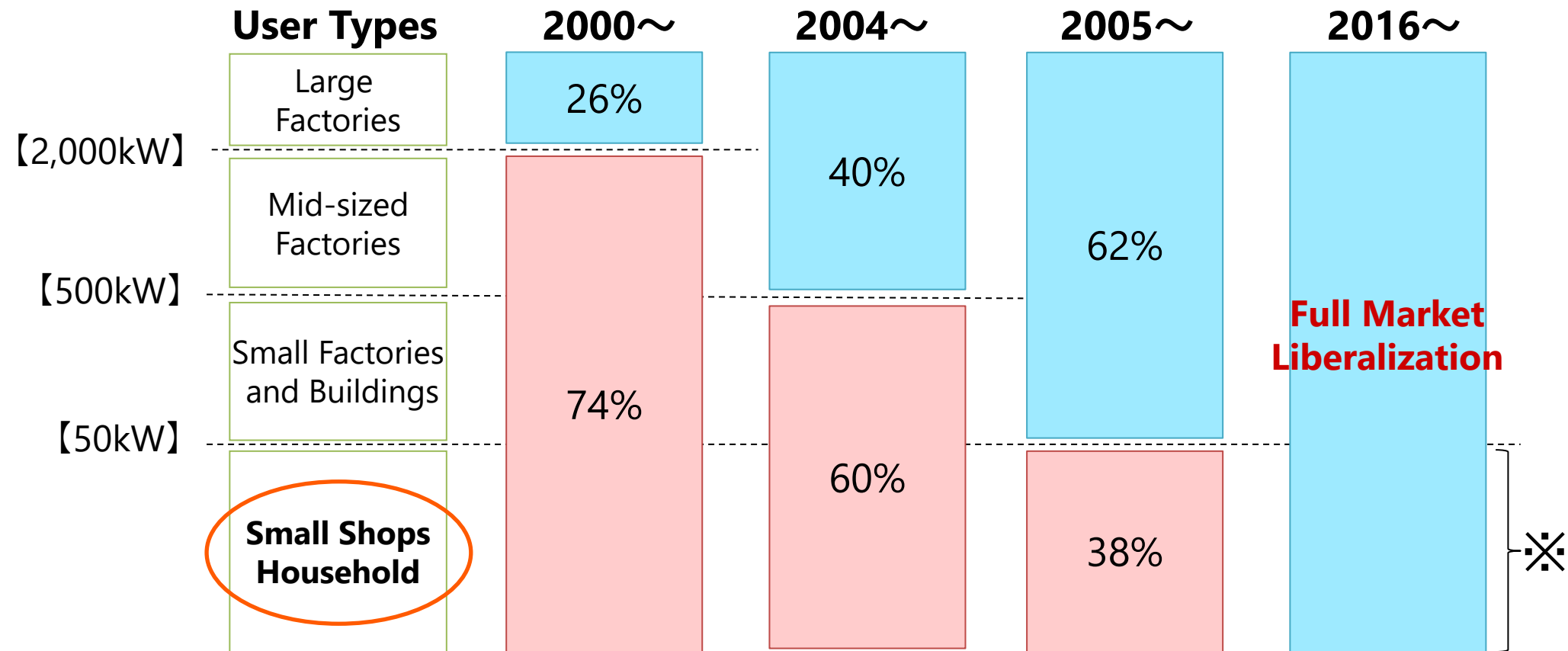
V. Selected Agenda for Power Market Reform

VI. Gas and Heat System Reform

14. Partial Liberalization of Power Market

- Retail market had gradually been liberalized since 2000.
- Around 60% of the market was already opened up for competition.

Gradual Expansion of Electricity Retail Market Liberalization



※Regulated tariffs will be abolished in 2020 or later.

15. Third Party Access with Penalty for Imbalance

April 2000 – March 2016



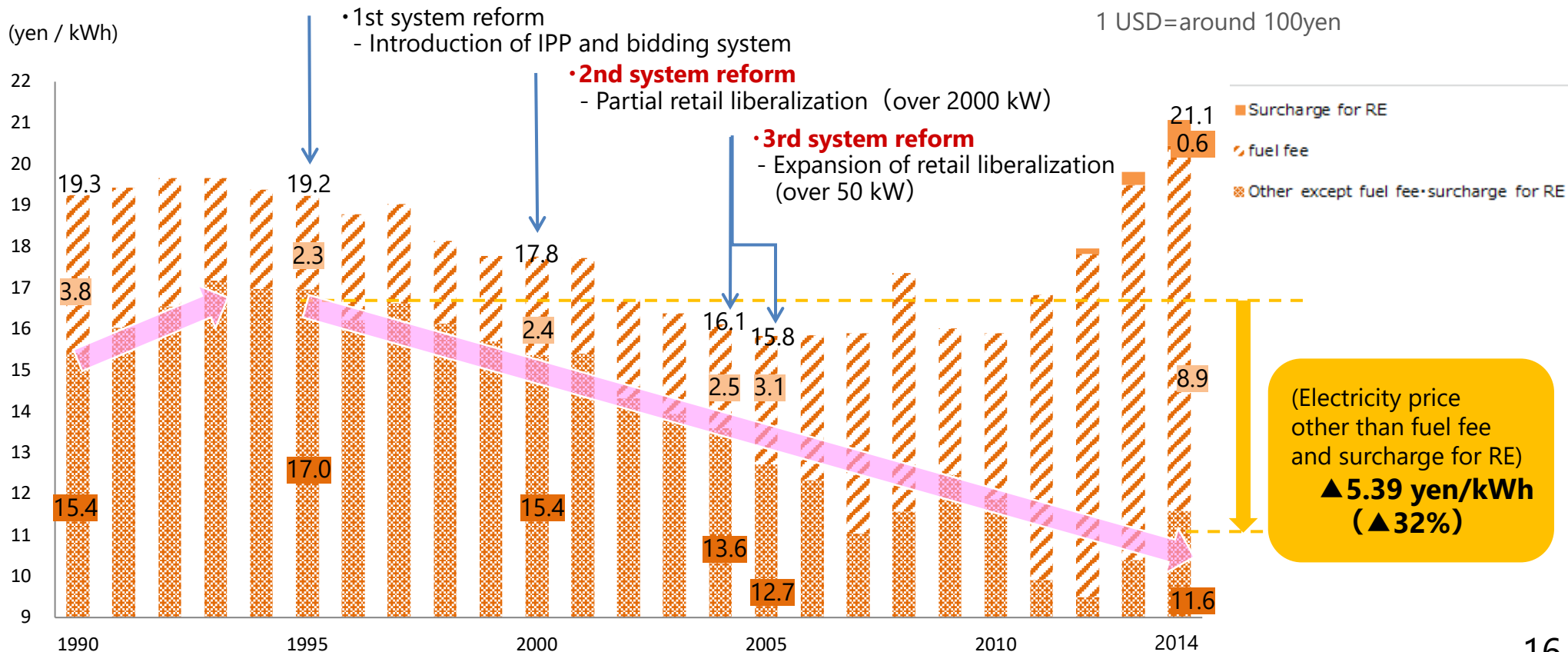
Excess supply : confiscated.

Excess demand over 3% : fined at 0.3 USD per kWh.

16. Reduction of the electricity price

- Electricity price reduced gradually due to the electricity system reform.
- While the electricity price rose due to the increase in fuel fee after the earthquake, the price other than fuel fee and surcharge for RE declined by 32%.

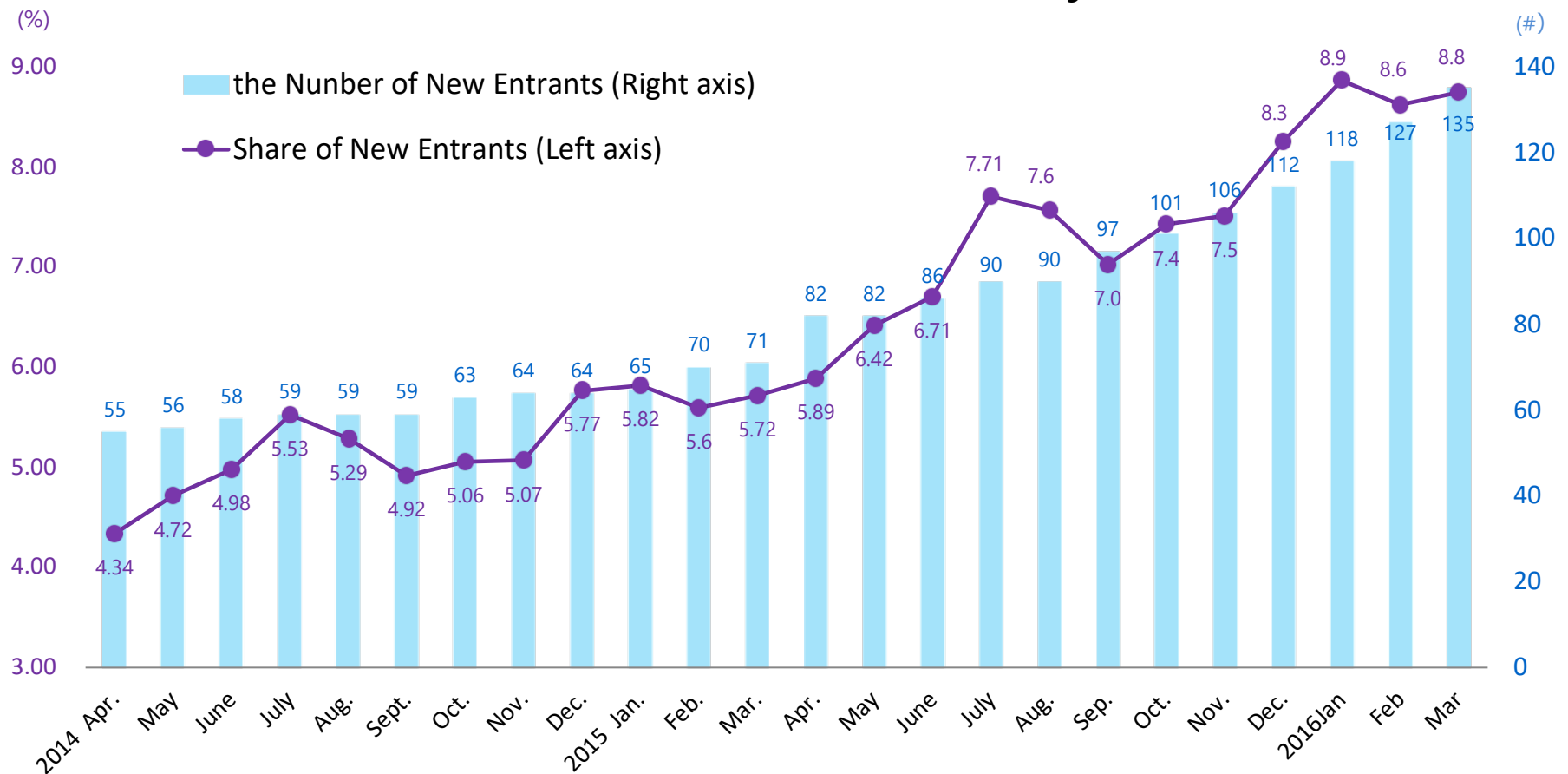
Transition of electricity price (Yen/kWh)



17. Increased Share of Non-utility Retailers over 50kW

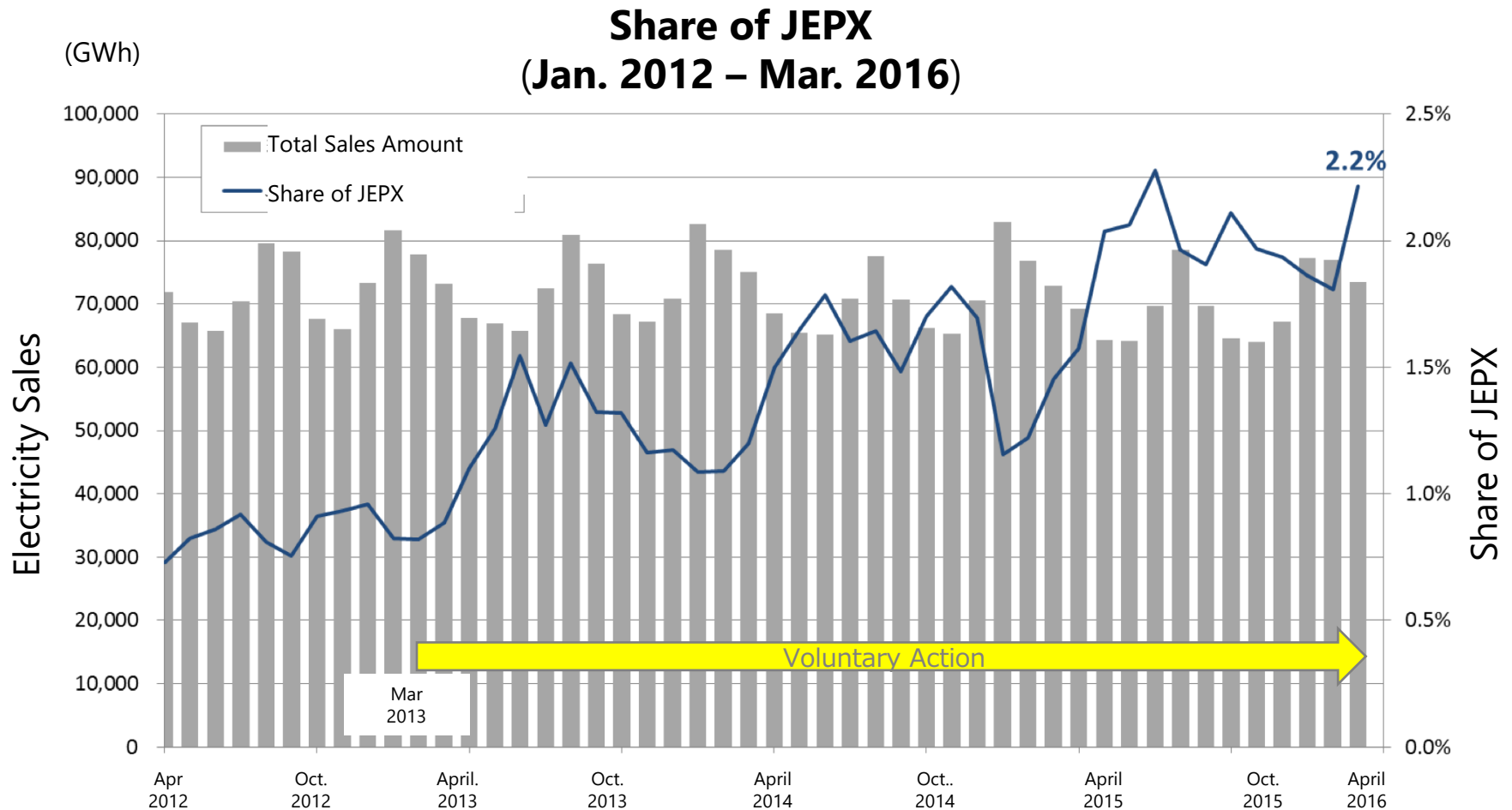
- The share of new entrants has steadily increased in the liberalized retail market since 2000, reaching around 9% in March.

Share and the Number of Non-utility Retailers



18. JEPX's Share in the Power Market

- The share of the amount of transaction in JEPX for the power service in Japan has tended to increase. The share of JEPX's transaction is about 2.2% of the electricity sales in Japan as of the end of March 2016.

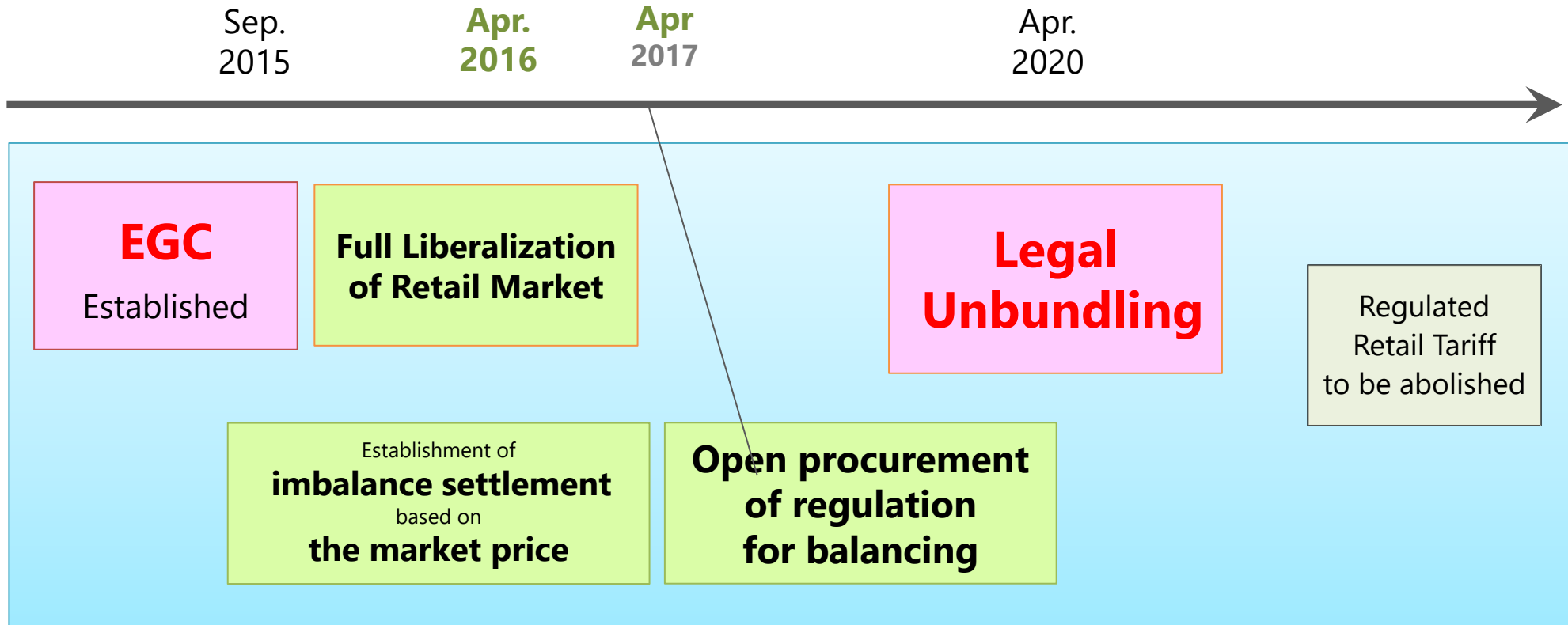


- I. State of Power Production in Japan
- II. Power Market Reform in Japan and EGC
- III. Partial Liberalization under Third Party Access in 2000

IV. Full Liberalization under Imbalance Settlement in 2016

- V. Selected Agenda for Power Market Reform
- VI. Gas and Heat System Reform

20. Roadmap for Power Market Reform

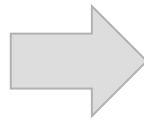



21. Establishment of Imbalance-settlement System

- From 1st of April in 2016, Imbalances settled at the market price.

Before 1st of April in 2016

Imbalance: **penalty**



From 1st of April in 2016

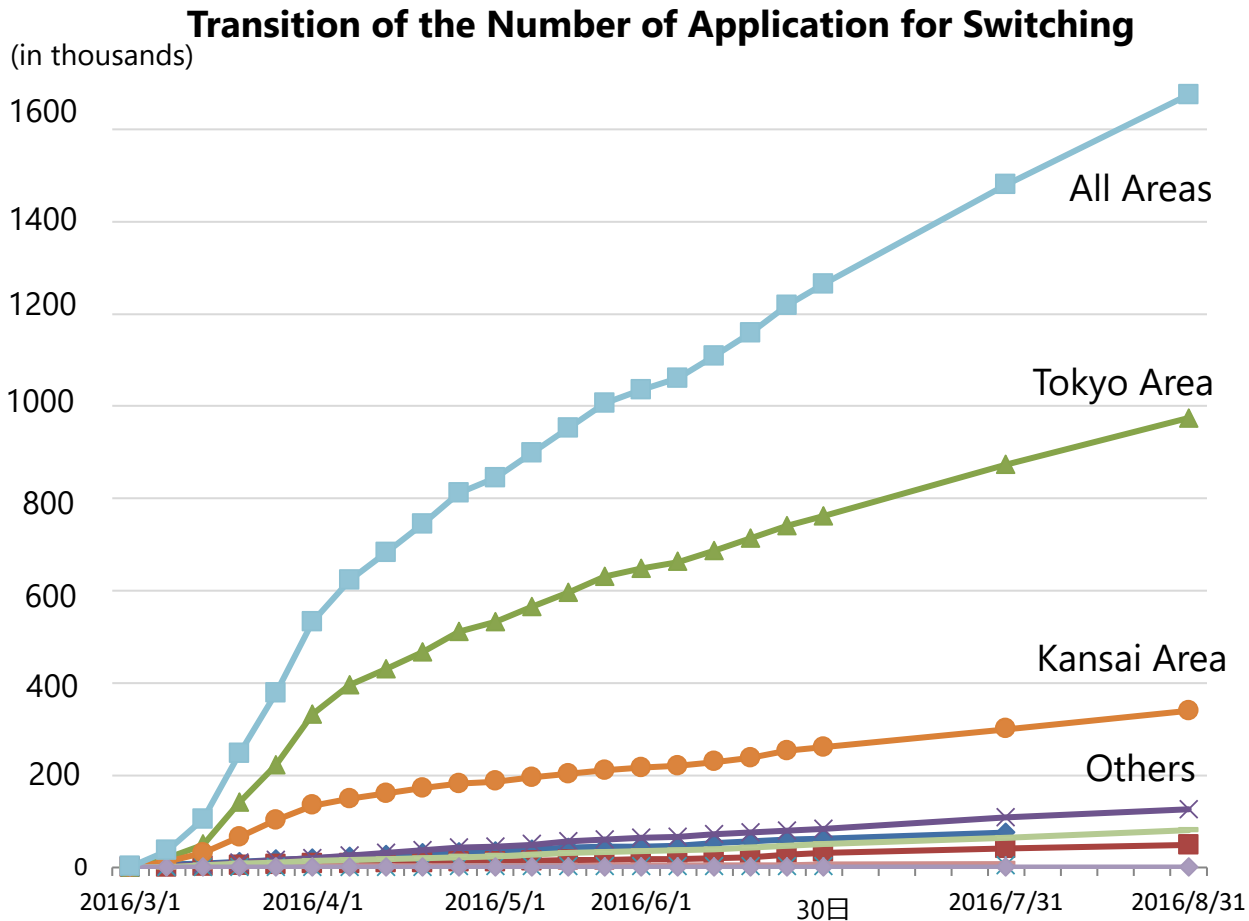
Imbalance: **settled at the Market Price**



22. The Number of Application for Switching

- The number of external switching applications (from incumbents to new entrants) amounts to 1.68 million as of August 31st, 1.7 million.
- If the number of internal switching applications (from regulated to non-regulated tariffs within the same incumbents) is included, total is 3.39 million.

(as of Aug 31st 2016)



Area	Num. of Application (in thousands)	Ratio* (%)
Hokkaido	84.2	3.05
Tohoku	48.9	0.89
Tokyo	794.4	4.24
Chubu	126.2	16.6
Hokuriku	5.0	0.41
Kansai	339.7	3.37
Chugoku	6.3	0.18
Shikoku	9.4	0.48
Kyusyu	81.0	1.30
Okinawa	—	—
All Areas	1,675.0	2.68

※ Calculated based on the number of contracts of common households in FY 2015 (about 62.53 million)

23. Installation schedule of smart meters

- Smart meters will be installed for all customers including households by FY2020 in Tokyo and by FY2024 nationwide.
- Transmission/distribution companies will install smart meters promptly for customers who switch their retailers or introduce HEMS.



- ✓ Remote metering
- ✓ 30 min. power usage data
- ✓ Remote opening / closing

		Hokkaido	Tohoku	Tokyo	Chubu	Kansai	Hokuriku	Chugoku	Shikoku	Kyushu	Okinawa
High voltage	Installation will be completed in	2016	Completed	Completed	2016	2016	Completed	2016	2016	Completed	2016
Low voltage	Installation will be started in	Started	Started	Started	Started	Started	Started	2016	Started	2016	2016
	Installation will be completed in	2023	2023	2020	2022	2022	2023	2023	2023	2023	2024

Source: METI; Electricity and Gas Market Surveillance Commission

- I. State of Power Production in Japan
- II. Power Market Reform in Japan and EGC
- III. Partial Liberalization under Third Party Access in 2000
- IV. Full Liberalization under Imbalance Settlement in 2016

V. Selected Agenda for Power Market Reform

- VI. Gas and Heat System Reform

25. Fundamental Reform of the Transmission Tariff System Needed

- Introduction of network charge to generators.
- Rebalance of Capacity charge (kW) vs Energy charge (kWh)
- Locational transmission tariff to give locational incentive to generators and load facilities.

26. Activation of Power Exchange

1. Improvement of the imbalance settlement system
 - Will promote shift from flexible bilateral contract to fixed volume contract.
2. Improvement of the forward market.
3. Gross bidding is proposed.
4. Procurement of transmission loss by system operators.

- I. State of Power Production in Japan
- II. Power Market Reform in Japan and EGC
- III. Partial Liberalization under Third Party Access in 2000
- IV. Full Liberalization under Imbalance Settlement in 2016
- V. Selected Agenda for Power Market Reform

VI. Gas and Heat System Reform

28. Roadmap for Gas and Heat Market Reform

**Apr.
2016**

Apr.
2017

Apr.
2022



【Gas】



【Heat Supply】

