Ministry of Economy,
Trade and Industry

Monitoring report of voluntary efforts and competitive status
October to December 2023 period

(Tentative translation)

Thursday, March 28, 2024

電力·ガス取引監視等委員会
Electricity and Gas Market Surveillance Commission

(Reference materials are omitted)

October to December 2023 period

Major indicators

○ The major indicators for this period are as follows.

				Currently reported	Reference		
				October to December 2023	Same period last year (October to December 2022)	FY2022 (April 2022-March 2023)	FY2021 (April 2021-March 2022)
JEPX market	Percentage to electricity sales*3			31.1%	43.1%(*5 34.6%)	40.1%	39.9%
	Day-Ahead market	Bidding	Sell volume compared to the same period last year	0.9× (1.1×*5)	1.0×	1.0×	1.0×
			Buy volume compared to the same period last year	0.8× (1.0×*5)	0.9×	0.9×	1.1×
		Contract	Contracted volume	57.1 billion kWh	79.3 billion kWh	318.5 billion kWh	327.2 billion kWh
			Contracted volume compared to the same period last year	0.7× (0.9×*5)	1.0×	1.0×	1.0×
			Average contracted price (system price)	12.6 yen/kWh	23.2 yen/kWh	20.4 yen/kWh	13.5 yen/kWh
		Occurrence rate of market splitting between the east and west market		48.8%	35.8%	34.9%	32.1%
	Intraday market	Contract	Contracted volume	1.28 billion kWh	1.12 billion kWh	4.94 billion kWh	4.18 billion kWh
			Average contracted price	13.2 yen/kWh	26.3 yen/kWh	22.9 yen/kWh	14.5 yen/kWh
	Forward market	Contract	Contracted volume	0kWh	9 million kWh	17 million kWh	47 million kWh
Futures market*4		Contract	Contracted volume	6.14 billion kWh	2.75 billion kWh	-	-
OTC transactions		Supply to outside the group		9.25 billion kWh	13.77 billion kWh	56.43 billion kWh	51.71 billion kWh
Retail market (Reference)*1	Electricity sales			187.6 billion kWh*2	186.4 billion kWh*2	805.4 billion kWh	832.1 billion kWh
		New entrants	Electricity sales	30.7 billion kWh	34.2 billion kWh	154.6 billion kWh	178.6 billion kWh
			Electricity sales compared to the same period last year	0.9×	0.8×	0.9×	1.2×
			Share of new entrants	17.0% (as of December)	18.7% (as of December)	-	-

*1 Source: Electricity Trading Report
*2 To avoid placing an excessive burden on businesses for tabulating data, the Electricity Trading Report allows businesses to report their electricity sales volume and sales amount recorded from the meter reading date of N − 1 month to the day before the meter reading date of N month as the data for N month. Since most companies report their results up to the meter reading date like this, these figures do not exactly match the actual results for the demand in N month.
*3 The percentage of electricity sales indicates the average value for the relevant period.
*4 A new category added for the current reporting period and thereafter (based on the data published on the websites of JPX and EEX).
*5 The comparison is based on the volume obtained by deducting the gross bidding volume for internal demand from the bidding volume of general electric utilities in the same period last year. Gross bidding volumes are calculated from the questionnaire results on higher buy-back prices in gross bidding reported by general electric utilities.
(Where general electric utilities refer to Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, and Kyushu Electric Power.)

Electricity market monitoring report

[Quarterly report]

- ◆ Wholesale electricity market
  - ● JEPX market
    - Day-Ahead market
    - Intraday market
    - Forward transaction market
- ◆ Voluntary efforts by general electric utilities, etc.
  - ● Supply of surplus electricity to JEPX market
  - ● Trading status and sell bid withdrawal status in the intraday market
  - ● Status of block sell bidding
  - ● Supply of power source to the market for wholesale electricity utilities
  - ● Status of bidding, etc. for public hydroelectricity business
  - ● Status of OTC transactions

[Medium- to long-term trend report]

- ◆ Wholesale electricity market
  - ● JEPX market
    - Trends in contracted volume
    - Trends in contracted price
    - Trends in the market splitting occurrence rate
  - ● JEPX spot price and fuel cost
- ◆ Retail market
  - ● Trends in new entrants share by area
  - ● Market share by area
  - ● Trends in electricity unit price
  - ● Trends in switching
- ◆ Gas market
  - ● Status of OTC transactions of general gas utilities
  - ● Usage status of Start-up wholesale measure

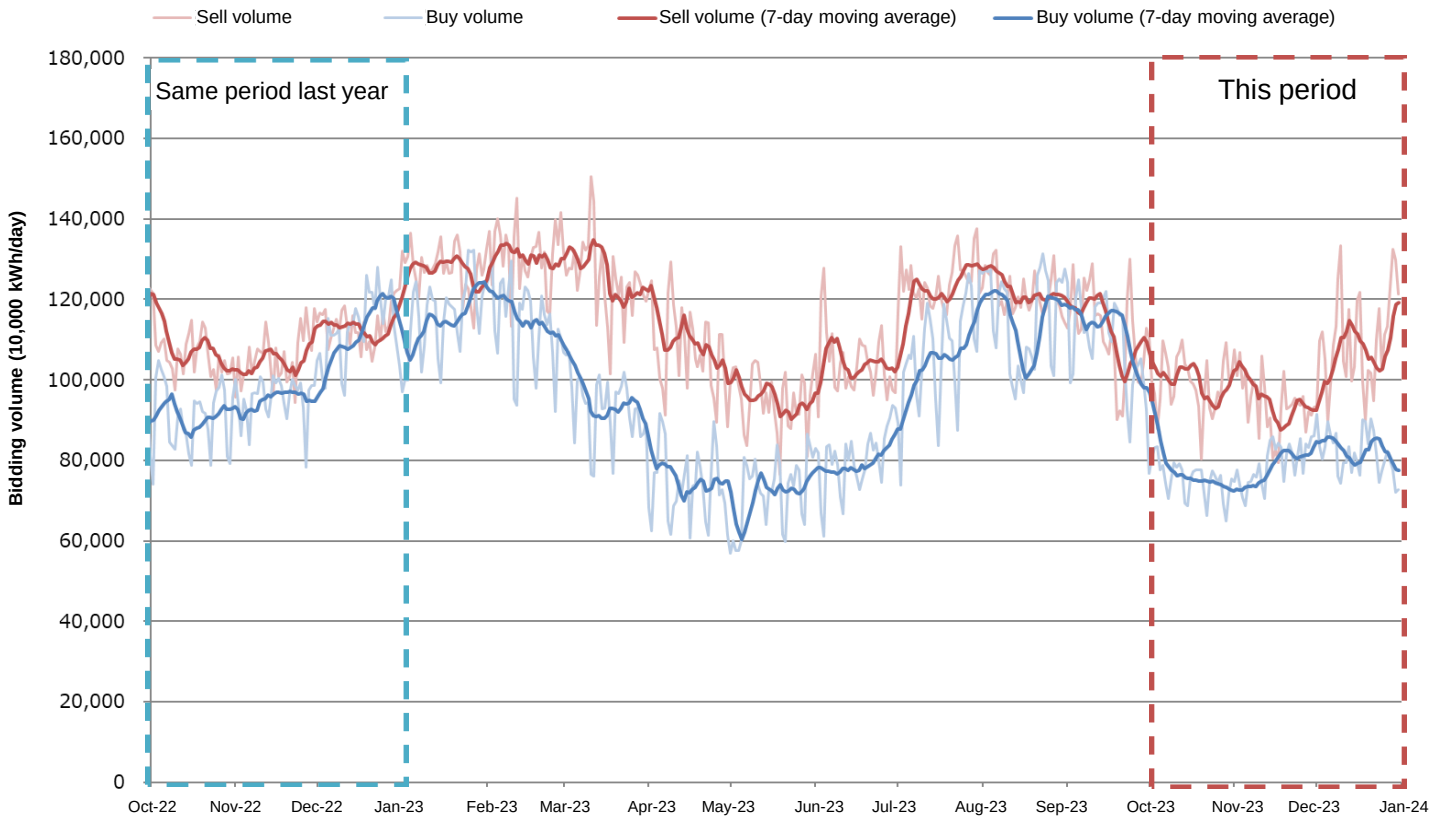
October to December 2023 period

Bidding volume in the day-ahead market

○ For this period, the bidding volume in the day-ahead market was 93.2 billion kWh for selling and 72.5 billion kWh for buying.

○ For year-on-year comparison, the sell volume was 0.9 times (1.1 times*1) that of the same period last year, and the buy volume was 0.8 times (1.0 times*1).

Day-Ahead market: Trends in bidding volume (October 1, 2022 to December 31, 2023)



Main data

Sell volume (October to December 2023)	93.2 billion kWh
Comparison with sell volume for the same period last year (vs. October to December 2022)	0.9 ×
Buy volume (October to December 2023)	72.5 billion kWh
Comparison with buy volume for the same period last year (vs. October to December 2022)	0.8 ×

* Gross bidding by general electric utilities has been suspended since October 1, 2023.

*1 The comparison is based on the volume obtained by deducting the gross bidding volume for internal demand from the bidding volume of general electric utilities in the same period last year. Gross bidding volumes are calculated from the questionnaire results on higher buy-back prices in gross bidding reported by general electric utilities.
(Where general electric utilities refer to Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, and Kyushu Electric Power.)

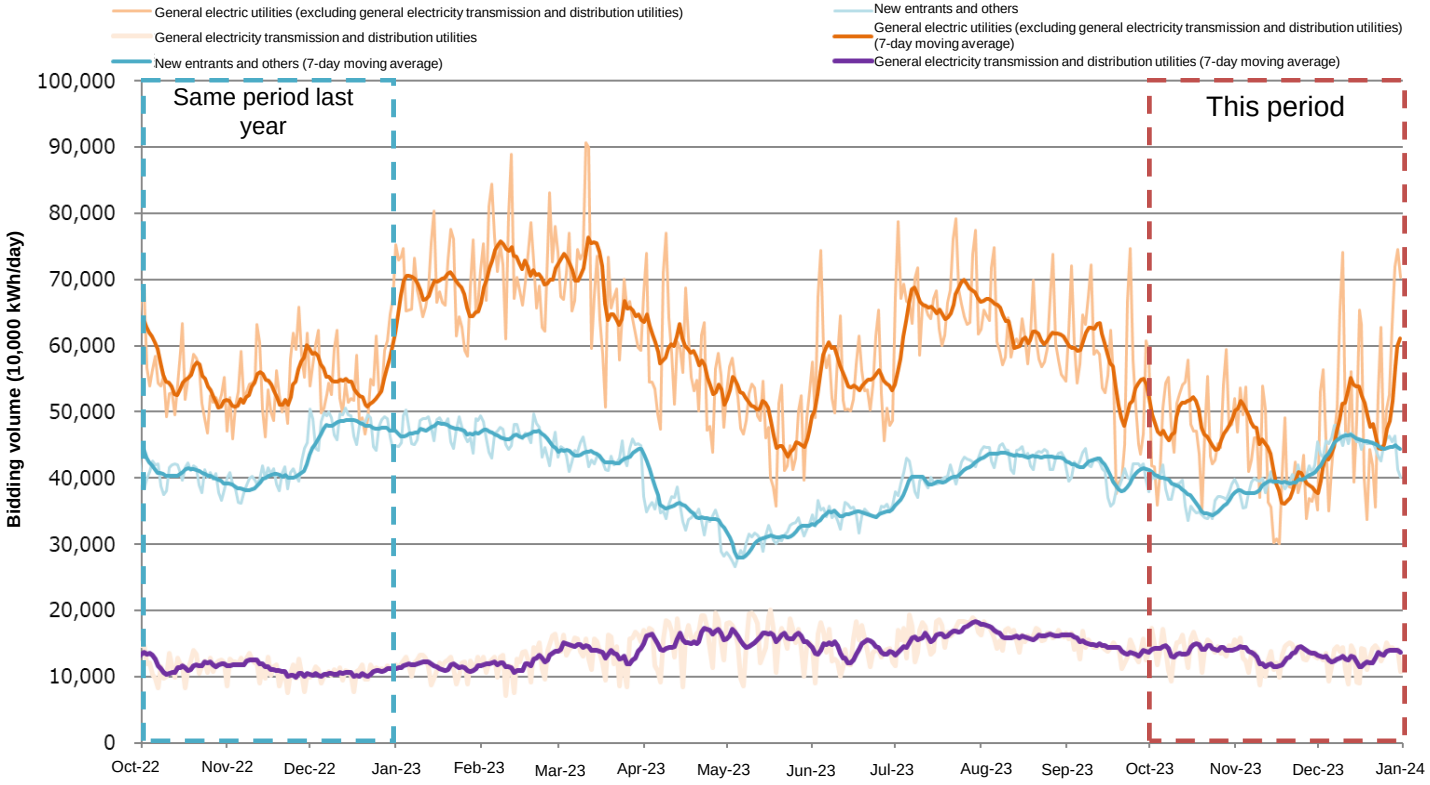
October to December 2023 period

Sell volume in the day-ahead market by business operator category

○ The sell volume in the day-ahead market for this period was 43.5 billion kWh for general electric utilities (excluding general electricity transmission and distribution utilities), 37.3 billion kWh for new entrants and other business operators, and 12.3 billion kWh for general electricity transmission and distribution utilities.

○ For year-on-year comparison, the volume was 0.9 times (1.3 times[*1]) that of the same period last year for general electric utilities, 0.9 times for new entrants and other business operators, and 1.2 times for general electricity transmission and distribution utilities.

Day-Ahead market: Trends in sell volume (October 1, 2022 to December 31, 2023)



Main data

Sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) (October to December 2023)
43.5 billion kWh

Comparison with sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) for the same period last year (vs. October to December 2022)
0.9 ×

Sell volume by new entrants and other business operators (October to December 2023)
37.3 billion kWh

Comparison with sell volume by new entrants and other business operators for the same period last year (vs. October to December 2022)
0.9 ×

Sell volume by general electricity transmission and distribution utilities (October to December 2023)
12.3 billion kWh

Comparison with sell volume by general electricity transmission and distribution utilities for the same period last year (vs. October to December 2022)
1.2 ×

* The FIT sell volume by general electricity transmission and distribution utilities has been excluded from the sell volume by general electric utilities, and a new line plotting the sell volume by general electricity transmission and distribution utilities has been added.
* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and JERA.
* General electricity transmission and distribution utilities include Hokkaido Electric Power Network, Tohoku Electric Power Network, TEPCO Power Grid, Chubu Electric Power Grid, Hokuriku Electric Power Transmission and Distribution, Kansai Electric Power Transmission and Distribution, Chugoku Electric Power Network, Shikoku Electric Power Transmission and Distribution, and Kyushu Electric Power Transmission and Distribution.
*1 The comparison is based on the volume obtained by deducting the gross bidding volume for internal demand from the bidding volume of general electric utilities in the same period last year. Gross bidding volumes are calculated from the questionnaire results on higher buy-back prices in gross bidding reported by general electric utilities.
(Where general electric utilities refer to Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, and Kyushu Electric Power.)

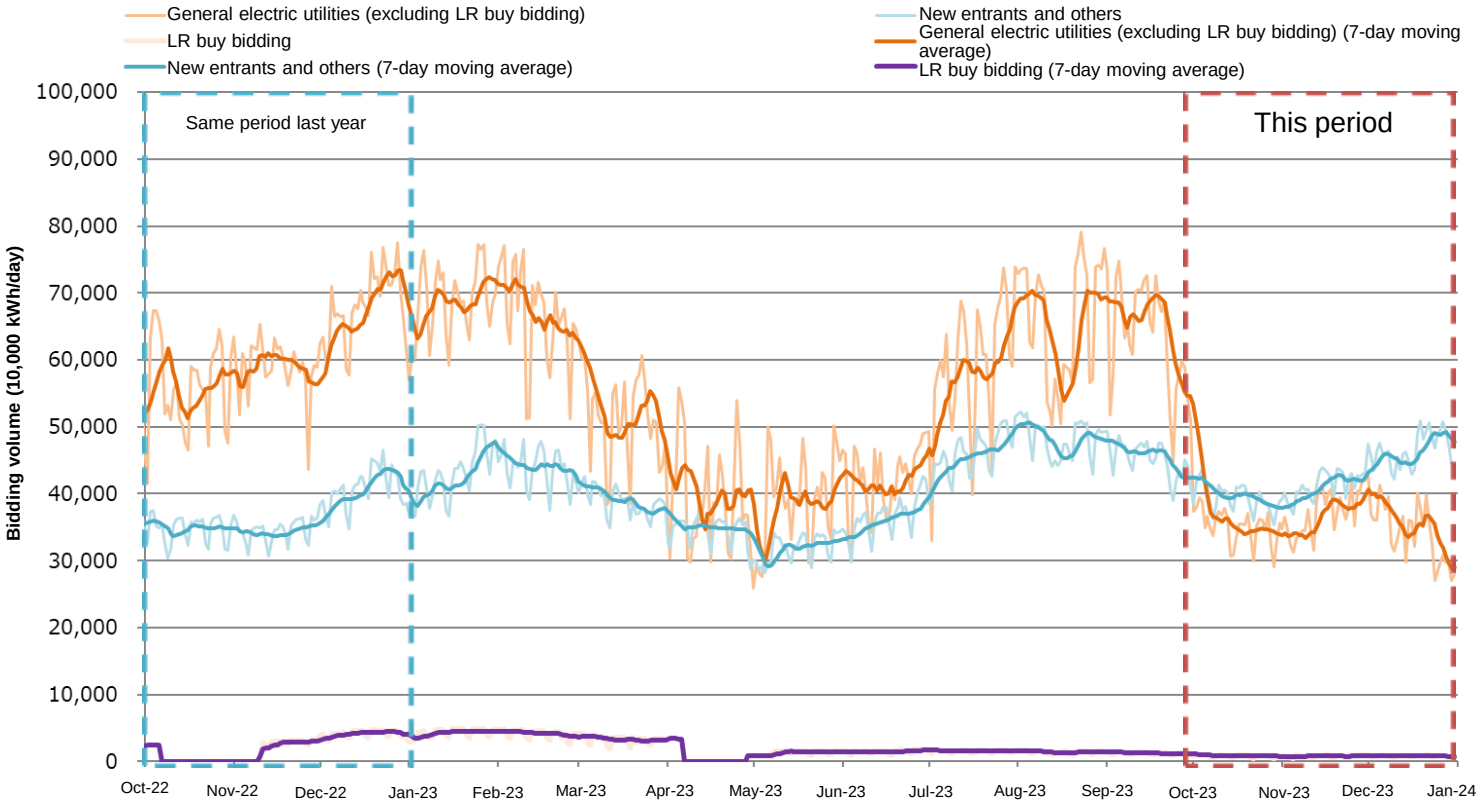
October to December 2023 period

Buy volume in the day-ahead market by business operator category

○ The buy volume in the day-ahead market for this period was 32.7 billion kWh for general electric utilities (excluding LR buy bidding) and 39.0 billion kWh for new entrants and other business operators, and LR buy volume by general electricity transmission and distribution utilities was 0.7 billion kWh.

○ For year-on-year comparison, the volume was 0.6 times (0.8 times[*1]) that of the same period last year for general electric utilities (excluding LR buy bidding) and 1.2 times for new entrants and other business operators.

Day-Ahead market: Trends in buy volume (October 1, 2022 to December 31, 2023)



Main data

Buy volume by general electric utilities (excluding LR buy bidding) (October to December 2023)	32.7 billion kWh
Comparison with buy volume by general electric utilities for the same period last year (excluding LR buy bidding) (vs. October to December 2022)	0.6 ×
Buy volume by new entrants and other business operators (October to December 2023)	39.0 billion kWh
Comparison with buy volume by new entrants and other business operators for the same period last year (vs. October to December 2022)	1.2 ×
LR buy volume by general electricity transmission and distribution utilities (October to December 2023)	0.7 billion kWh

* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, JERA, and general electricity transmission and distribution utilities.

* General electricity transmission and distribution utilities include Hokkaido Electric Power Network, Tohoku Electric Power Network, TEPCO Power Grid, Chubu Electric Power Grid, Hokuriku Electric Power Transmission and Distribution, Kansai Electric Power Transmission and Distribution, Chugoku Electric Power Network, Shikoku Electric Power Transmission and Distribution, and Kyushu Electric Power Transmission and Distribution.

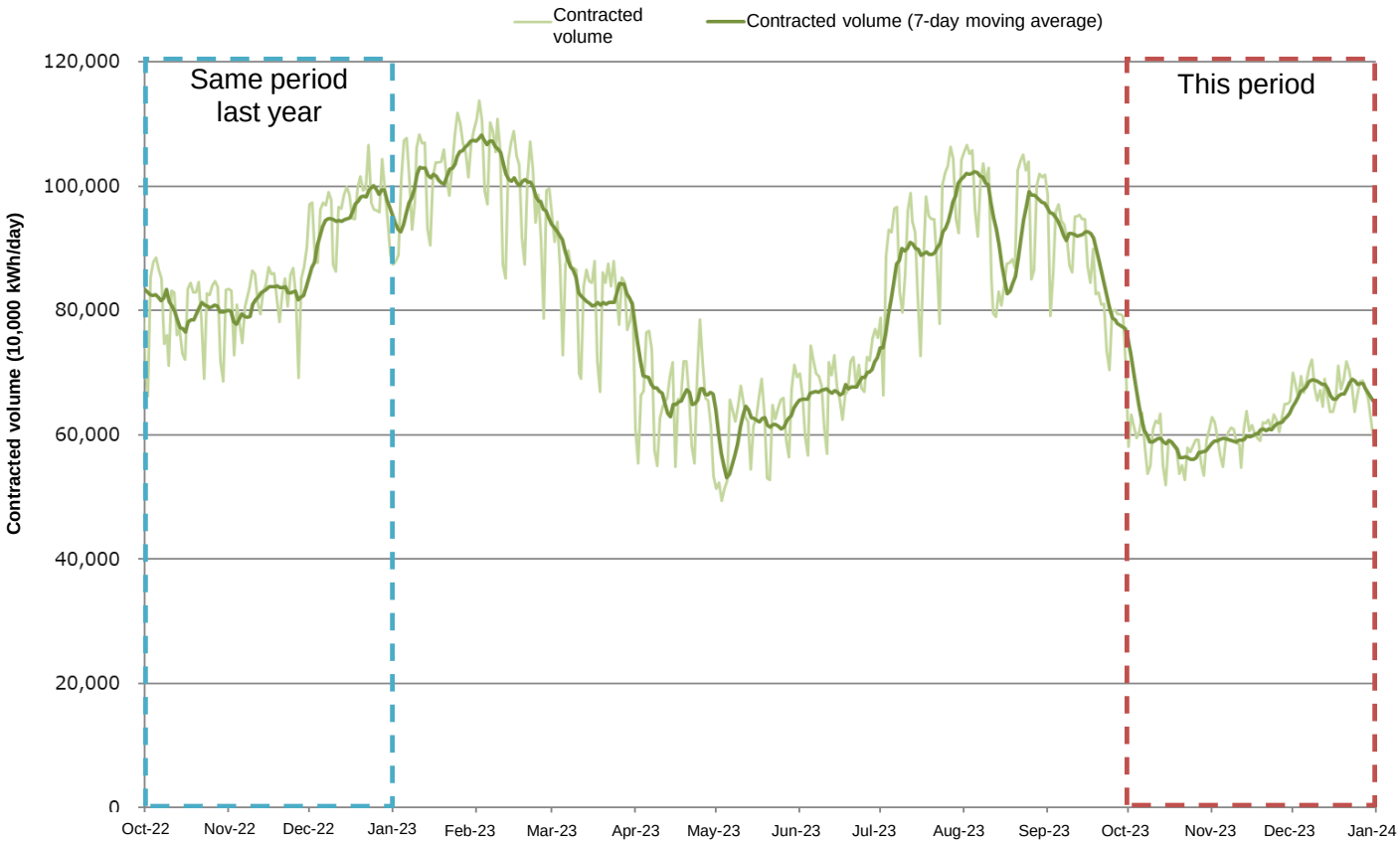
*1 The comparison is based on the volume obtained by deducting the gross bidding volume for internal demand from the bidding volume of general electric utilities in the same period last year. Gross bidding volumes are calculated from the questionnaire results on higher buy-back prices in gross bidding reported by general electric utilities.
(Where general electric utilities refer to Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, and Kyushu Electric Power.)

October to December 2023 period

Contracted volume in the day-ahead market

○ The contracted volume in the day-ahead market for this period was 57.1 billion kWh.
○ For year-on-year comparison, the volume was 0.7 times (0.9 times*1) that of the same period last year.

Day-Ahead market: Trends in contracted volume (October 1, 2022 to December 31, 2023)



Main data

Contracted volume (October to December 2023)
57.1 billion kWh

Comparison with contracted volume for the same period last year (vs. October to December 2022)
0.7×

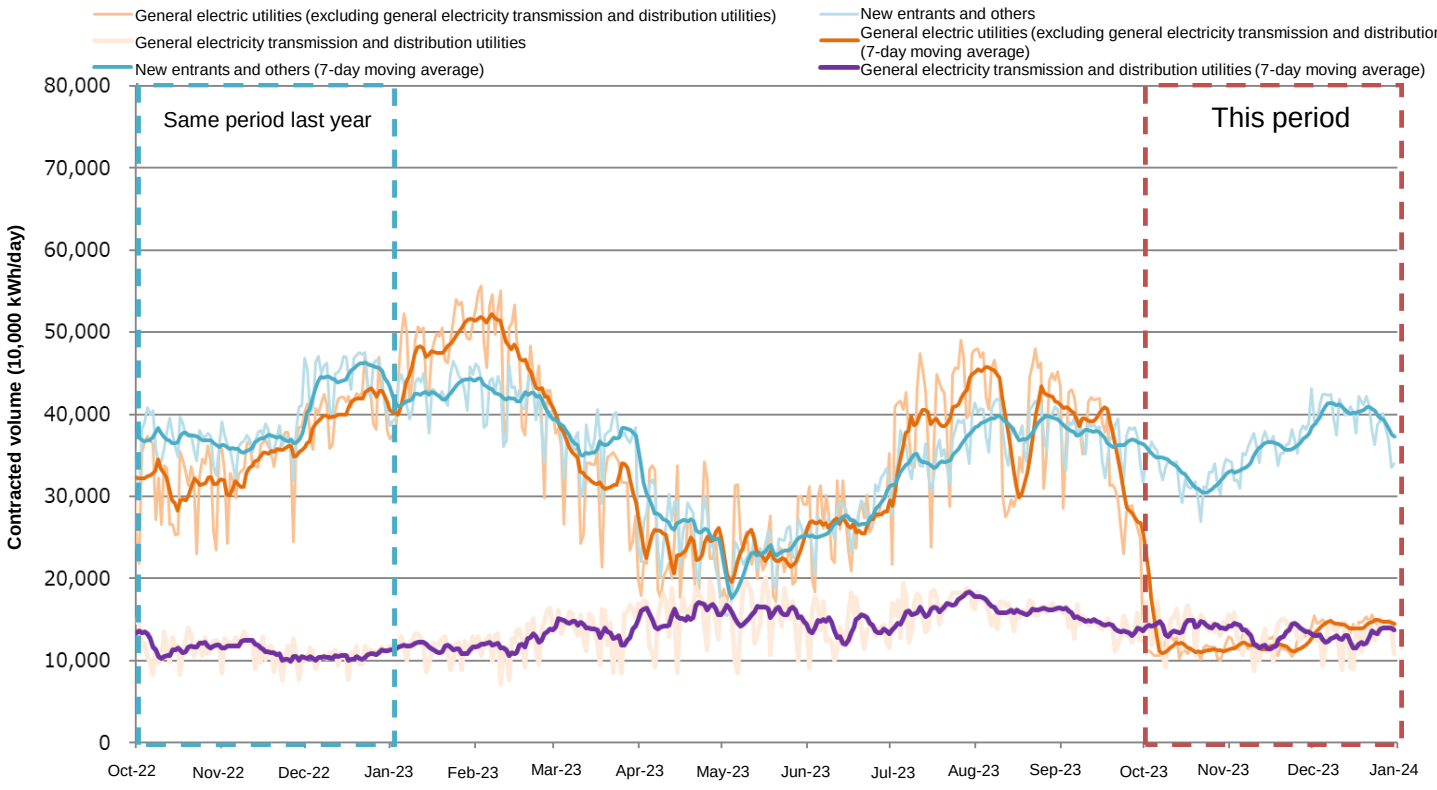
*1 The comparison is based on the volume obtained by deducting the gross bidding volume for internal demand from the bidding volume of general electric utilities in the same period last year. Gross bidding volumes are calculated from the questionnaire results on higher buy-back prices in gross bidding reported by general electric utilities.
(Where general electric utilities refer to Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, and Kyushu Electric Power.)

October to December 2023 period

Contracted sell volume in the day-ahead market by business operator category

- ○ The contracted sell volume in the day-ahead market for this period was 11.6 billion kWh for general electric utilities (excluding general electricity transmission and distribution utilities), 33.2 billion kWh for new entrants and other business operators, and 12.3 billion kWh for general electricity transmission and distribution utilities.
- ○ For year-on-year comparison, the volume was 0.4 times (0.7 times[*1]) that of the same period last year for general electric utilities, 0.9 times for new entrants and other business operators, and 1.2 times for general electricity transmission and distribution utilities. The decline in the contracted volume for general electric utilities is presumably attributable to the change of sell bids for supplying some surplus electricity at 0.01 yen (for buying at marginal cost) as part of gross bidding to supply it at marginal cost, which resulted in lower contract rates.

Day-Ahead market: Trends in contracted sell volume (October 1, 2022 to December 31, 2023)



Main data

Contracted sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) (October to December 2023)
11.6 billion kWh

Comparison with contracted volume by general electric utilities (excluding general electricity transmission and distribution utilities) for the same period last year (vs. October to December 2022)
0.4 ×

Contracted sell volume by new entrants and other business operators (October to December 2023)
33.2 billion kWh

Comparison with contracted sell volume by new entrants and other business operators for the same period last year (vs. October to December 2022)
0.9 ×

Contracted sell volume by general electricity transmission and distribution utilities (October to December 2023)
12.3 billion kWh

Comparison with contracted sell volume by general electricity transmission and distribution utilities for the same period last year (vs. October to December 2022)
1.2 ×

* The contracted FIT sell volume by general electricity transmission and distribution utilities has been excluded from the contracted sell volume by general electric utilities, and a new line plotting the contracted sell volume by general electricity transmission and distribution utilities has been added.
* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and JERA.
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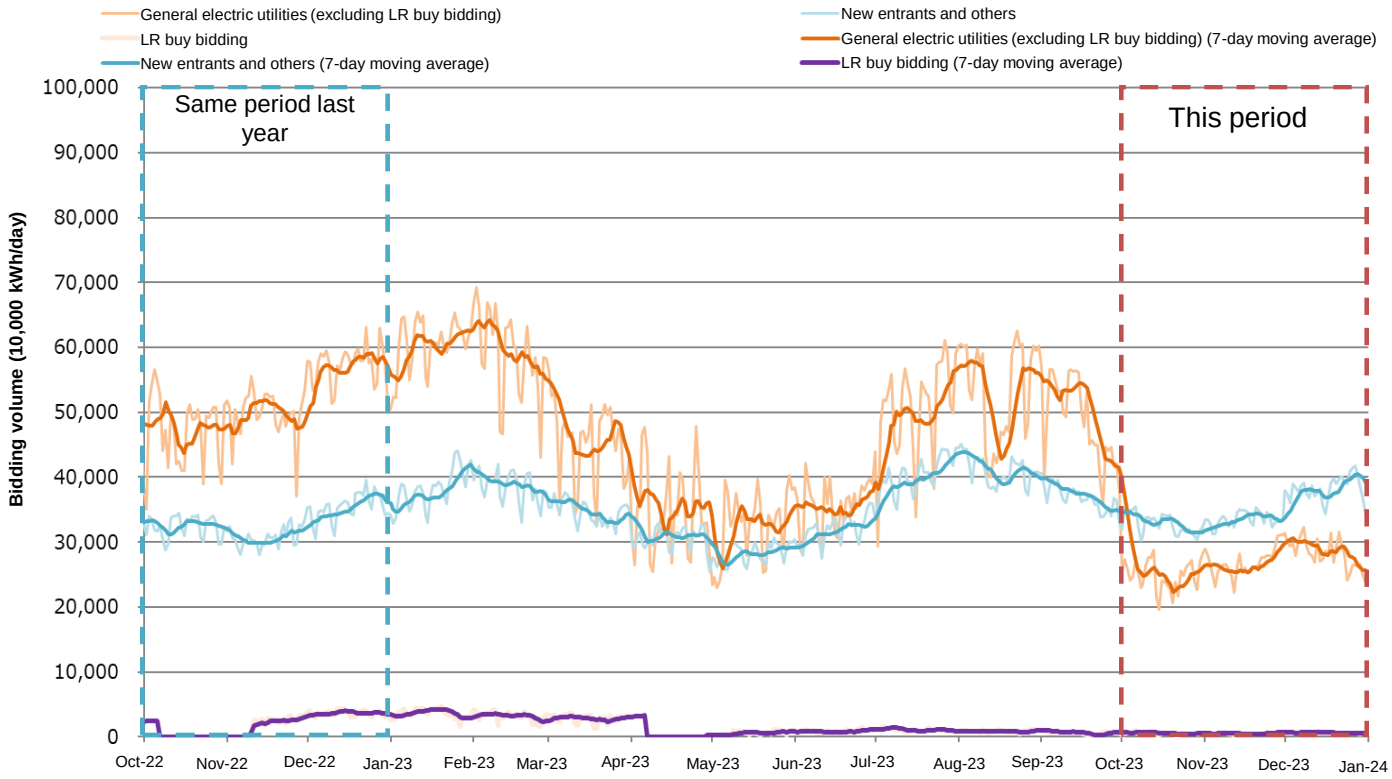
October to December 2023 period

Contracted buy volume in the day-ahead market by business operator category

- ○ The contracted buy volume in the day-ahead market for this period was 24.5 billion kWh for general electric utilities (excluding LR buy bidding) and 32.1 billion kWh for new entrants and other business operators, and the contracted LR buy volume by general electricity transmission and distribution utilities was 0.5 billion kWh.
- ○ For year-on-year comparison, the volume was 0.5 times (0.8 times[*1]) that of the same period last year for general electric utilities (excluding LR buy bidding) and 1.1 times for new entrants and other business operators.
- ○ The contracted buy volume by general electric utilities exceeded their contracted sell volume. The contracted buy volume by new entrants and other business operators had been above their contracted sell volume for the last two periods, whereas during the current period, their contracted sell volume exceeded their contracted buy volume.

Day-Ahead Market: Trends in contracted buy volume (October 1, 2022 to December 31, 2023)



Main data

Contracted buy volume by general electric utilities (excluding LR buy bidding) (October to December 2023)
24.5 billion kWh

Comparison with contracted buy volume by general electric utilities for the same period last year (excluding LR buy bidding) (vs. October to December 2022)
0.5 ×

Contracted buy volume by new entrants and other business operators (October to December 2023)
32.1 billion kWh

Comparison with contracted buy volume by new entrants and other business operators for the same period last year (vs. October to December 2022)
1.1 ×

Contracted LR buy volume by general electricity transmission and distribution utilities (October to December 2023)
0.5 billion kWh

* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, JERA, and general electricity transmission and distribution utilities.
* General electricity transmission and distribution utilities include Hokkaido Electric Power Network, Tohoku Electric Power Network, TEPCO Power Grid, Chubu Electric Power Grid, Hokuriku Electric Power Transmission and Distribution, Kansai Electric Power Transmission and Distribution, Chugoku Electric Power Network, Shikoku Electric Power Transmission and Distribution, and Kyushu Electric Power Transmission and Distribution.
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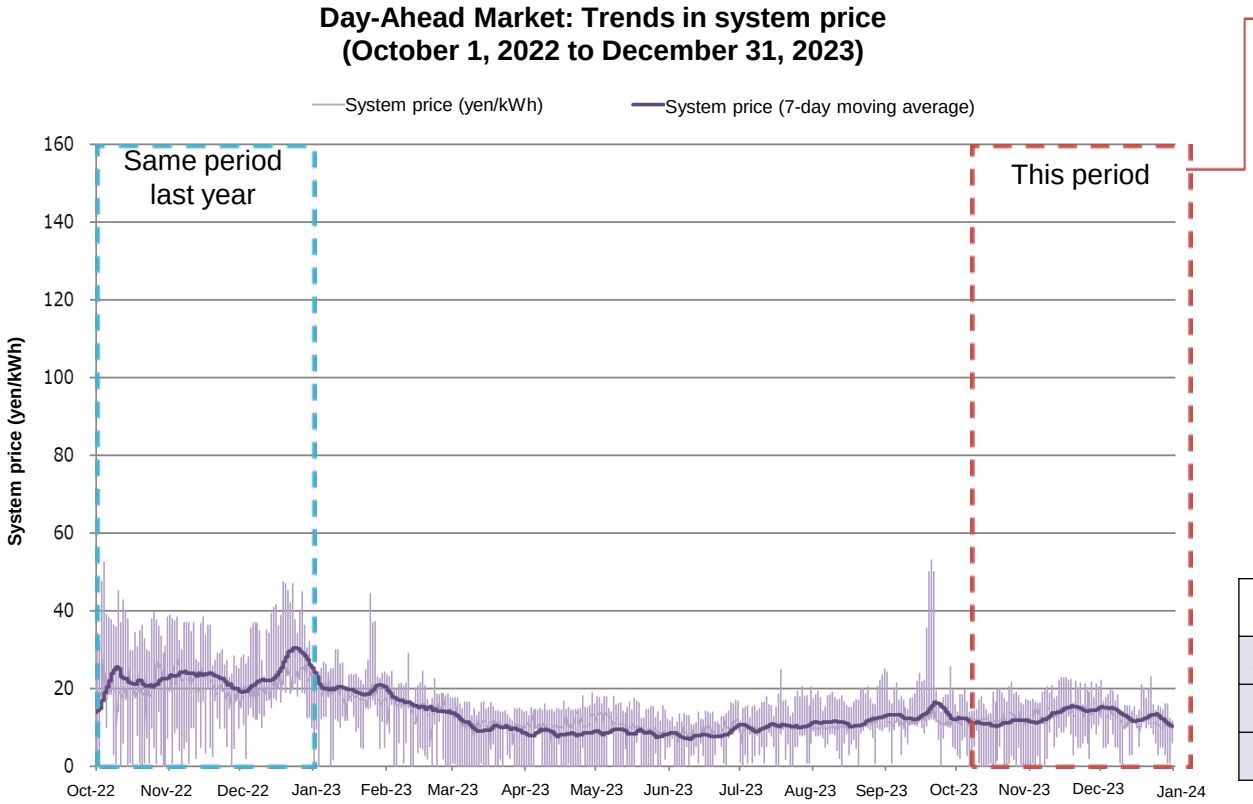
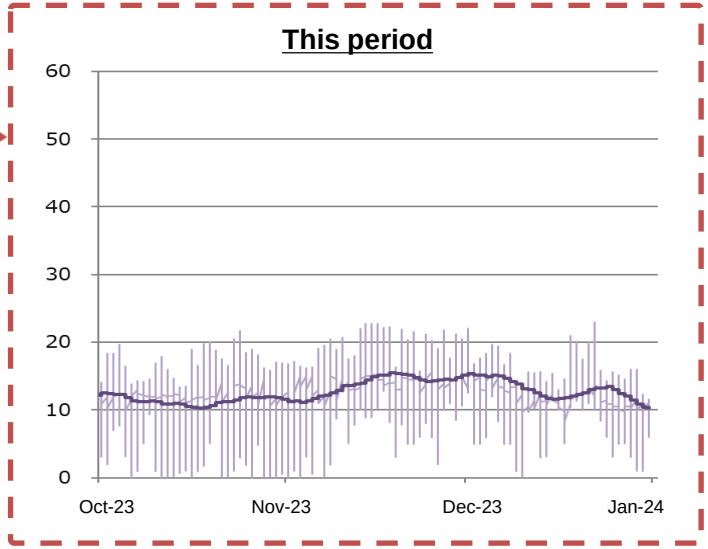
October to December 2023 period

System price in the day-ahead market

- ○ The average system price in the day-ahead market for this period was 12.6 yen/kWh.
- ○ It decreased by 10.6 yen compared to the average of 23.2 yen/kWh for the same period last year. (LNG spot prices decreased from an average of $30.3/MMBtu for the same period last year to an average of $15.3/MMBtu for this period.)





Main data

Unit: yen/kWh

	This period	Same period last year	Difference
Average system price	12.6	23.2	-10.6
Highest price	23.0	52.4	-29.4
Lowest price	0.01	0.01	+0.0

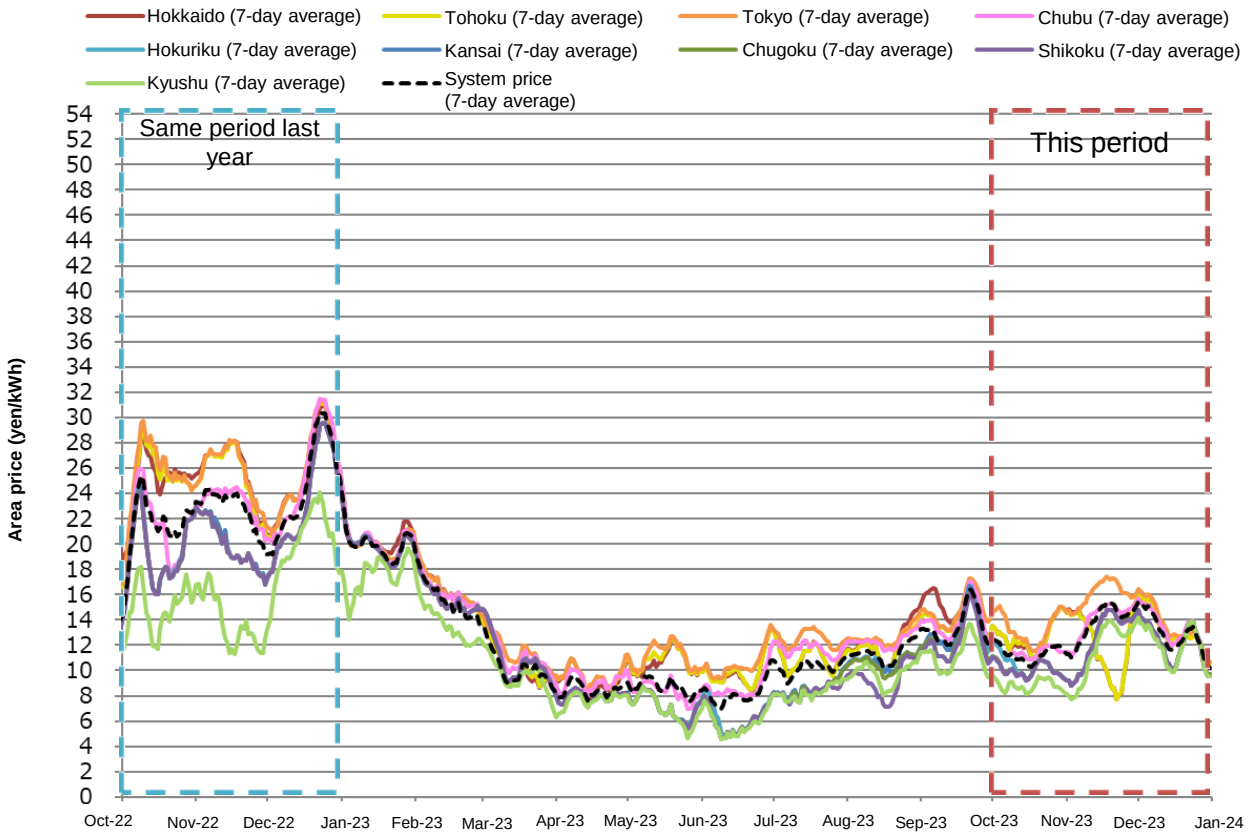
*1 Highest price for this period: 1 day, 1 frame in total
*2 Lowest price for this period: 14 days, 62 frames in total

October to December 2023 period

Area price in the day-ahead market

○ Average area prices in the day-ahead market for this period were lower than those for the same period last year in each area.

Day-Ahead Market: Trends in area price (October 1, 2022 to December 31, 2023)



Average price during the period

Unit: yen/kWh

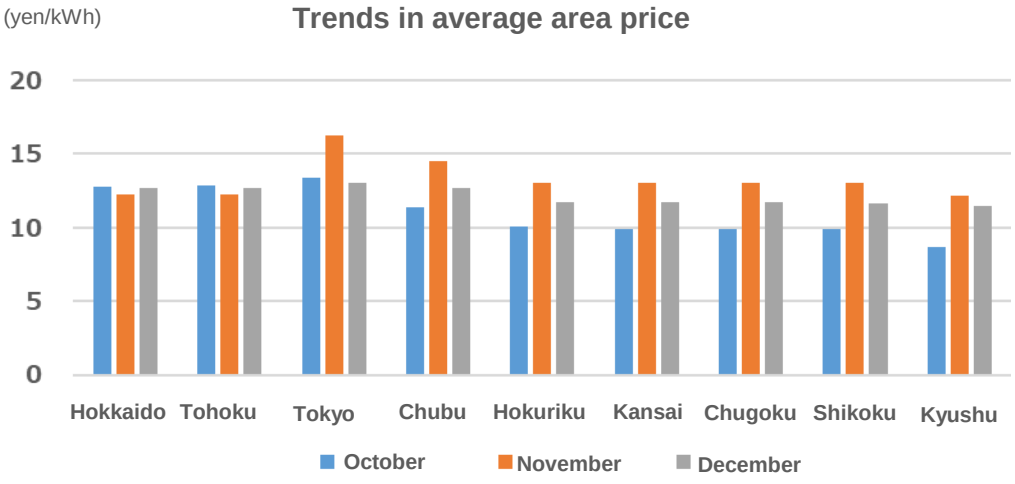
	This period	Same period last year	Difference
System price	12.6	23.2	-10.6
Hokkaido	12.6	25.6	-13.0
Tohoku	12.6	25.6	-13.0
Tokyo	14.2	25.9	-11.7
Chubu	12.8	23.5	-10.7
Hokuriku	11.6	21.2	-9.6
Kansai	11.5	21.2	-9.7
Chugoku	11.5	21.1	-9.6
Shikoku	11.5	21.1	-9.6
Kyushu	10.8	16.3	-5.6

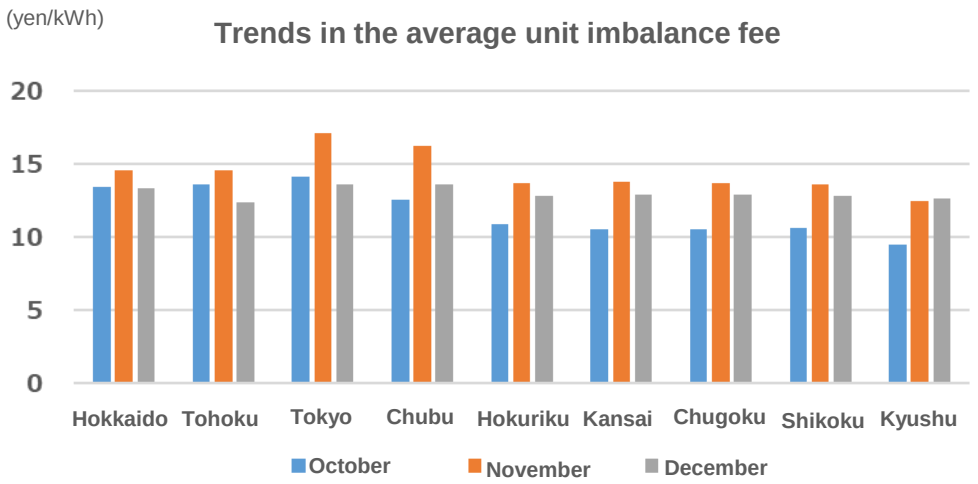
October to December 2023 period

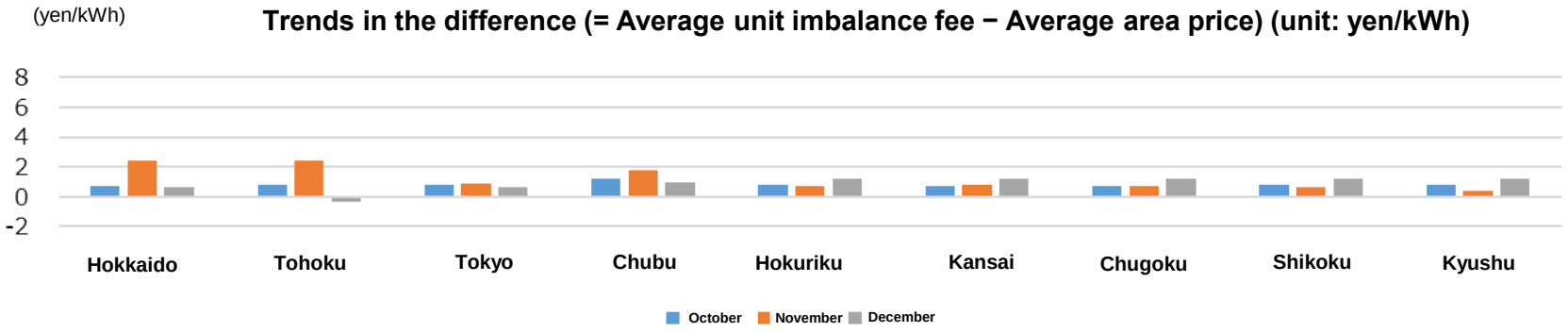
Trends in unit imbalance fee and area price

○ A comparison of trends in the unit imbalance fee and area price in each area (monthly averages) indicates a discrepancy in every month during the period. In particular, unit imbalance fees in the Hokkaido and Tohoku areas exceeded the area price by more than 2 yen in November.

○ The differences between the two values were 2.41 yen at the maximum, 0.34 yen at the minimum, and 0.97 yen on average.







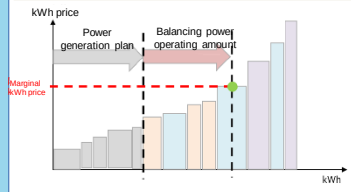
Source: Prepared by the Electricity and Gas Market Surveillance Commission Secretariat based on the final values of the imbalance volume (as of January 30, 2024) published on the Imbalance Prices Calculation Service website.
*The structure of the imbalance fee system was changed on April 1, 2022.

(Reference) Imbalance calculation method (from April 2022)

○ The overall picture of the imbalance fee system and its calculation method is shown in the figure below.

Imbalance fee system from FY2022 onwards

Merit order of power supply operating costs

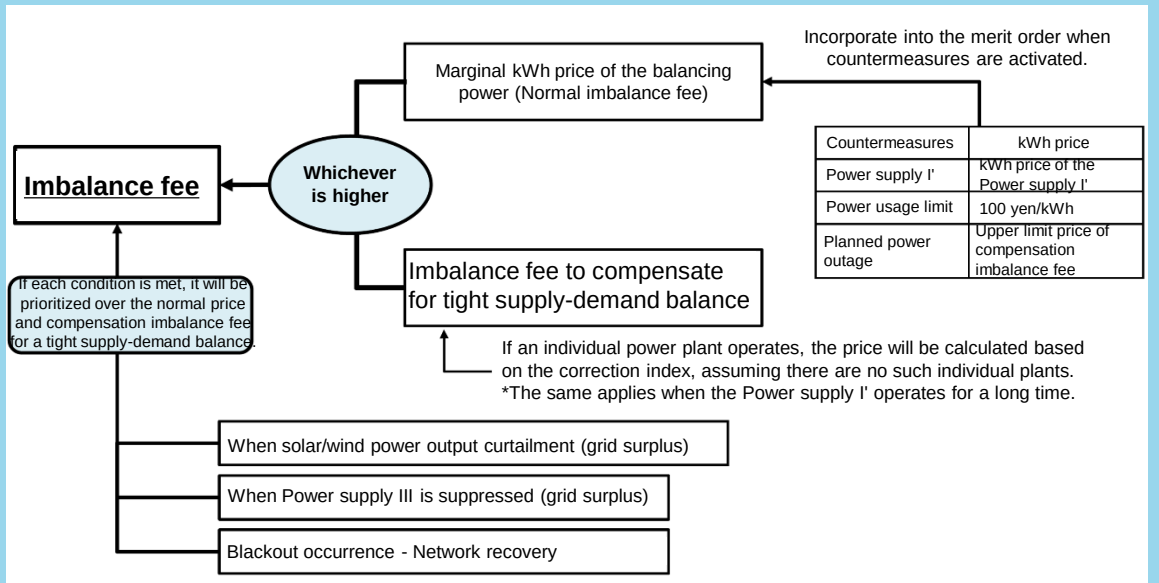


System based on the kWh price of the balancing power

Weighted average value of the marginal kWh price of the balancing power for the first 15 minutes and the second 15 minutes within a 30-minute frame

Introduced a mechanism in which imbalance fees increase when supply and demand is tight (compensation imbalance fees).

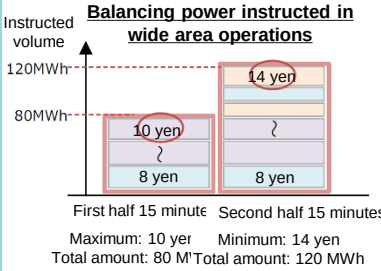
Measures:
(1) Give grid users incentives to help balance supply and demand across the grid.
(2) By reflecting the kWh price of the balancing power in the imbalance fee, general electricity transmission and distribution utilities can recover the supply-demand balancing cost.



Countermeasures	kWh price
Power supply I'	kWh price of the Power supply I'
Power usage limit	100 yen/kWh
Planned power outage	Upper limit price of compensation imbalance fee

○ Calculation method of marginal kWh price of the balancing power

Balancing power instructed in wide area operations



Imbalance fee (marginal kWh price of the balancing power)

The imbalance fee for that period is the weighted average of the marginal kWh prices for the first 15 minutes and the second 15 minutes by the balancing power instructed volume.

$$\frac{10\times80+14\times120}{80+120} = 12.4 \text{ yen}$$

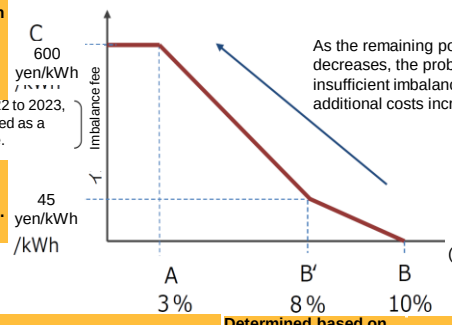
* From FY2023, wide-area operations will be in 5-minute increments, and the price will be calculated as a weighted average of 5 minutes x 6 frames.

○ Concept of imbalance fee to compensate for tight supply-demand balance

As a cost to secure an additional 1 kWh of supply capacity in an emergency, as a price sufficient to secure 1 kWh of new supply capacity unavailable on the market, the price required to secure additional DR.

For two years from fiscal 2022 to 2023, 200 yen/kWh will be applied as a temporary measure.

Determined based on the kWh price of the secured Generator I'.



As the remaining power supply capacity decreases, the probability that insufficient imbalance will generate additional costs increases.

Correction price calculation index (Remaining power supply capacity that can be utilized by power transmission and distribution utilities)

Determined based on the level at which the government issues a tight supply-demand warning.

Determined based on the level at which Power supply I' can be operated with certainty.

Determined based on the timing to start activating Power supply I'.

22

October to December 2023 period

Day-Ahead market splitting status between areas

- ○ The market splitting occurrence rate remains high for the Tokyo-Chubu interconnection line (FC), the Chubu-Hokuriku interconnection line, and the Chubu-Kansai interconnection line, exceeding 40% on average for this period. The Tokyo-Chubu interconnection line (FC) experienced a decline in service capacity from the end of September to December due to work-related constraints, while the Tohoku-Tokyo interconnection line also had a lower service capacity in November due to work, creating a situation prone to market splitting.
- ○ Compared to the same period last year, the Chugoku-Kyushu interconnection line indicated a remarkable decrease in the market splitting occurrence rate.

Monthly splitting occurrence rate for interconnection lines between each area

Chubu-Hokuriku interconnection line

	July	August	September	October	November	December	Average for this period
	75.8%	56.3%	32.0%	43.8%	46.5%	40.3%	43.5%
(Same period last year)	16.5%	61.9%	38.0%	38.5%			

Hokuriku-Kansai interconnection line

July	August	September	October	November	December	Average for this period
0.3%	2.4%	12.6%	9.7%	0.1%	0.0%	3.3%
(Same period last year)	1.9%	0.0%	0.0%	0.6%		

Hokkaido-Honshu interconnection line

July	August	September	October	November	December	Average for this period
4.0%	13.0%	20.2%	6.1%	4.7%	6.3%	5.7%
(Same period last year)	18.3%	6.9%	13.9%	13.1%		

Kansai-Chugoku interconnection line

July	August	September	October	November	December	Average for this period
1.5%	2.4%	9.2%	0.0%	0.0%	0.0%	0.0%
(Same period last year)	0.9%	2.4%	0.0%	1.1%		

Tohoku-Tokyo interconnection line

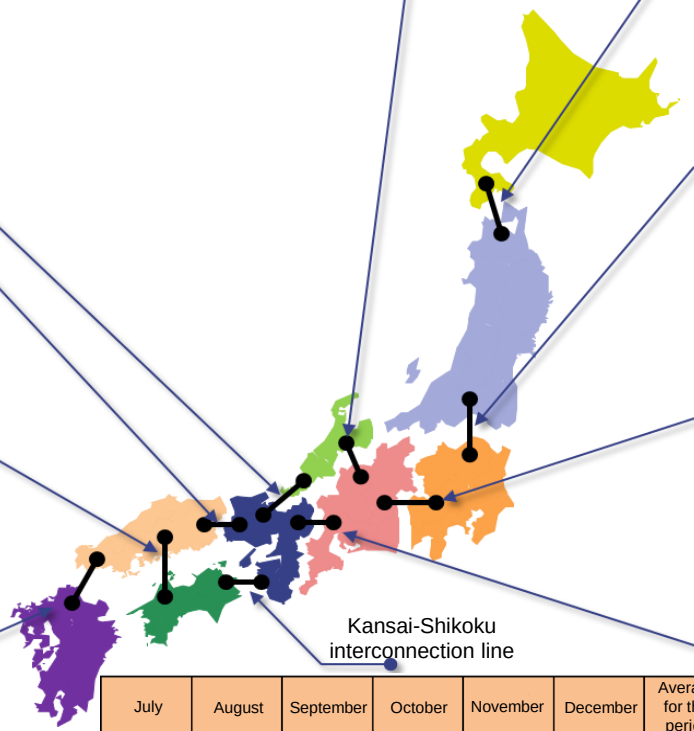
July	August	September	October	November	December	Average for this period
31.3%	18.5%	10.8%	11.7%	52.4%	15.0%	26.1%
(Same period last year)	3.1%	3.5%	1.0%	2.5%		

Chugoku-Shikoku interconnection line

July	August	September	October	November	December	Average for this period
3.7%	20.4%	2.2%	0.7%	1.1%	0.7%	0.8%
(Same period last year)	0.7%	0.0%	0.3%	0.3%		

Tokyo-Chubu interconnection line (FC)

July	August	September	October	November	December	Average for this period
19.0%	13.1%	34.9%	62.3%	53.6%	30.5%	48.8%
(Same period last year)	52.1%	46.3%	9.5%	35.8%		



Chugoku-Kyushu interconnection line

July	August	September	October	November	December	Average for this period
8.9%	22.4%	34.9%	26.8%	19.7%	5.1%	17.2%
(Same period last year)	51.3%	63.3%	35.2%	49.8%		

Kansai-Shikoku interconnection line

July	August	September	October	November	December	Average for this period
5.2%	22.1%	10.9%	0.7%	1.1%	0.7%	0.8%
(Same period last year)	1.5%	2.4%	0.3%	1.4%		

Chubu-Kansai interconnection line

July	August	September	October	November	December	Average for this period
76.1%	58.6%	44.5%	53.4%	46.5%	40.3%	46.7%
(Same period last year)	18.3%	61.9%	38.0%	39.2%		

* The numbers (percentages) in the tables show the market splitting occurrence rate in each interconnection line, which is the number of products in which market splitting occurred as a percentage of the number of products handled in each month (48 30-minute frames per day x number of days).

* Occurrences of market splitting include those caused by interconnection line work.

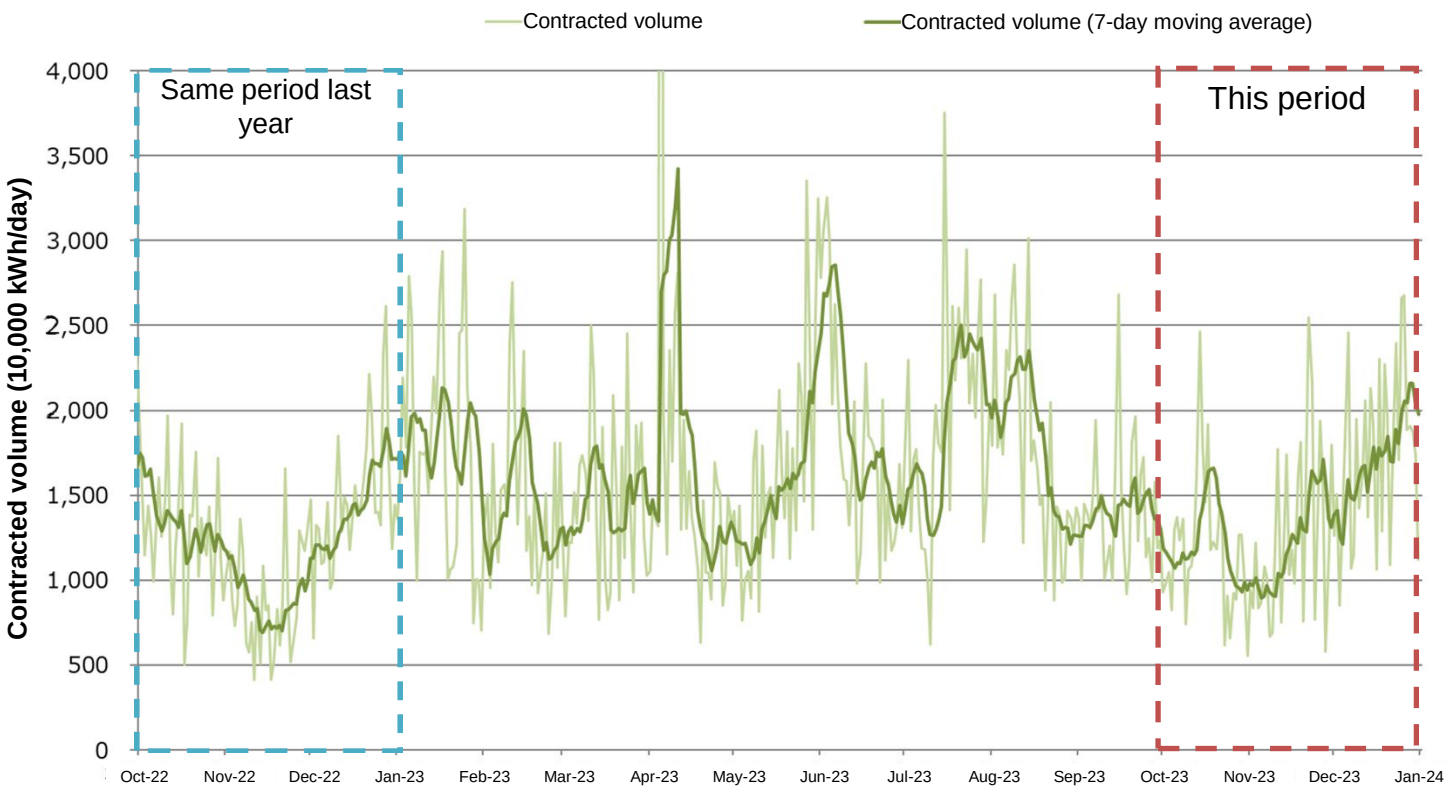
October to December 2023 period

Contracted volume in the intraday market

- ○ The contracted volume in the intraday market for this period was 1.28 billion kWh.
- ○ For year-on-year comparison, the volume was 1.1 times that of the same period last year.

Intraday market: Trends in contracted volume

(October 1, 2022 to December 31, 2023)



Main data

Contracted volume (October to December 2023)
1.28 billion kWh

Comparison with contracted volume for the same period last year (vs. October to December 2022)
1.1 ×

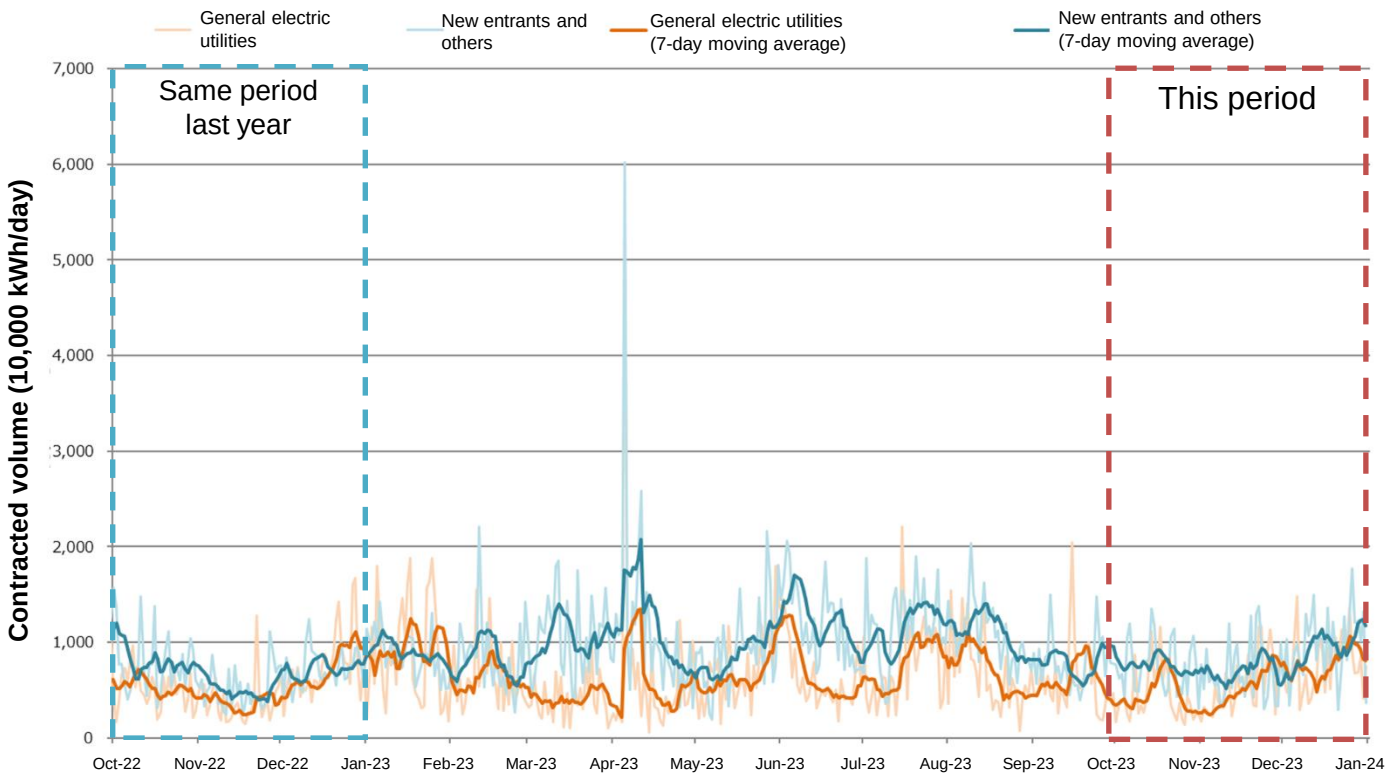
October to December 2023 period

Contracted sell volume in the intraday market by business operator category

○ The contracted sell volume in the intraday market for this period was 0.54 billion kWh for general electric utilities and 0.74 billion kWh for new entrants and other business operators.

○ For year-on-year comparison, the volume was 1.1 times that of the same period last year for general electric utilities and 1.2 times for new entrants and other business operators.

Intraday market: Trends in contracted sell volume
(October 1, 2022 to December 31, 2023)



Main data

Contracted sell volume by general electric utilities (October to December 2023)	0.54 billion kWh
Comparison with contracted sell volume by general electric utilities for the same period last year (vs. October to December 2022)	1.1 ×
Contracted sell volume by new entrants and other business operators (October to December 2023)	0.74 billion kWh
Comparison with contracted sell volume by new entrants and other business operators for the same period last year (vs. October to December 2022)	1.2×

* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and JERA.

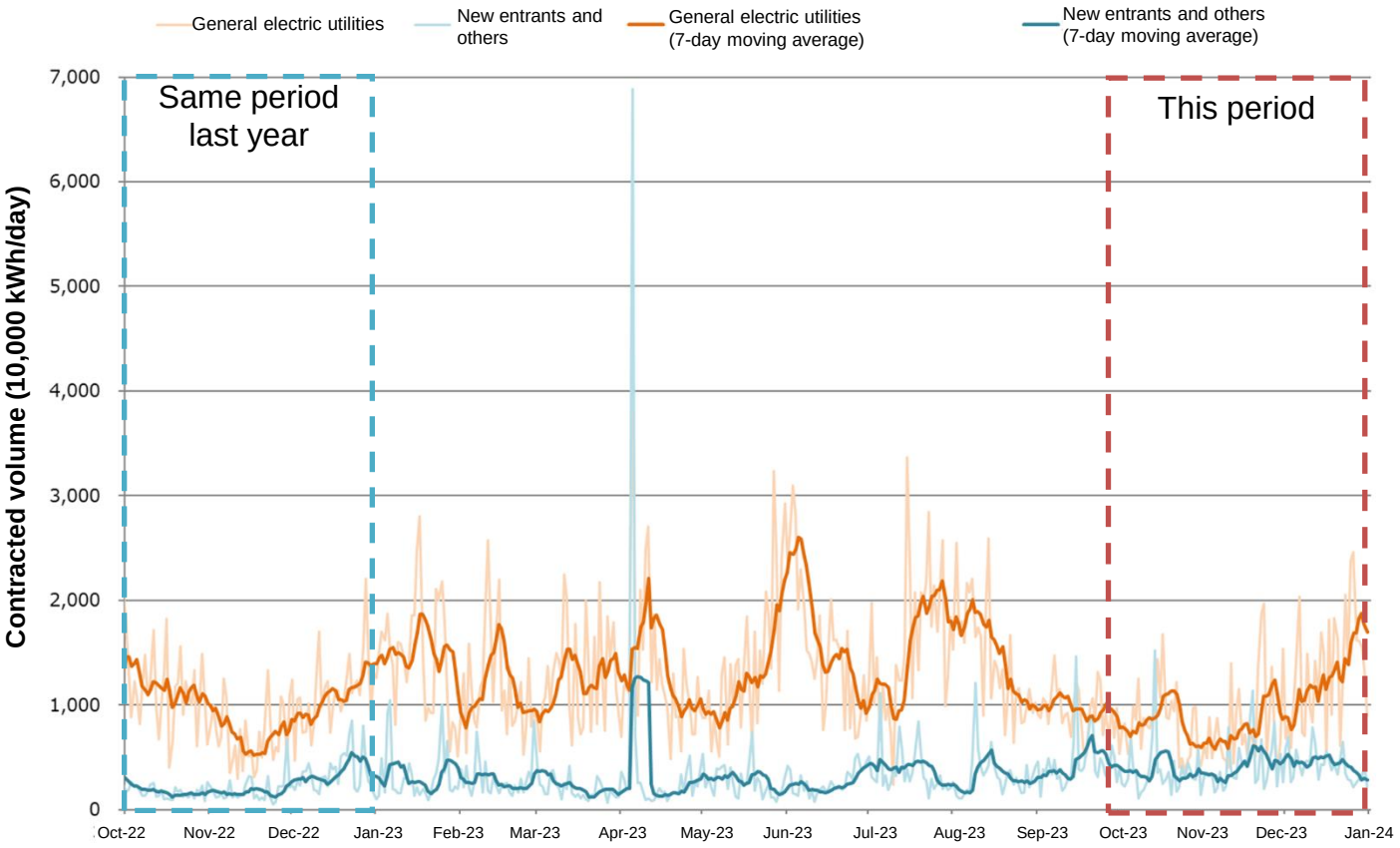
October to December 2023 period

Contracted buy volume in the intraday market by business operator category

- ○ The contracted buy volume in the intraday market for this period was 0.91 billion kWh for general electric utilities and 0.37 billion kWh for new entrants and other business operators.
- ○ For year-on-year comparison, the volume was 1.0 times that of the same period last year for general electric utilities and 1.7 times for new entrants and other business operators.
- ○ The contracted buy volume by general electric utilities exceeded their contracted sell volume, and the contracted sell volume by the new entrants and other business operators exceeded their contracted buy volume.

Intraday market: Trends in contracted buy volume

(October 1, 2022 to December 31, 2023)



Main data

Contracted buy volume by general electric utilities (October to December 2023)
0.91 billion kWh

Comparison with contracted buy volume by general electric utilities for the same period last year (vs. October to December 2022)
1.0 ×

Contracted buy volume by new entrants and other business operators (October to December 2023)
0.37 billion kWh

Comparison with contracted buy volume by new entrants and other business operators for the same period last year (vs. October to December 2022)
1.7 ×

* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and JERA.

October to December 2023 period

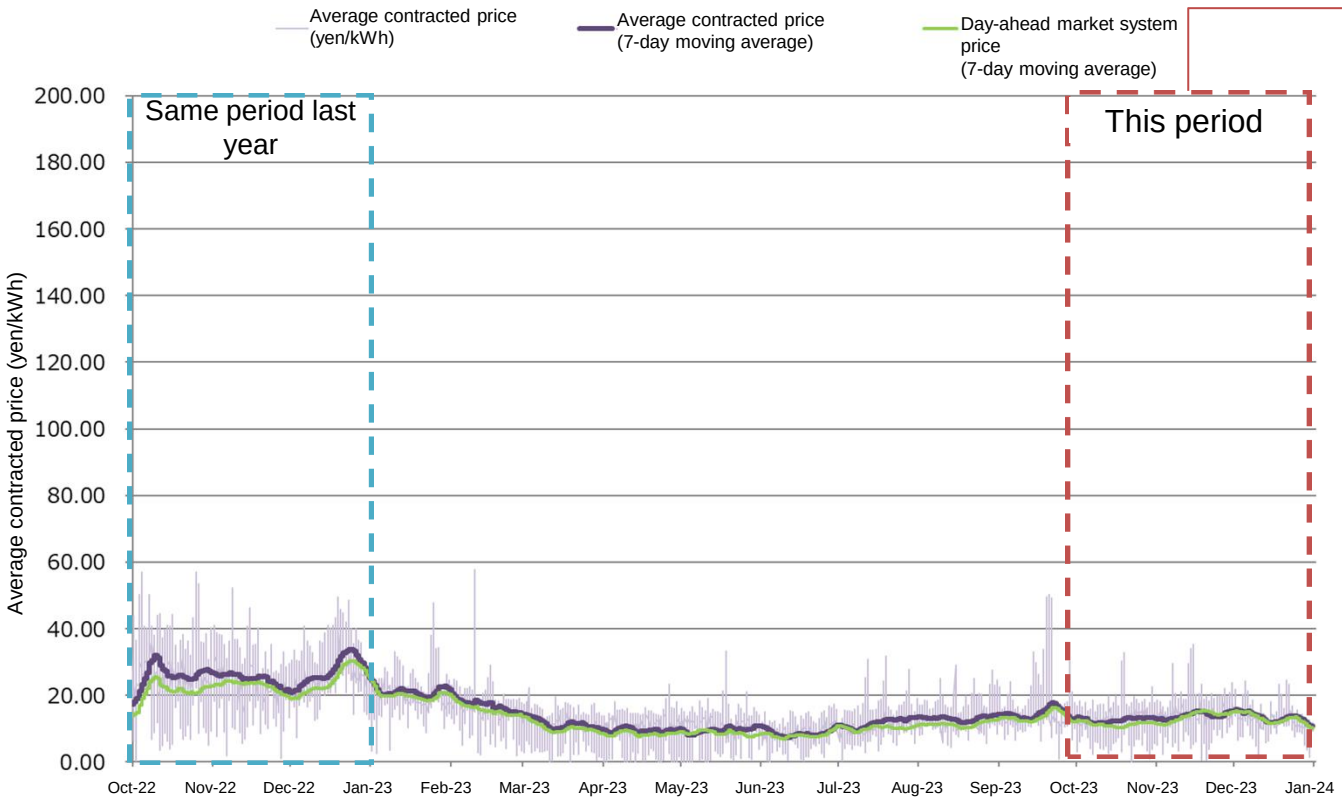
Average contracted price in the intraday market

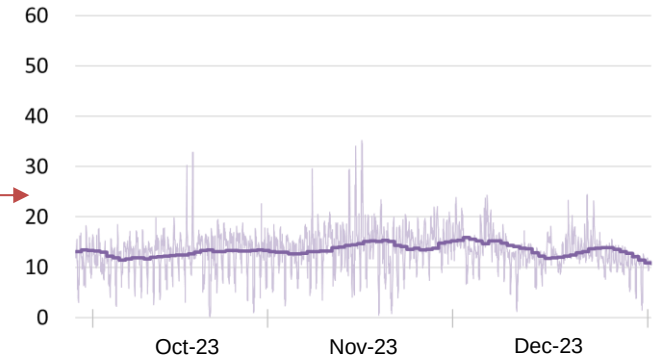
○ The average contracted price in the intraday market for this period was 13.2 yen/kWh. This was a 50.1% decrease compared to the average of 26.3 yen/kWh for the same period last year.

○ The average contracted price in the intraday market for this period exceeded the average system price by 0.6 yen/kWh.

Intraday market: Trends in the average contracted price

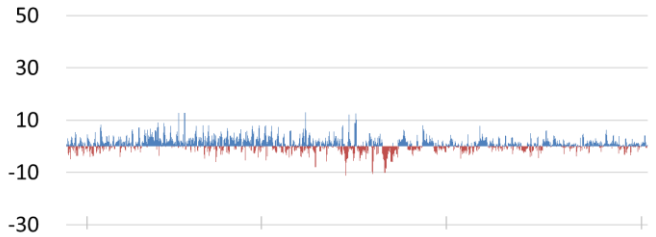
(October 1, 2022 to December 31, 2023)





Price difference (Average intraday market price − System price)

Maximum difference (positive): +13.06 yen/kWh (20:00, November 7)
Maximum difference (negative): −11.25 yen/kWh (04:30, November 14)



Main data

Unit: yen/kWh

	This period	Same period last year	Difference
Intraday market average contracted price	13.2	26.3	-13.1
(Reference) Day-ahead market average system price	12.6	23.2	-10.6
Highest price	35.2	56.9	-21.7
Lowest price	0.18	0.25	-0.07

Highest price: November 15, 1 frame in total
Lowest price: October 22, 1 frame in total

October to December 2023 period

Overview of contracted volume and bidding volume in the forward market transactions

○ There were no trading volumes contracted in the forward market for this period.
○ Electricity futures trading contracted for this period was 250,780 MWh for TOCOM and 5,892,324 MWh for EEX.

Contracted volume/bidding volume during the period*1

(Unit: MWh)

Item	Area	Total (This quarter)	Daytime: Weekly	Daytime: Monthly	24-hour: Weekly	24-hour: Monthly	24-hour: Yearly	(Reference) Total (Year-ago quarter)
Contracted volume	**Total**	0	**0**	**0**	**0**	**0**	**0**	**8,900**
	Tokyo	0	0	0	0	0	0	8,900
	Kansai	0	0	0	0	0	0	0
Sell volume	**Total**	**881,358**	**293,160**	**452,928**	**61,270**	**74,000**	**0**	**382,202**
	Tokyo	311,458	83,160	211,128	8,170	9,000	0	258,142
	Kansai	569,900	210,000	241,800	53,100	65,000	0	124,060
Buy volume	**Total**	**5,513,442**	**741,552**	**3,611,400**	**160,540**	**999,950**	**0**	**6,765,592**
	Tokyo	123,424	98,784	0	24,640	0	0	1,341,208
	Kansai	5,390,018	642,768	3,611,400	135,900	999,950	0	5,424,384

(Reference) Contracted volume in the futures market*2 (TOCOM and EEX) during the period

(TOCOM)

Item	Area	Total (This quarter)	Base load	Daytime load	(Reference) Total (Year-ago quarter)
Contracted volume	**Total**	**250,780**	**230,851**	**19,928**	**472,686**
	Tokyo	176,728	163,342	13,386	334,026
	Kansai	74,052	67,510	6,542	138,660

(EEX)

Item	Area	Total (This quarter)	Base load	Peak load	(Reference) Total (Year-ago quarter)
Contracted volume	**Total**	**5,892,324**	**5,439,192**	**453,132**	**2,278,032**
	Tokyo	4,958,892	4,564,920	393,972	2,029,608
	Kansai	933,432	874,272	59,160	248,424

* 1 Forward market data was obtained by converting the contracted volume of each product into kWh (for 24-hour products, total number of days including holidays × 24 hours; for daytime products, number of days excluding holidays × 10 hours) and aggregating the results by contracted month.
* 2 Futures market data was obtained through aggregation based on data published on the JPX and EEX websites.

Electricity market monitoring report

[Quarterly report]

◆ Wholesale electricity market
- ● JEPX market
  - - Day-Ahead market
  - - Intraday market
  - - Forward transaction market

◆ Voluntary efforts by general electric utilities, etc.
- ● Supply of surplus electricity to JEPX market
- ● Trading status and sell bid withdrawal status in the intraday market
- ● Status of block sell bidding
- ● Supply of power source to the market for wholesale electricity utilities
- ● Status of bidding, etc. for public hydroelectricity business
- ● Status of OTC transactions

[Medium- to long-term trend report]

◆ Wholesale electricity market
- ● JEPX market
  - - Trends in contracted volume
  - - Trends in contracted price
  - - Trends in the market splitting occurrence rate
- ● JEPX spot price and fuel cost

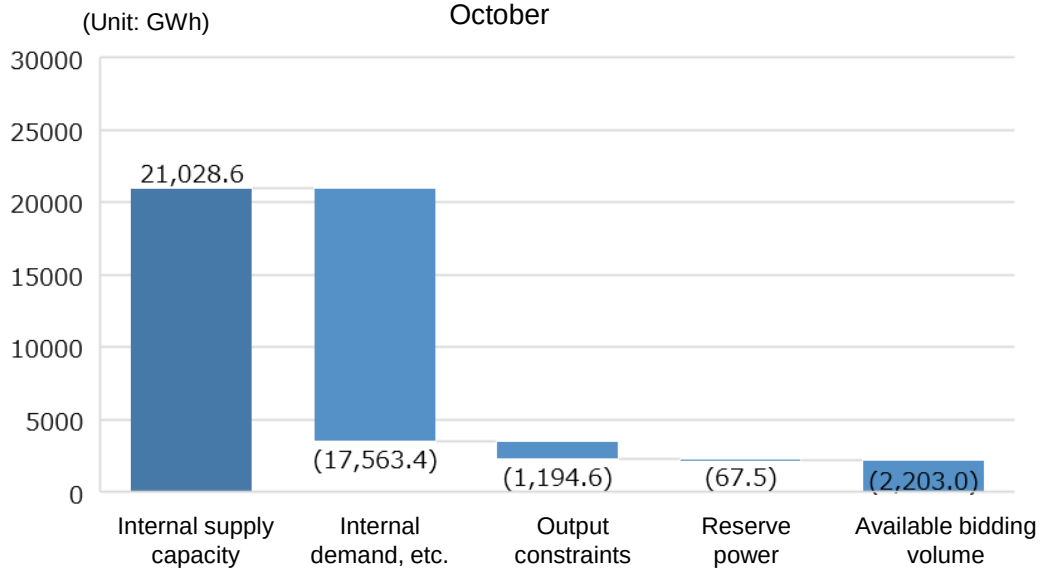
◆ Retail market
- ● Trends in new entrants share by area
- ● Market share by area
- ● Trends in electricity unit price
- ● Trends in switching

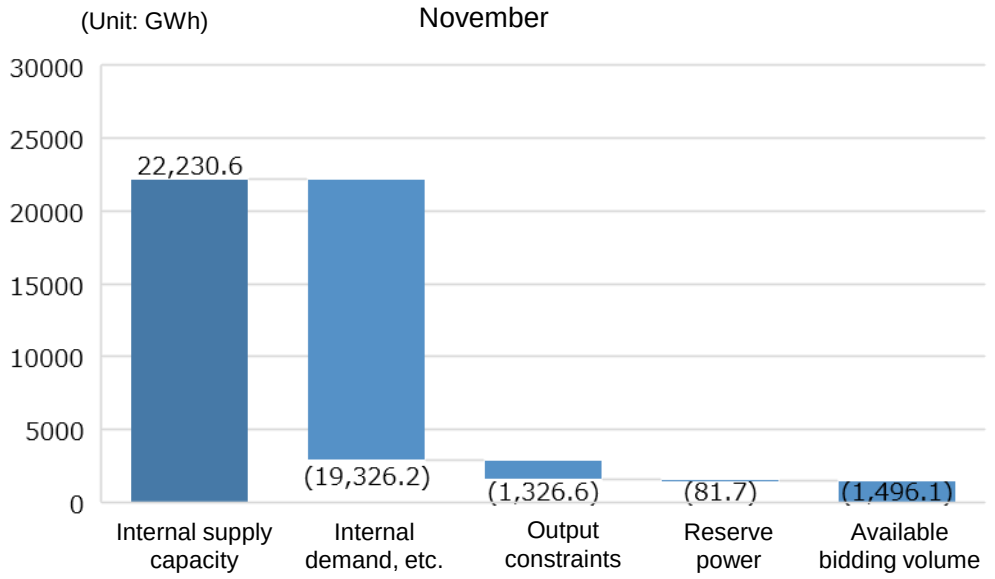
◆ Gas market
- ● Status of OTC transactions of general gas utilities
- ● Usage status of Start-up wholesale measure

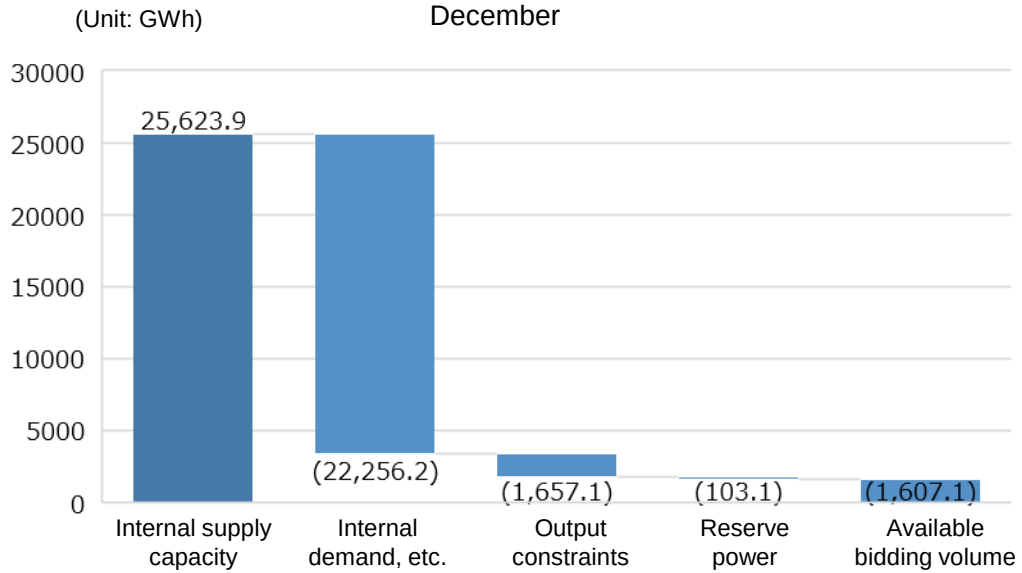
October to December 2023 period

Supply of surplus electricity to JEPX market: Status of available bidding volume for supply capacity

○ The total available bidding volume on the sample dates of each month (data aggregated over seven days each month) was approximately 6% to 10% of the internal supply capacity (10.5% in October, 6.7% in November, and 6.3% in December).







[Date for aggregation of available bidding volume]

◆ The secretariat designated seven sampling days each month and performed evaluations based on data provided by general electric utilities and JERA.

- Sampling days for October consist of two days when the price particularly soared and weekdays when the maximum system price was among the highest in the month.
  October 4, 16, 18, 19, 23, 24, and 26 (of which 18 and 19 are days when the average intraday market price soared)
- Sampling days for November consist of two days when the price particularly soared and weekdays when the daily average system price was among the highest in the month.
  November 10, 14, 15, 16, 17, 29, and 30 (of which 14 and 15 are days when the average intraday market price soared)
- Sampling days for December consist of weekdays when the daily average system price was among the highest in the month.
  December 1, 5, 6, 18, 19, 21, and 22

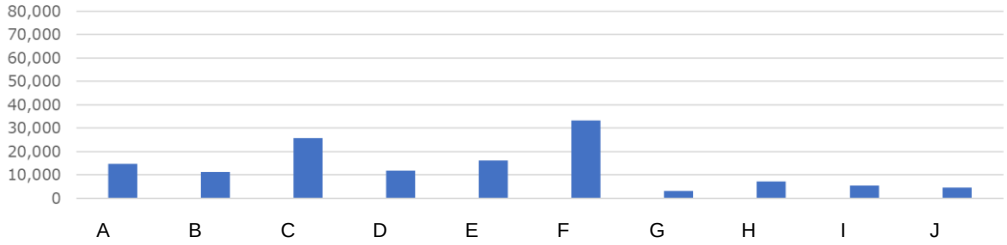
◆ The data was collected in the specified data submission format for days when the price rose to 30 yen/kWh or more in the day-ahead market and the intraday market.

October to December 2023 period

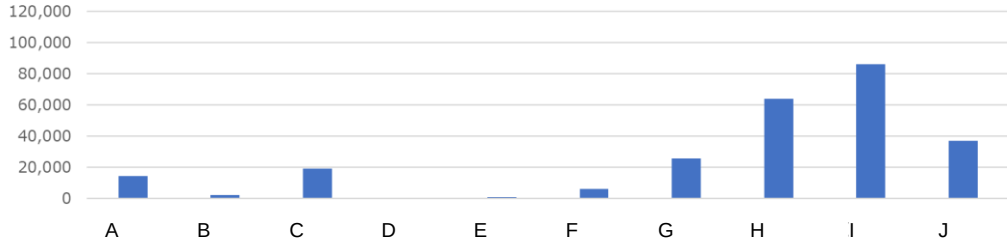
Intraday market for general electric utilities: Contract status by buyer and by seller

- ○ Contracted volumes in the intraday market by general electric utilities and JERA as sellers and buyers were aggregated.
- ○ On the seller side, the main operators include electric companies B and F; on the buyer side, the main operators include electric companies D, H, and I.

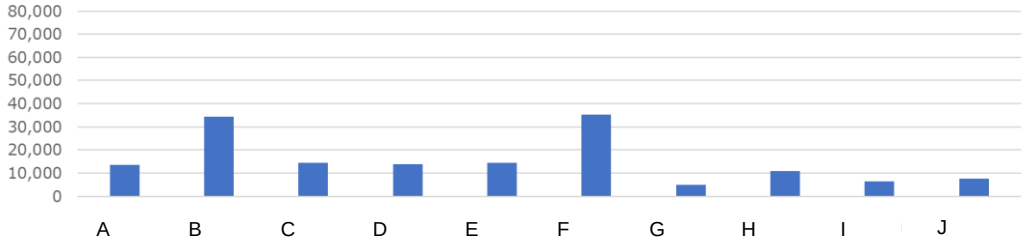
Contracted volume by seller in the intraday market, October 2023 (Unit: MWh)



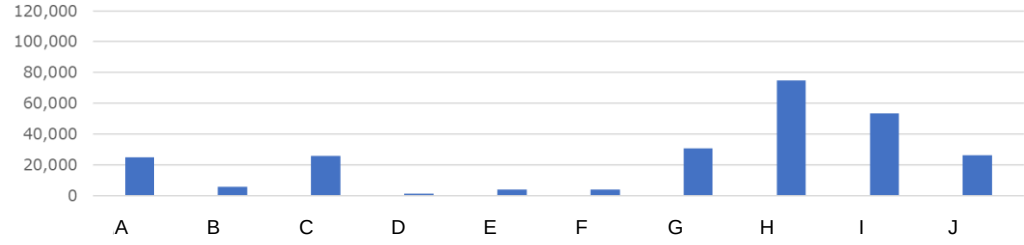
Contracted volume by buyer in the intraday market, October 2023 (Unit: MWh)



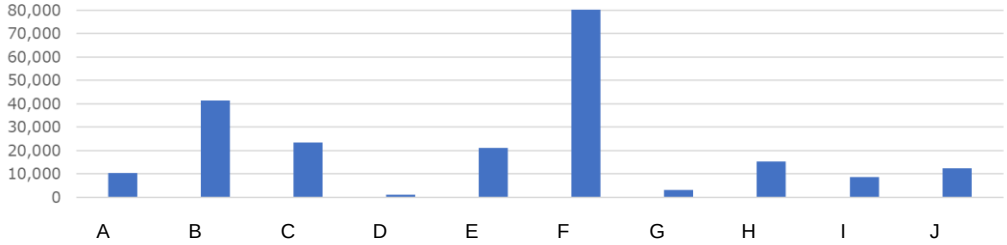
Contracted volume by seller in the intraday market, November 2023 (Unit: MWh)



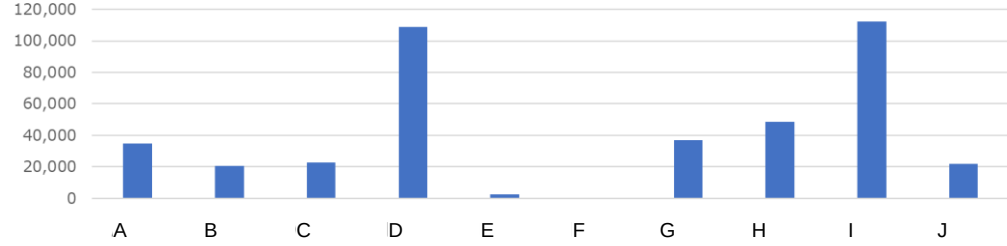
Contracted volume by buyer in the intraday market, November 2023 (Unit: MWh)



Contracted volume by seller in the intraday market, December 2023 (Unit: MWh)



Contracted volume by buyer in the intraday market, December 2023 (Unit: MWh)



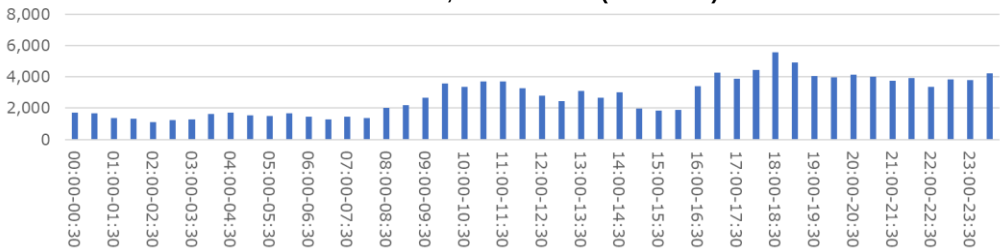
*Aggregated from JEPX data (undisclosed)
*Calculated for general electric utilities (excluding Okinawa Electric Power) and JERA

October to December 2023 period

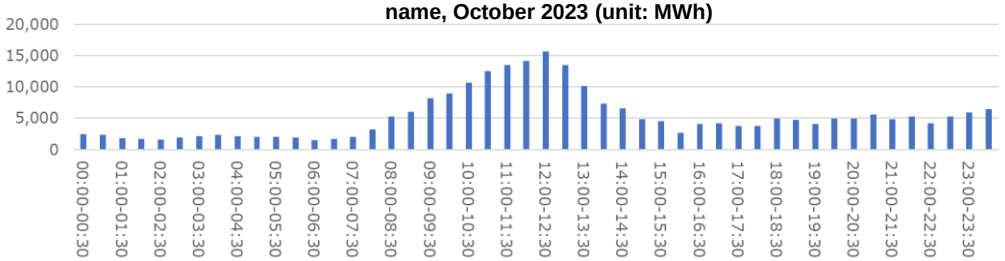
Intraday market for general electric utilities: Contract status by buyer and by seller

- The charts below show the contracted volume in the intraday market for general electric utilities and JERA, broken down by seller and by buyer for each product frame.
- On the seller side, peaks are observed during the lighting demand period, and on the buyer side, peaks are observed during hours around noon.

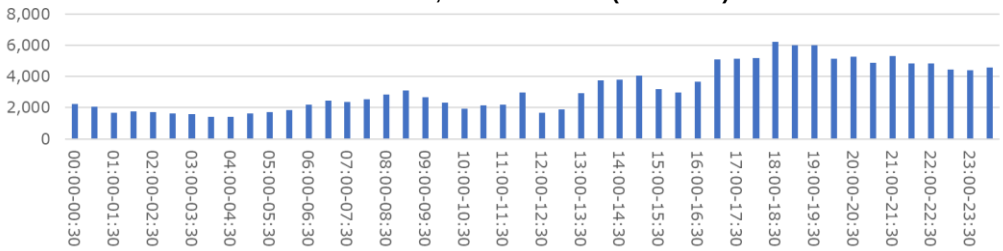
Contracted volume in the intraday market by seller and by product name, October 2023 (unit: MWh)



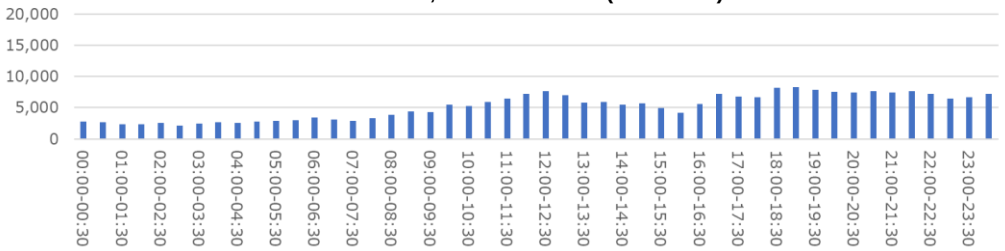
Contracted volume in the intraday market by buyer and by product name, October 2023 (unit: MWh)



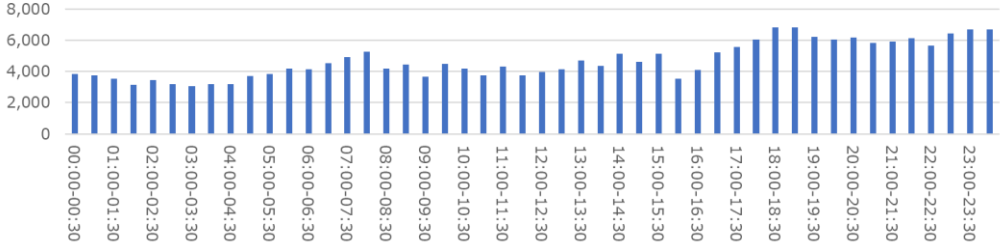
Contracted volume in the intraday market by seller and by product name, November 2023 (unit: MWh)



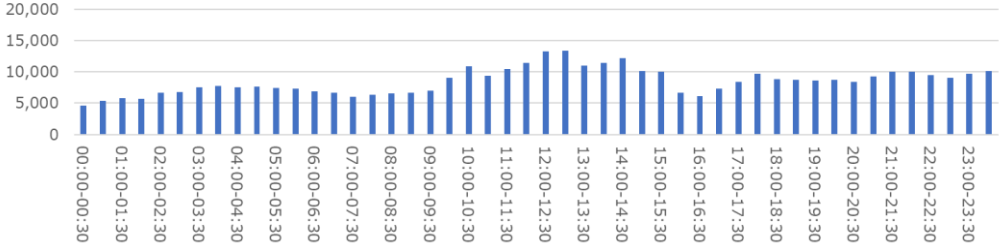
Contracted volume in the intraday market by buyer and by product name, November 2023 (unit: MWh)



Contracted volume in the intraday market by seller and by product name, December 2023 (unit: MWh)



Contracted volume in the intraday market by buyer and by product name, December 2023 (unit: MWh)



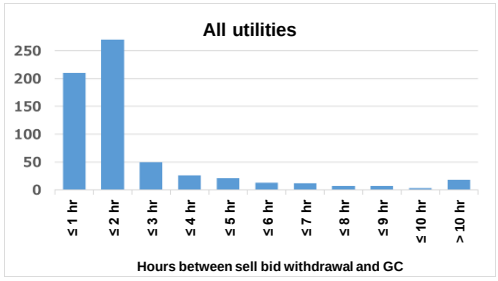
*Aggregated from JEPX data (undisclosed)
*Calculated for general electric utilities (excluding Okinawa Electric Power) and JERA

October to December 2023 period

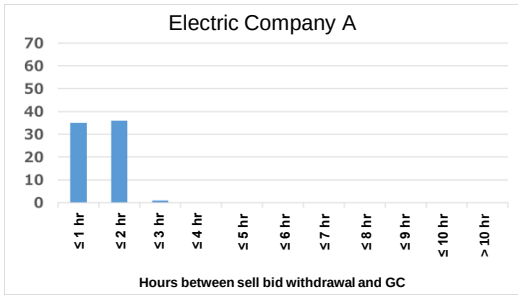
Status of withdrawal of sell bids by general electric utilities (Distribution of number of cases by remaining time until GC)

○ For the three sampling days (October 6, November 14, and December 22), the distribution of the number of utilities was checked to see how many hours before GC they withdrew their sell bids. It was found that the trend that the distribution concentrates in the period between “one hour before GC” and “two hours before GC” has continued. The number of cases corresponding to “one hour before” was 210, indicating a level similar to that in the previous quarter (217 cases).

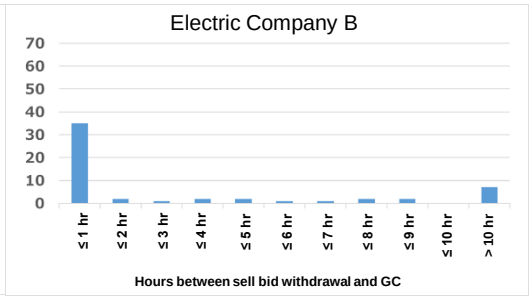
(No. of cases)



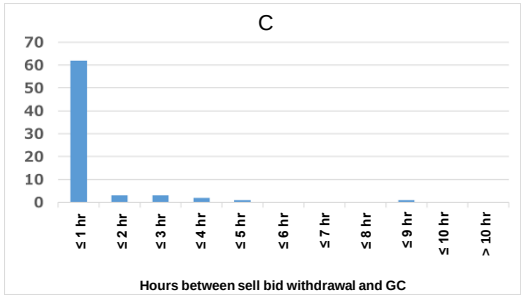
(No. of cases)



(No. of cases)



(No. of cases)



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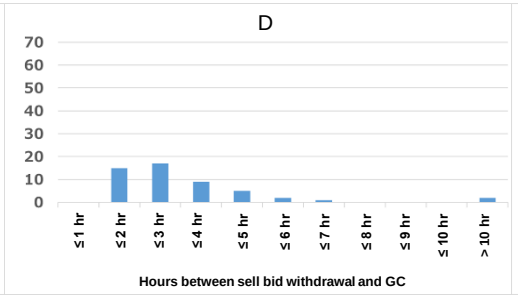

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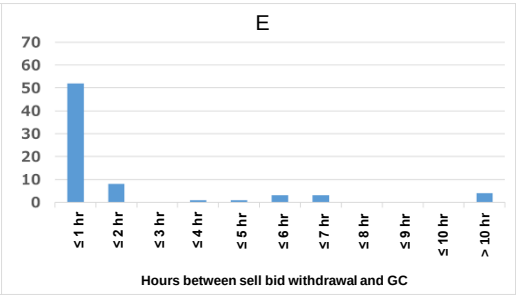

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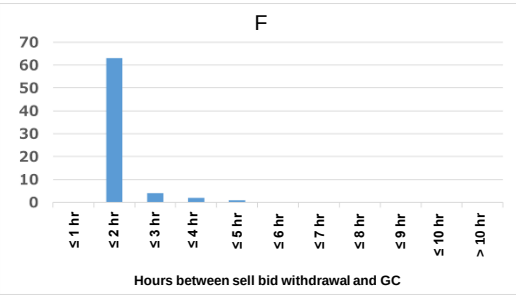

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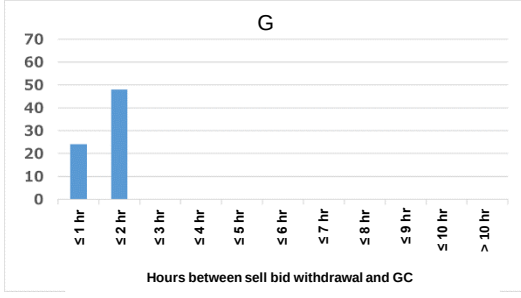

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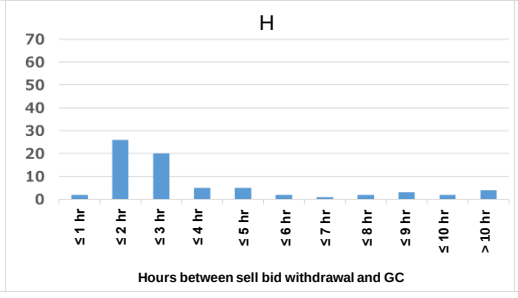

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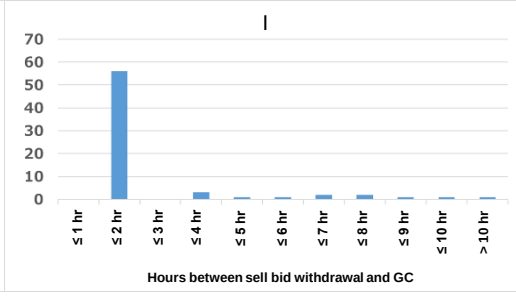

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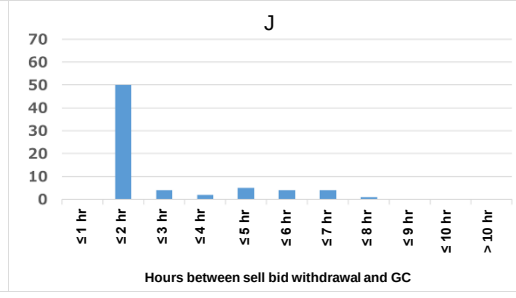


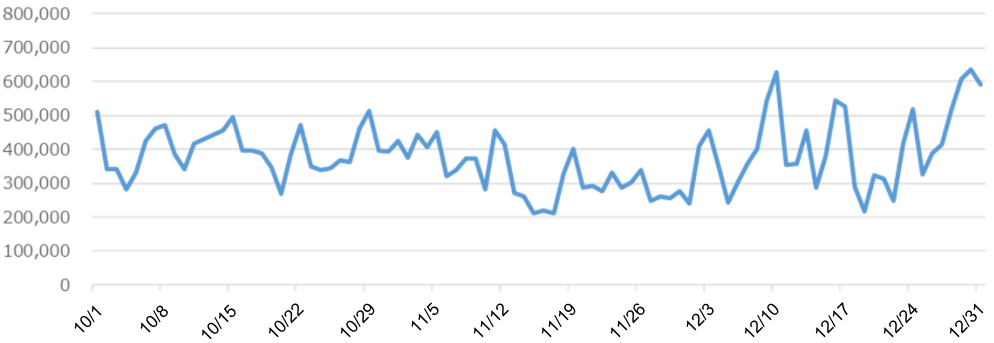
* The number of sell bids on the board was counted at 59 minutes and 59 seconds past every hour. The time until the GC was calculated with the time after which there were no sell bids on the board assumed as the withdrawal time.
* Only “00 minute” frames (e.g., 01:00) were counted, and "30 minute" frames (e.g., 01:30) were not counted. Frames with always 0 sell bids were excluded from the calculations.
* The secretariat sampled the characteristic day of each month: for October, a weekday when the daily average system price was the lowest in the three months; for November, a day when the average price soared by 30 yen or more in the intraday market; for December, a weekday when the maximum system price was the highest in the three months.

October to December 2023 period

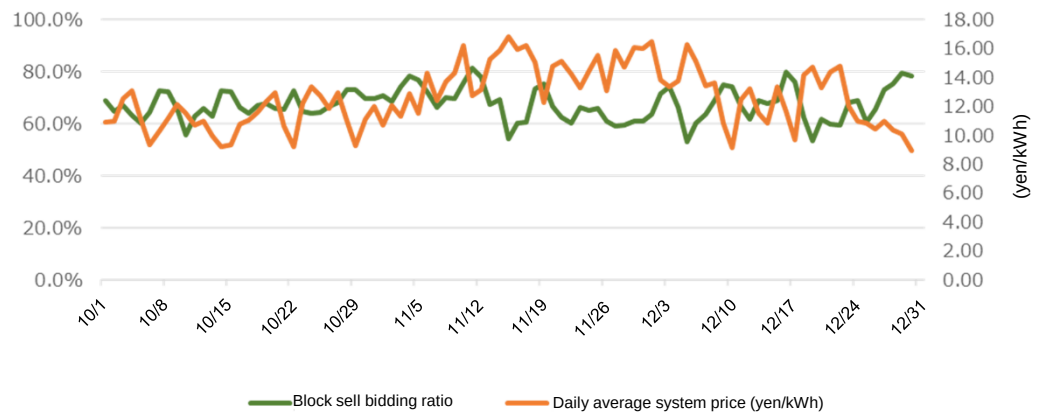
Status of block sell bidding

- ○ The block sell bidding ratio continues to indicate a trend of being lower on days when the spot prices rise and being higher on days when spot prices fall.
- ○ The block sell contract rate continues to indicate a trend of being higher on days when spot prices rise and being lower on days when spot prices fall.
- ○ The daily block sell contract rate indicated no major fluctuations, averaging approximately 4.6% in December.

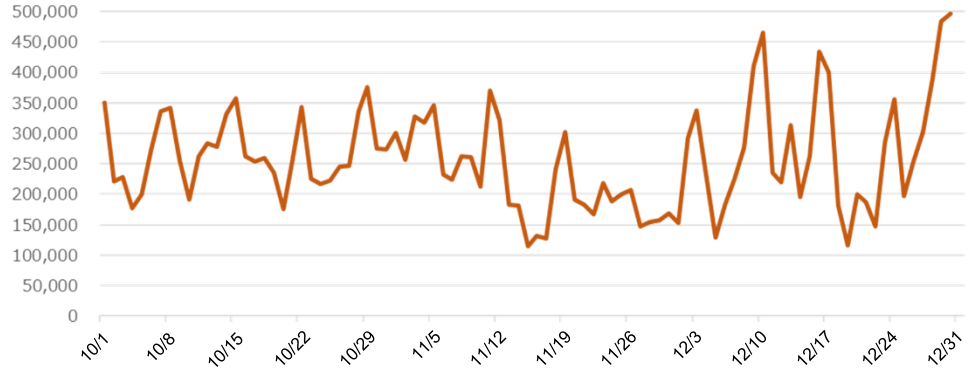
Actual sell volume (MWh)



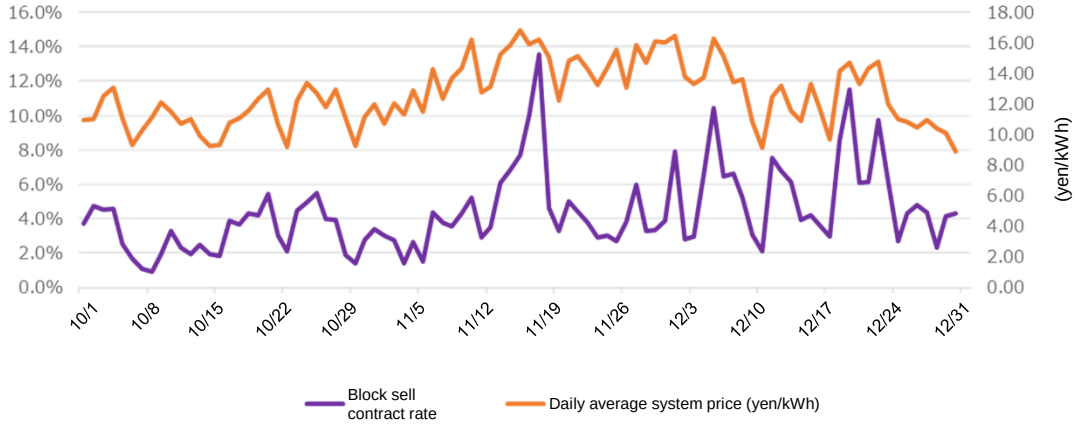
Average system price and block sell bidding ratio



Actual block sell bidding volume (MWh)



Average system price and block sell contract rate



*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa E

*The block bid ratio is calculated as the ratio of the actual block bidding volume for which no buyer has been determined, (b), to the actual sell volume, (a).

(a) Actual sell volume = Total sell volume (for regular bids) − Gross bidding high price buyback volume − Implicit auction sell volume

(b) Actual block bidding volume = Normal block bidding volume (excluding implicit auctions and gross bidding) + Gross bidding actual block sell volume*

*Gross bidding actual block sell volume = Gross bidding block sell volume − Gross bidding high price buyback volume. If a negative value is obtained, it is counted as zero.

*The block sell contract rate is calculated as the ratio of actual contracted block volume, (c), to actual block bidding volume, (b).

(c) Actual contracted block volume = Normal contracted block volume (excluding implicit auctions and gross bidding) + Gross bidding actual contracted block sell volume**

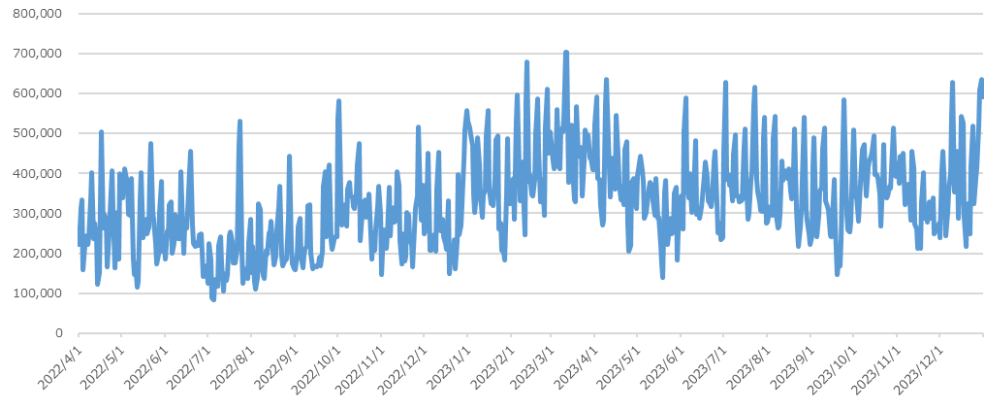
**Gross bidding actual contracted block sell volume = Gross bidding contracted block sell volume − Gross bidding high price buyback volume. If a negative value is obtained, it is counted as zero.

October to December 2023 period

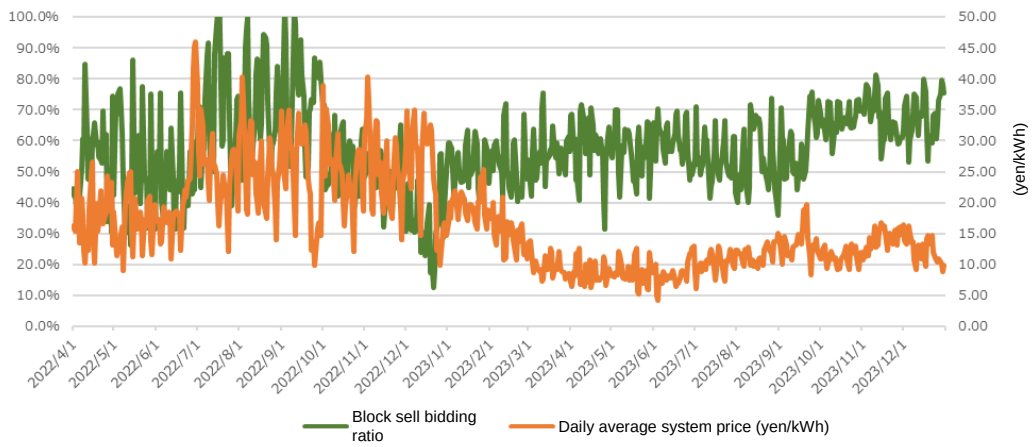
Reference: Status of block sell bidding (long term)

- Both the actual sell volume and the actual block sell bidding volume have shown no marked fluctuations since January 2023.
- As gross bidding has been suspended since October, the contract rate fell to around 5% thereafter. This decline is presumably attributable to the change of block sell bids for supplying some surplus electricity at 0.01 yen (for buying at marginal cost) as part of gross bidding to supply it at marginal cost, which resulted in lower contract rates.

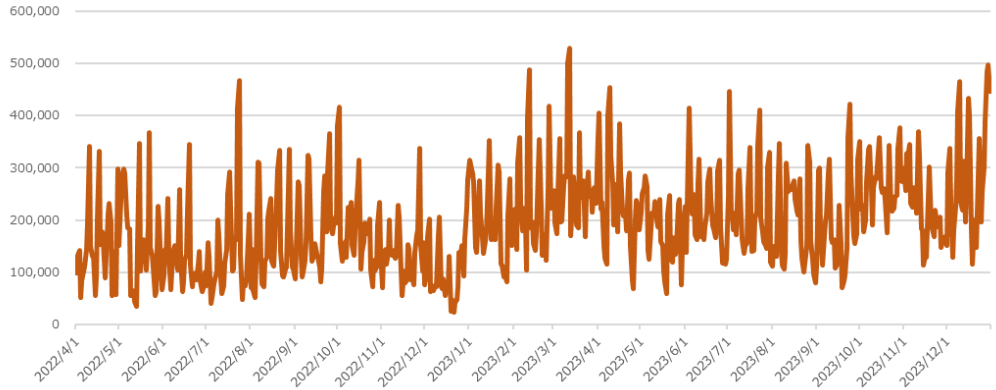
Actual sell volume (MWh)



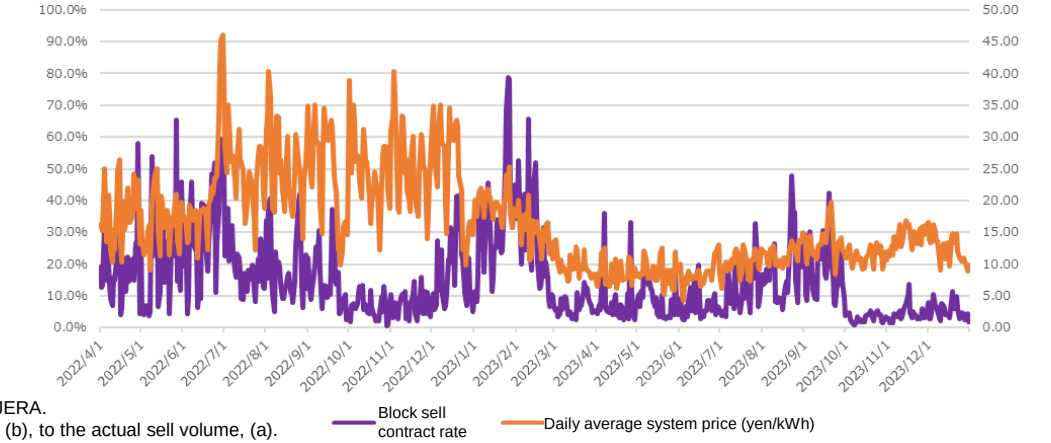
Average system price and block sell bidding ratio



Actual block sell bidding volume (MWh)



Average system price and block sell contract rate



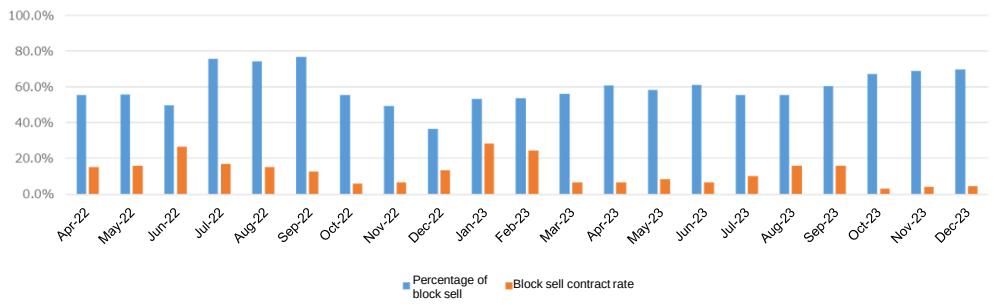
*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa Electric Power) and JERA.
*The block bid ratio is calculated as the ratio of the actual block bidding volume for which no buyer has been determined, (b), to the actual sell volume, (a).
(a) Actual sell volume = Total sell volume (for regular bids) − Gross bidding high price buyback volume − Implicit auction sell volume
(b) Actual block bidding volume = Normal block bidding volume (excluding implicit auctions and gross bidding) + Gross bidding actual block sell volume*
*Gross bidding actual block sell volume = Gross bidding block sell volume − Gross bidding high price buyback volume. If a negative value is obtained, it is counted as zero.
*The block sell contract rate is calculated as the ratio of actual contracted block volume, (c), to actual block bidding volume, (b).
(c) Actual contracted block volume = Normal contracted block volume (excluding implicit auctions and gross bidding) + Gross bidding actual contracted block sell volume**
**Gross bidding actual contracted block sell volume = Gross bidding contracted block sell volume − Gross bidding high price buyback volume. If a negative value is obtained, it is counted as zero.

October to December 2023 period

Monthly trends in block sell percentage and contract rate by business operator (1/2)

- ○ Contract rates declined (especially for electric company D) because as a result of the suspension of gross bidding, block sell bids for supplying some surplus electricity at 0.01 yen (for buying at marginal cost) were changed to supply it at marginal cost, as mentioned earlier.
- ○ Note that electric company K upgraded its tool and changed the bidding method in January 2024.

General electric utilities (excluding Okinawa Electric Power) + JERA



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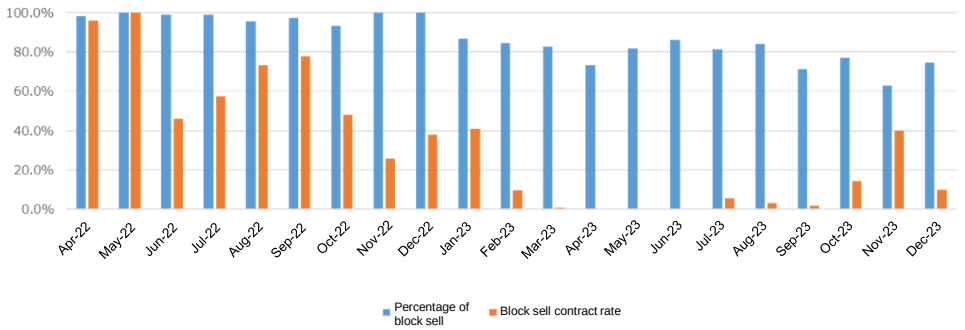

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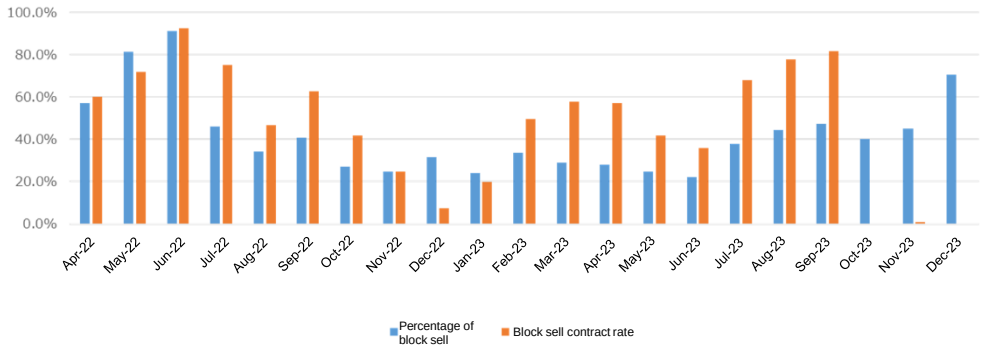

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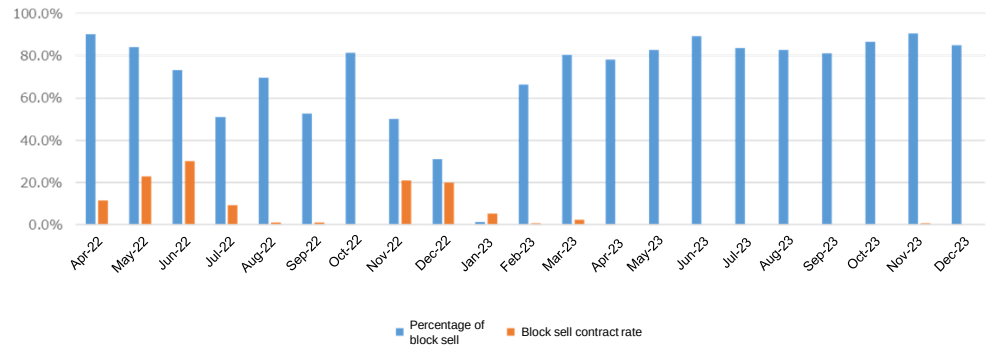

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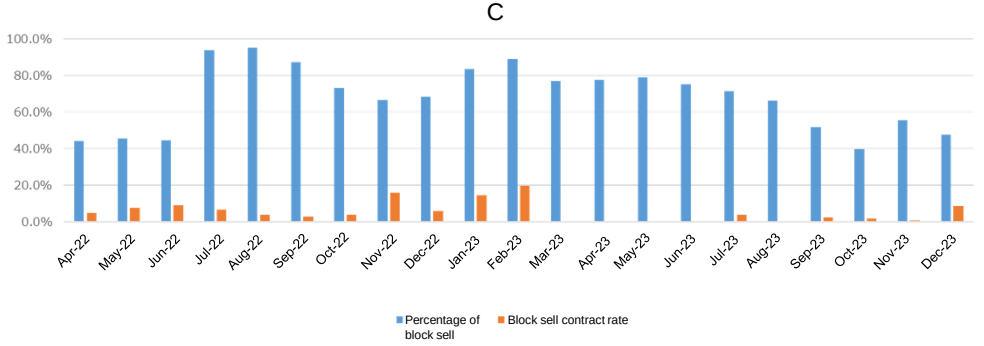

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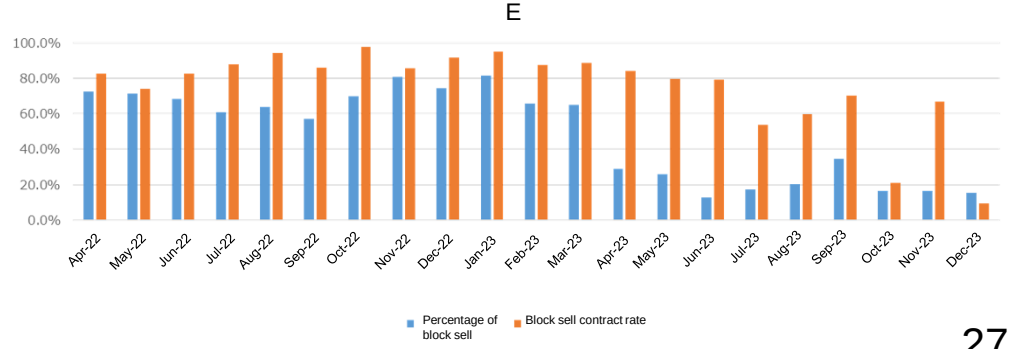
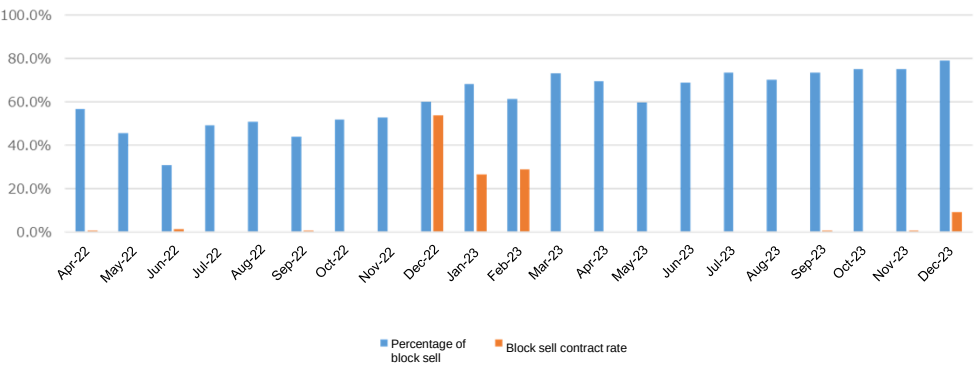


*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa Electric Power) and JERA.

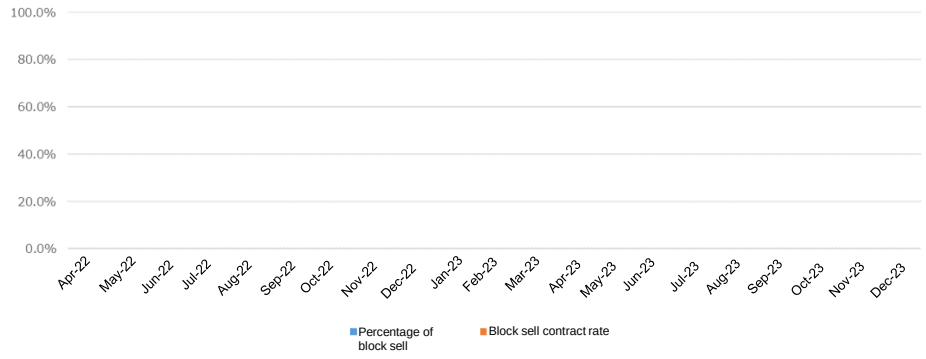
October to December 2023 period

Monthly trends in block sell percentage and contract rate by business operator (2/2)

F



Electric Company H (Note 1)



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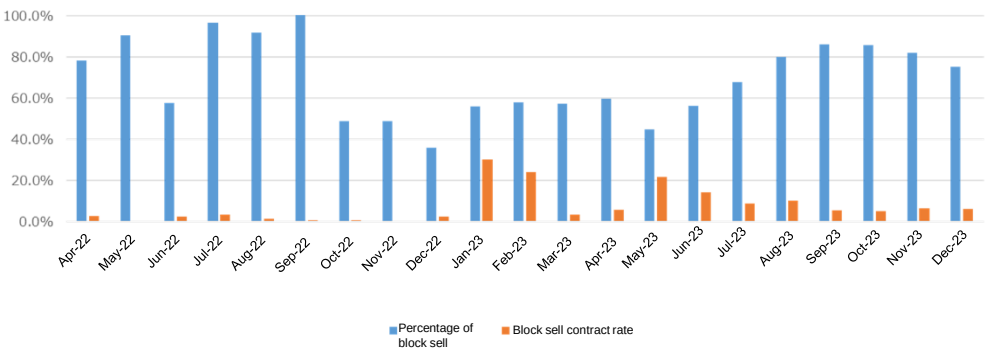

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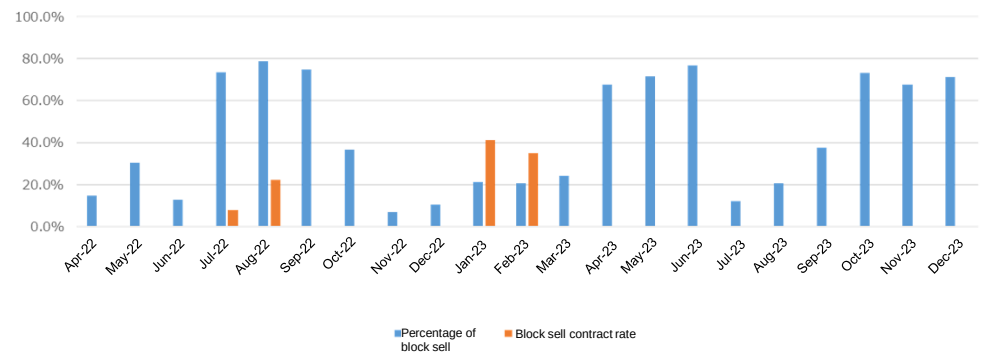

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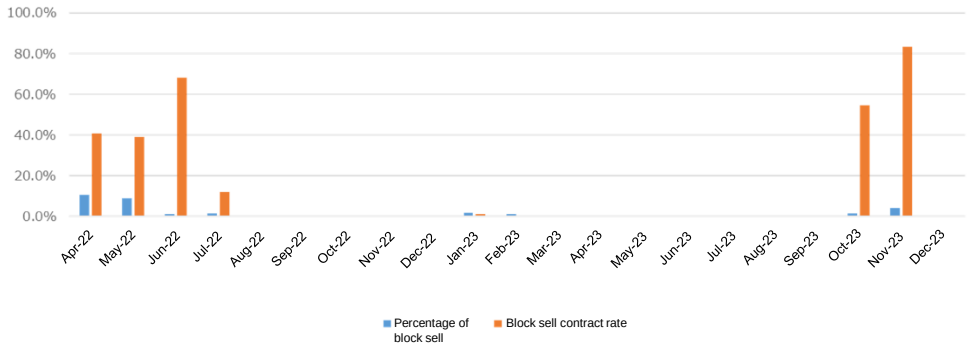
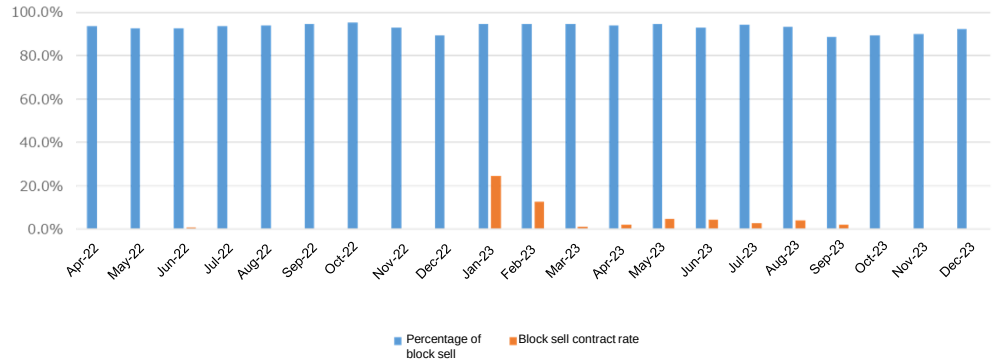


Electric Company K



*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa Electric Power) and JERA.
(Note 1) Electric Company H does not conduct block sell bidding.

October to December 2023 period

Supply of power source to the market for wholesale electricity utilities (J-Power)

○ To date, approximately 619,000 kW[*4] (approximately 5%) of the total of 12 million kW[*5] has been supplied.
No progress has been seen compared to the same period last year.

○ Further supply of power has not yet been decided for each company.

	Volume of supplied power	Discussion status, etc.
Hokkaido Electric Power	Approximately 200 million kWh supplied per year[*3]	Further supply of power is undecided.
Tohoku Electric Power	50,000 kW[*2] already supplied	Further supply of power is undecided.
TEPCO EP	30,000 kW[*1] already supplied	Further supply of power is undecided.
Chubu Electric Power	18,000 kW[*1] already supplied	For the power sources subject to supply to the market, power supply contracts with J-POWER ended at the end of March 2021 (for the entire volume, including the volume already supplied). Further supply of power is undecided.
Hokuriku Electric Power	10,000 kW[*1] already supplied	For the power sources subject to supply to the market, power supply contracts with J-POWER ended at the end of March 2021 (for the entire volume, including the volume already supplied). Further supply of power is undecided.
Kansai Electric Power	350,000kW[*2] already supplied	Further supply of power is undecided.
Chugoku Electric Power	18,000 kW[*1] already supplied	Further supply of power is undecided.
Shikoku Electric Power	30,000 kW[*1] already supplied	Further supply of power is undecided.
Kyushu Electric Power	80,000 kW[*1] already supplied	Further supply of power is undecided.
Okinawa Electric Power	10,000 kW[*1] already supplied	Further supply of power is undecided.

Source: Information provided by general electric utilities

*1: Sending end output, *2: Starting output, *3: Annual total power generation amount, *4: For Hokkaido Electric Power, an estimation from the volume already supplied is indicated for convenience sake, *5:Total power output excluding approximately 5 million kW of pumped storage power plant output.

* The data does not include volumes newly supplied to deliver to the base load market.

October to December 2023 period

Status of competitive bidding, etc., for public hydroelectric business

○ Local governments manage hydroelectric power generation projects with a total installed capacity of approximately 2.31 million kW. Among them, 0.67 million kW have been contracted through general competitive bidding. This volume is almost the same as that of the same period last year.

○ Of the remaining 1.64 million kW installations, approximately 80% continue to be under discretionary contracts with general electric utilities, and approximately 20% consist of FIT power sources for sale and modifications to become eligible for FIT.

Public hydroelectric power generation facilities (as of April 1, 2023)

• Number of power plants: 310 • Total output: Approx. 2.31 million kW

Examples of hydroelectric power sales contracts among 24 public utilities in which power is being delivered to successful bidders determined through competitive bidding or public proposals (as of December 31, 2023)

Business entity	Power generation type	Total maximum output [kW]	Contract type	Successful bidder
Hokkaido	5 hydroelectric power plants	50,500	General competitive bidding	Ennet
Iwate Prefecture	13 hydroelectric power plants	143,470	Public proposal	Tohoku Electric Power
	1 hydroelectric power plant	450		Kuji Regional Energy
Akita Prefecture	12 hydroelectric power plants	92,900	Public proposal	Consortium (Tohoku Electric Power, Tohoku Electric Power Frontier)
	3 hydroelectric power plants*1	9,250		Local Denki
Yamagata Prefecture	1 hydroelectric power plant	3,700	Public proposal	Yamagata Power Supply
	8 hydroelectric power plants	59,100		Tohoku Electric Power
	4 hydroelectric power plants*1	26,600		The Earth Club
	1 hydroelectric power plant*1	420	Public proposal	Yamagata Power Supply
Tochigi Prefecture	8 hydroelectric power plants	60,700	Public proposal	TEPCO Energy Partner
Tokyo	3 hydroelectric power plants	36,500	Public proposal	ENEOS
Yamanashi Prefecture	1 hydroelectric power plant*2	380	Public proposal	Ennet
Nagano Prefecture	18 hydroelectric power plants*1	61,855	Public proposal	Consortium (Diamond Power, Marubeni Power Retail, UPDATER)
Niigata Prefecture	7 hydroelectric power plants*3	100,200	General competitive bidding	Tohoku Electric Power
Kyoto Prefecture	1 hydroelectric power plant	11,000	General competitive bidding	Kansai Electric Power
Tottori Prefecture	2 hydroelectric power plants	6,100	General competitive bidding	Tottori Citizen's Electric Power
	1 hydroelectric power plant	9,200	General competitive bidding	Chugoku Electric Power
Okayama Prefecture	1 hydroelectric power plant*2	180	General competitive bidding	Zero Watt Power
Yamaguchi Prefecture	1 hydroelectric power plant*2	260	General competitive bidding	UPDATER
	Total	**672,765**		

Total number: 19

Total maximum output: 672,765 kW

[29.1% of total hydropower output]

*1 These numbers were revised because starting from the July to September 2021 report, FIT power sources that had shifted to public proposals or general competitive bidding have been subjected to adjustment.
(for Nagano Prefecture, the number of power plants subject to public proposals was changed to 18 from 22 because four of them are currently being replaced to become FIT-eligible or for other purposes. Seven of the 18 locations are FIT power sources.)

*2 These power plants shifted to general competitive bidding or public proposals after their termination of FIT.

*3 For Niigata Prefecture, the number of power plants subject to general competitive bidding was changed to seven from nine because two of them have been replaced to become FIT-eligible or for other purposes.

Source: Information provided by relevant municipalities

October to December 2023 period

Moves toward canceling long-term contracts for power sources owned by local governments

○ According to questionnaire surveys of general electric utilities regarding the status of long-term contract cancellations, there were no requests to discuss, or consultations about, premature termination from municipalities during this period.

Compiled from responses from general electric utilities regarding cancellation and review of electricity sales contracts with local governments from October 2023 onwards

[Status of negotiations for premature cancellation of existing contracts]

— During this period, municipalities did not request or consult to cancel or review the basic power supply contract (multi-year, long-term contract) with general electric utilities. However, some local governments expressed their intention of considering the possibility of premature cancellation as an option for future business operations from a comprehensive viewpoint.

[Reference: Efforts related to power sales contracts by local governments (compiled from regular simple questionnaires)]

- The following efforts continue regarding discretionary contracts with general electric utilities.
  - Establishment of electricity rate plans in partnership with general electric utilities (e.g., a plan with added environmental value, a plan for investment promotion, a plan for local industry promotion, a discount plan for people relocated from other areas)
- Division of electricity sales into a general quota and a quota of new regional entrants within the prefecture, for contracting based on public proposals
- Introduction of a local production for local consumption-type PPA (Gunma model), which matches electricity consumers with retailers
- Use of single-year contracts

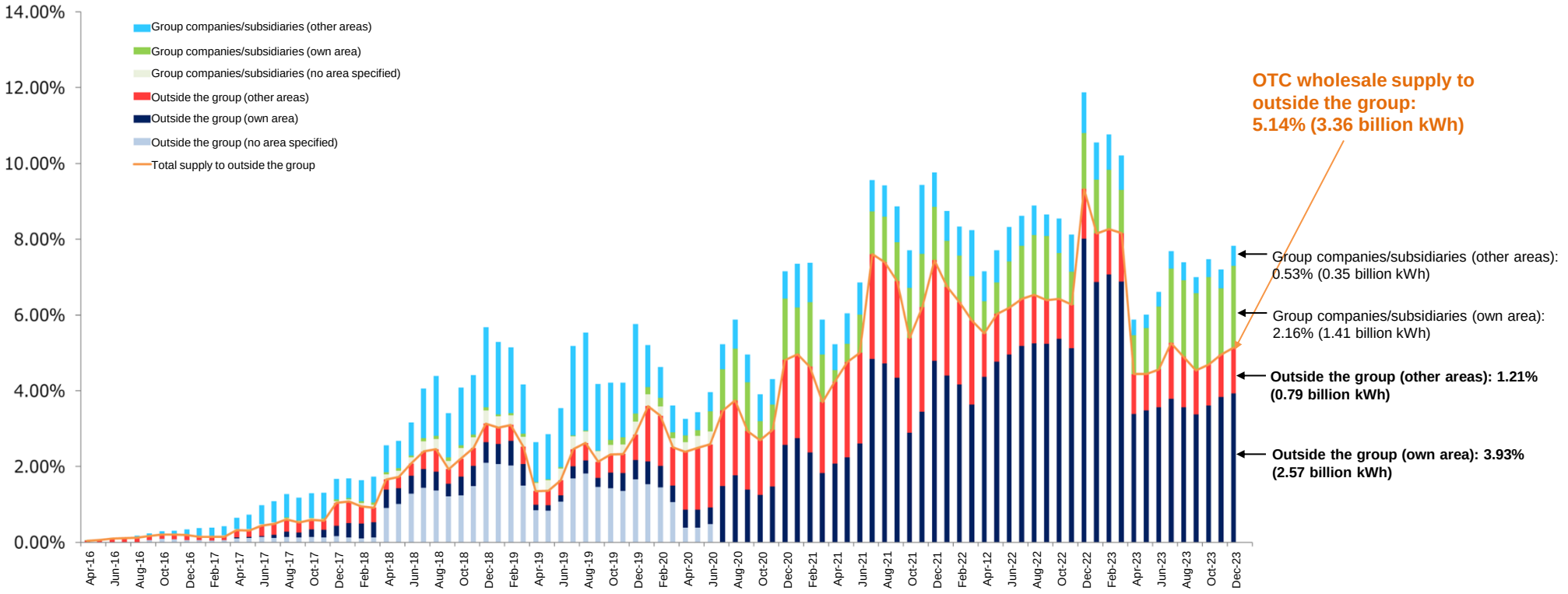
Source: Information provided by general electric utilities and municipalities

October to December 2023 period

Status of OTC transactions by general electric utilities

- ○ As of December 2023, the ratio of supply from general electric utilities through OTC transactions to total demand was 7.82% (5.118 billion kWh, 0.7 times that of the same period last year).
- ○ OTC wholesale supplies to external parties (5.14%, 3.36 billion kWh) accounted for 30.3% of the demand for electricity from new entrants (11.10 billion kWh).

Trends in the ratio of supply through OTC transactions to total demand



Source: Information provided by general electric utilities (including JERA), etc.

* Group companies are defined as companies with a capital relationship of 20% or more.

*Notes on the “area”: Until June 2020, the companies’ responses were mixed, with some answering about the “(1) power receiving area” and others about the “(2) usage area.” Most responses answering about “(2) usage area” reported “no area specified.”

To understand the situation more accurately, we notified the utilities that their responses should always refer to the “(1) power receiving area,” starting in the July-September 2020 period. The results reflect this change and as a result, the “no area specified” option was eliminated.

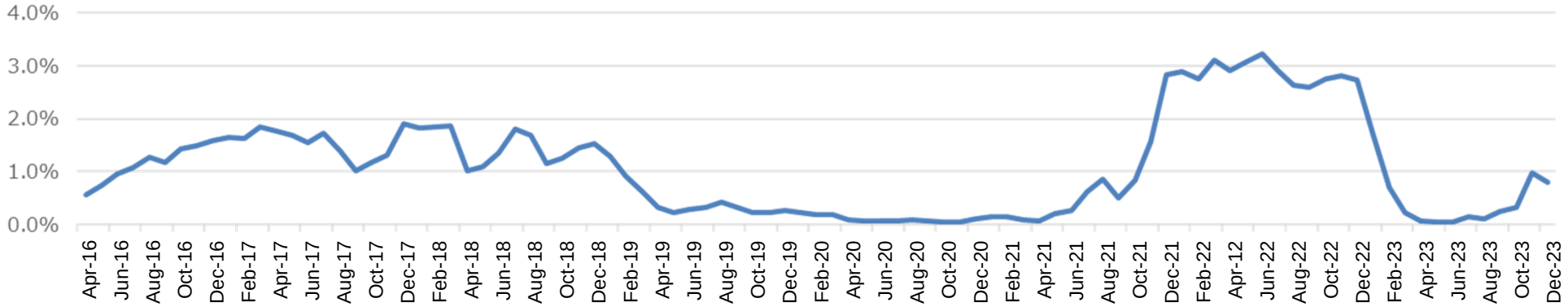
*For JERA, the calculation excluded the wholesale portion of TEPCO Energy Partner and Chubu Electric Power Miraiz.

October to December 2023 period

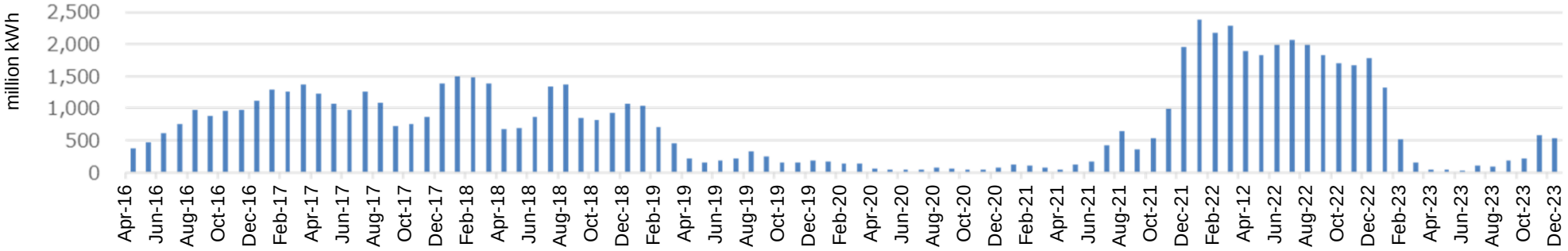
Trends in regular BU electricity sales

○ As of December 2023, the ratio of regular BU electricity sales to total demand was 0.8% (530 million kWh).

10 utilities' regular BU electricity sales as a percentage of total demand (%)



Total regular BU electricity sales by 10 utilities (kWh)



Source: Information provided by general electric utilities (including JERA), etc.

Electricity market monitoring report

[Quarterly report]

- ◆ Wholesale electricity market
  - ● JEPX market
    - Day-Ahead market
    - Intraday market
    - Forward transaction market
- ◆ Voluntary efforts by general electric utilities, etc.
  - ● Supply of surplus electricity to JEPX market
  - ● Trading status and sell bid withdrawal status in the intraday market
  - ● Status of block sell bidding
  - ● Supply of power source to the market for wholesale electricity utilities
  - ● Status of bidding, etc. for public hydroelectricity business
  - ● Status of OTC transactions

[Medium- to long-term trend report]

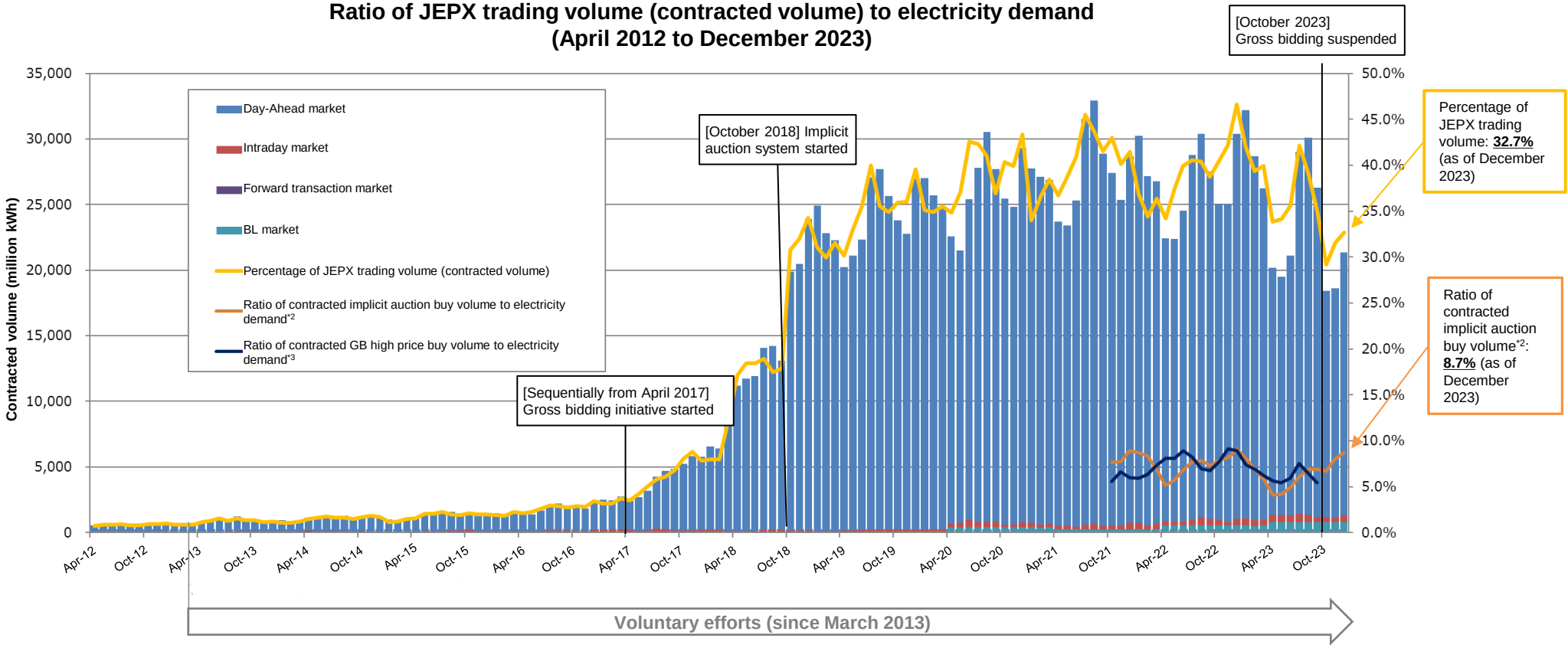
- ◆ Wholesale electricity market
  - ● JEPX market
    - Trends in contracted volume
    - Trends in contracted price
    - Trends in the market splitting occurrence rate
  - ● JEPX spot price and fuel cost
- ◆ Retail market
  - ● Trends in new entrants share by area
  - ● Market share by area
  - ● Trends in electricity unit price
  - ● Trends in switching
- ◆ Gas market
  - ● Status of OTC transactions of general gas utilities
  - ● Usage status of Start-up wholesale measure

Medium- to long-term trends

Trends in the ratio of JEPX trading volume (contracted volume) to electricity demand

- ○ As of December 2023, the ratio of JEPX trading volume (contracted volume*1) to Japan's electricity demand was 32.7%.
- ○ The ratio of contracted implicit auction buy volume*2 to electricity demand was 8.7%.

Ratio of JEPX trading volume (contracted volume) to electricity demand (April 2012 to December 2023)



	2012/04	2013/04	2014/04	2015/04	2016/04	2017/04	2018/04	2019/04	2020/04	2021/04	2022/04	2023/04	2023/12
Percentage of JEPX trading volume	0.7%	1.1%	1.5%	1.6%	2.1%	3.5%	17.1%	30.1%	34.8%	36.7%	34.2%	33.8%	**32.7%**
(Percentage of day-ahead market)	0.7%	1.0%	1.4%	1.5%	2.1%	3.2%	16.9%	29.9%	33.8%	36.0%	32.9%	31.6%	**30.6%**
(Percentage of intraday market)	0.001%	0.1%	0.1%	0.1%	0.004%	0.3%	0.2%	0.2%	0.4%	0.4%	0.5%	0.9%	**0.8%**
(Percentage of BL market)	-	-	-	-	-	-	-	-	0.6%	0.4%	0.8%	1.3%	**1.2%**

*1 Total of contracted buy volume of each business operator and each frame (including contracted buy volume when the same business operator has contracted for both buying and selling in the same frame, such as through its own implicit auctions).

*2 The contracted implicit auction buy volume is the sum of the contracted volumes of accounts that are determined to be implicit auctions, based on their attributes in the JEPX user account data.

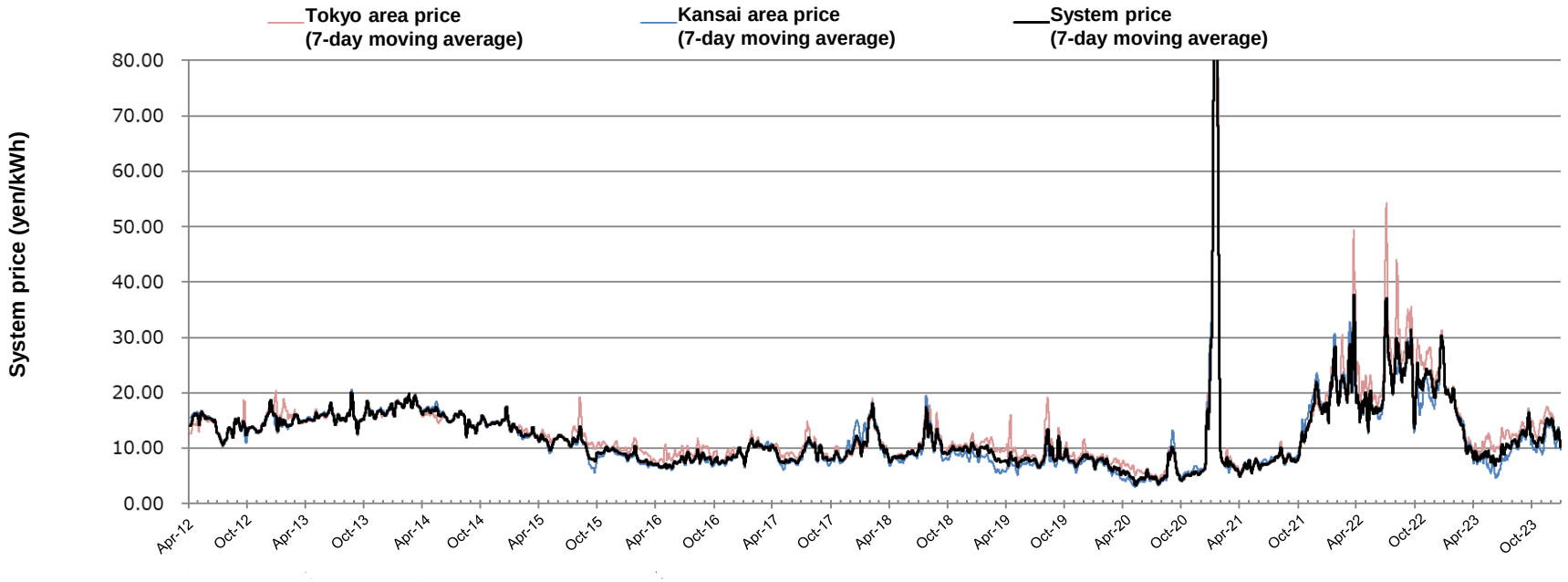
*3 The contracted GB absolute buy volumes for general electric utilities are expressed as an aggregate contracted volume at the buy bid prices of 999 yen/kWh for the regular accounts of general electric utilities, excluding Kansai Electric Power and Hokuriku Electric Power, 200 yen/kWh for Hokuriku Electric Power, and 210 yen/kWh or more for Kansai Electric Power.

Medium- to long-term trends

Price trends in the day-ahead market

- ○ The system price increased since the autumn of 2021 and dropped to around 20 yen from April to May 2022. It rose again from the end of June that year but fell to around 8 yen in June 2023. It followed an upward trend since July 2023 but leveled off in October to December, with a quarterly average at 12.6 yen/kWh.
- ○ In the FY2022 annual evaluation, the difference between the Tokyo and Kansai area prices widened compared to other fiscal years. However, in this fiscal year, the difference has been narrowing, remaining at similar levels in October to December to those of the previous quarter. (The area price average for the previous quarter was 13.3 yen/kWh for Tokyo and 10.8 yen/kWh for Kansai.)

Day-Ahead market: Trends in system price (April 1, 2012 to December 31, 2023)



(yen/kWh)	FY2012 average	FY2013 average	FY2014 average	FY2015 average	FY2016 average	FY2017 average	FY2018 average	FY2019 average	FY2020 average	FY2021 average	FY2022 average	**Current quarter average**
System price	14.4	16.5	14.7	9.8	8.5	9.7	9.8	7.9	11.2	13.5	20.4	12.6
Tokyo area price	14.7	16.4	14.6	11.0	9.3	10.2	10.7	9.1	12.0	14.3	23.5	14.2
Kansai area price	14.3	16.6	14.7	9.4	8.3	9.8	8.9	7.2	11.1	14.1	19.5	11.5

Medium- to long-term trends

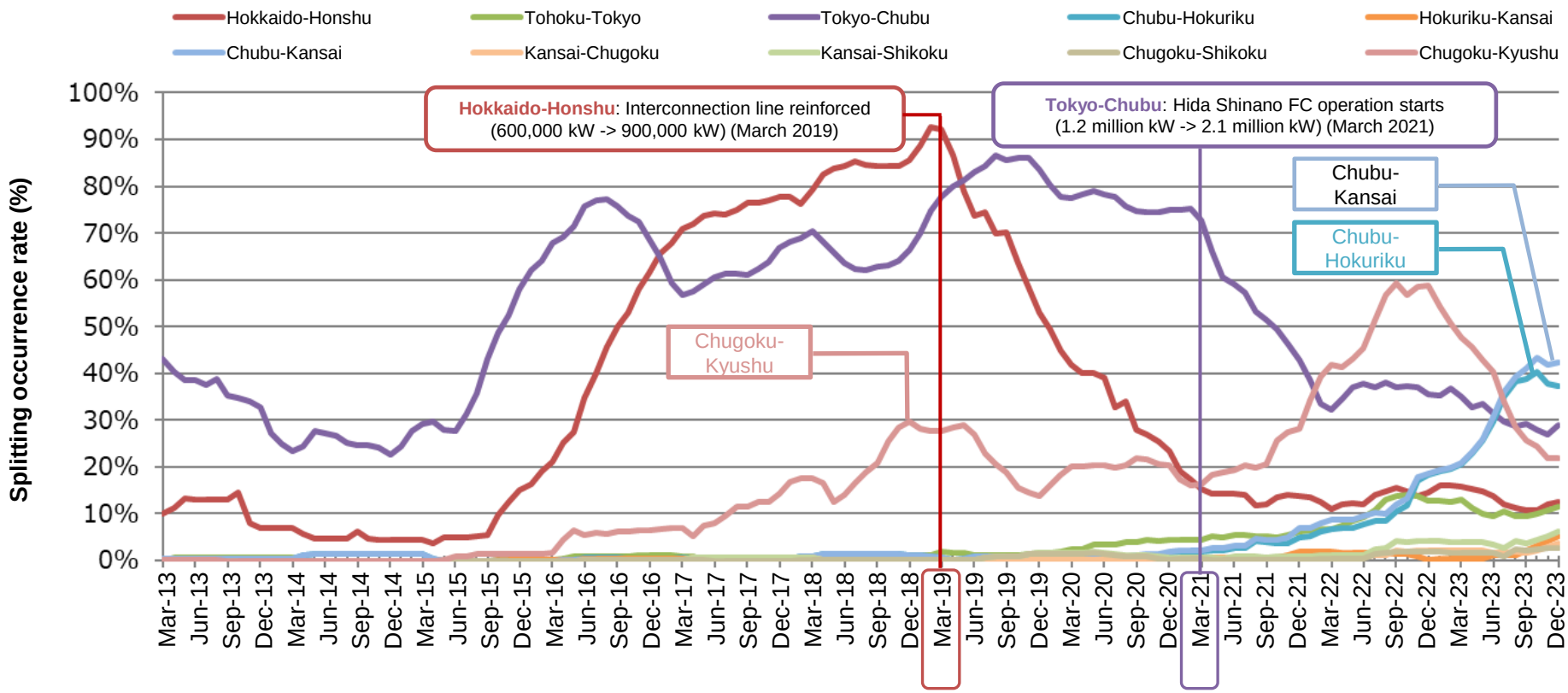
Trends in the occurrence rate of market splitting between each area

○ Market splitting regularly occurs to the Hokkaido-Honshu interconnection line, the Tokyo-Chubu interconnection line, and the Chugoku-Kyushu interconnection line.

○ The market splitting rate for Hokkaido-Honshu and Tokyo-Chubu had been on the decline, but has leveled off in recent years. By contrast, the market splitting rate for Chugoku-Kyushu, which had been on the rise, has been declining recently. On the other hand, an upward trend is observed for Chubu-Hokuriku and Chubu-Kansai.

Day-Ahead market: Trends in monthly splitting occurrence rate (12-month moving average)

(March 2013 to December 2023)



* Monthly splitting occurrence rate (12-month moving average): The 12-month moving average of the monthly sum of the percentage of the frames in which different area prices were observed between adjacent areas, among all 30-minute frames in the day-ahead market.

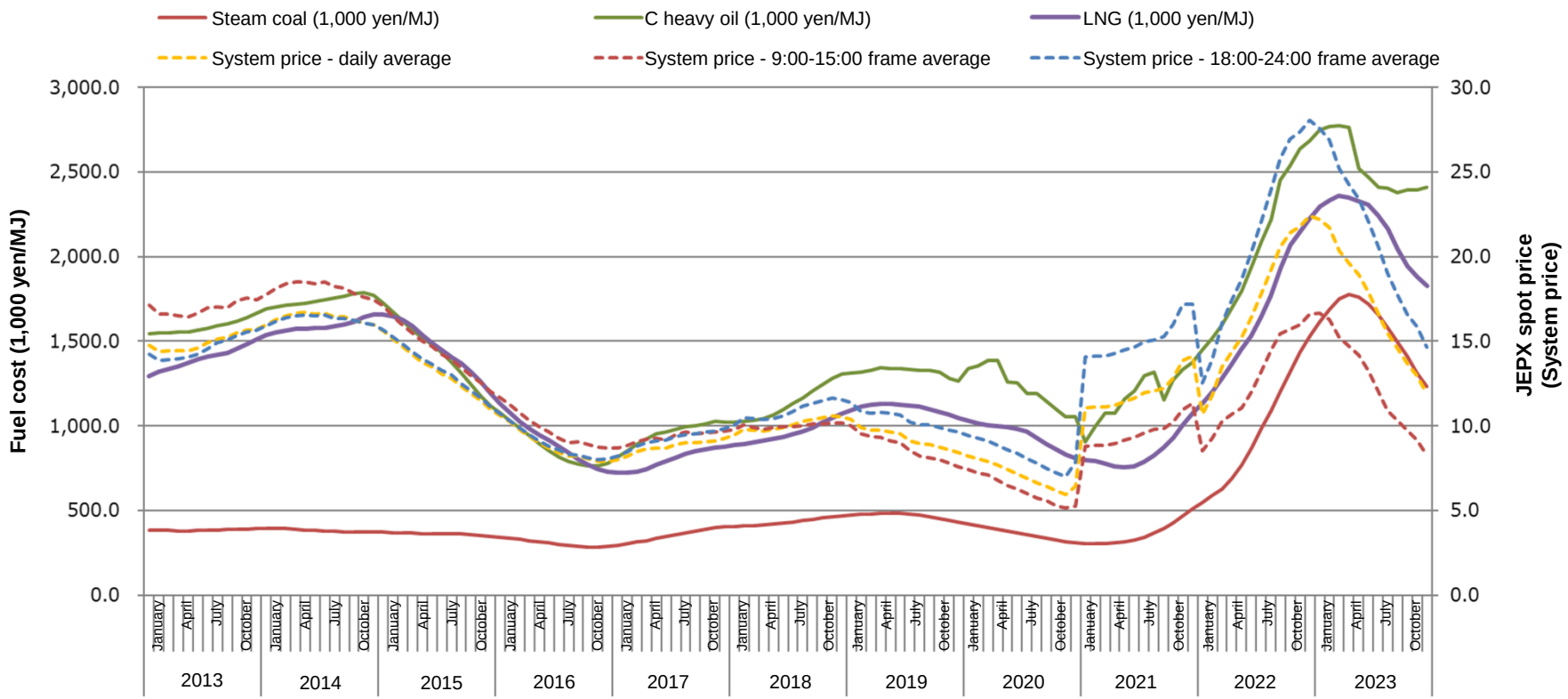
* Spot transaction in the Hokkaido area was suspended from September 7 to 26, 2018, due to the effects of the 2018 Hokkaido Eastern Iburi Earthquake. Calculations excluded the period of suspension.

JEPX spot price and fuel cost

○ The long-term trend of JEPX spot prices has been similar to that of LNG and C heavy oil prices.

○ Fuel costs, which maintained a downward trend since the beginning of 2023, have become less aligned with spot prices, with C heavy oil prices indicating no major fluctuations since September.

Trends in JEPX spot price and fuel cost (12-month moving average) (January 2013 to December 2023)



Source: Prepared by the Electricity and Gas Market Surveillance Commission based on the Trade Statistics of Japan, Ministry of Finance (as of February 20, 2024)

* Fuel costs are import CIF prices aggregated based on the calorific values shown in the thermal power generation fuel results in the Electricity Survey Statistics.

* There are no trade statistics available for C heavy oil for April, July, August, October, and December 2019; February, March, April, June, August, September, November, and December 2020; and April, May, and September 2021.

* The system price plummeted in January 2022 because the 12-month moving average from February 2021 to January 2022 was used and thus a spike in the single monthly price for January 2021 was not included in the calculation.

Electricity market monitoring report

[Quarterly report]

- ◆ Wholesale electricity market
  - ● JEPX market
    - Day-Ahead market
    - Intraday market
    - Forward transaction market
- ◆ Voluntary efforts by general electric utilities, etc.
  - ● Supply of surplus electricity to JEPX market
  - ● Trading status and sell bid withdrawal status in the intraday market
  - ● Status of block sell bidding
  - ● Supply of power source to the market for wholesale electricity utilities
  - ● Status of bidding, etc. for public hydroelectricity business
  - ● Status of OTC transactions

[Medium- to long-term trend report]

- ◆ Wholesale electricity market
  - ● JEPX market
    - Trends in contracted volume
    - Trends in contracted price
    - Trends in the market splitting occurrence rate
  - ● JEPX spot price and fuel cost
- ◆ Retail market
  - ● Trends in new entrants share by area
  - ● Market share by area
  - ● Trends in electricity unit price
  - ● Trends in switching
- ◆ Gas market
  - ● Status of OTC transactions of general gas utilities
  - ● Usage status of Start-up wholesale measure

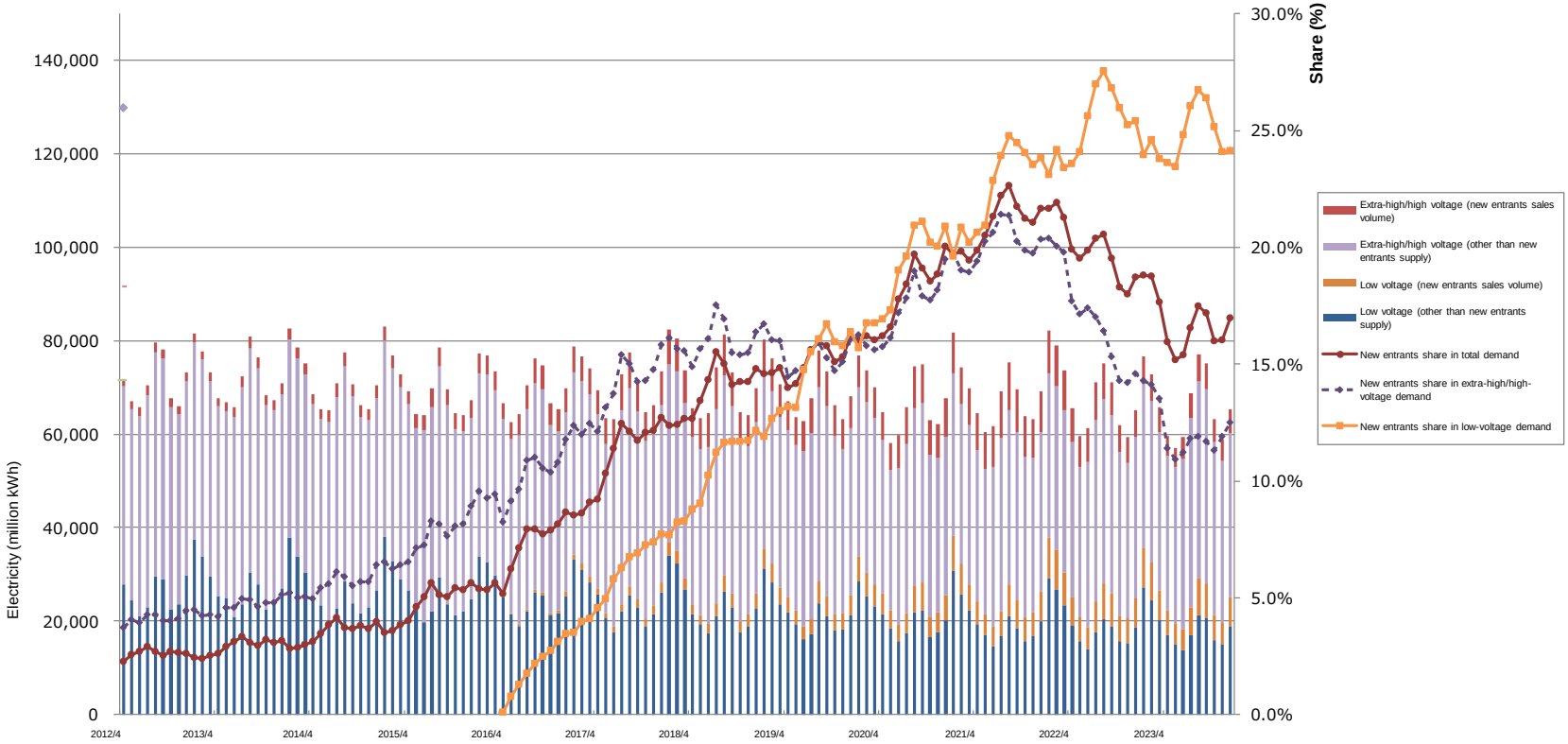
Medium- to long-term trends

Trends in new entrants share

○ The share of new entrants in total electricity demand based on the electricity sales volume has been on the rise recently.

○ As of December 2023, the share of new entrants in total demand was **approximately 17.0%**, that in extra-high/high-voltage demand was approximately 12.5%, and that in low-voltage demand was approximately 24.1%.

Market share of new entrants (April 2012 to December 2023)



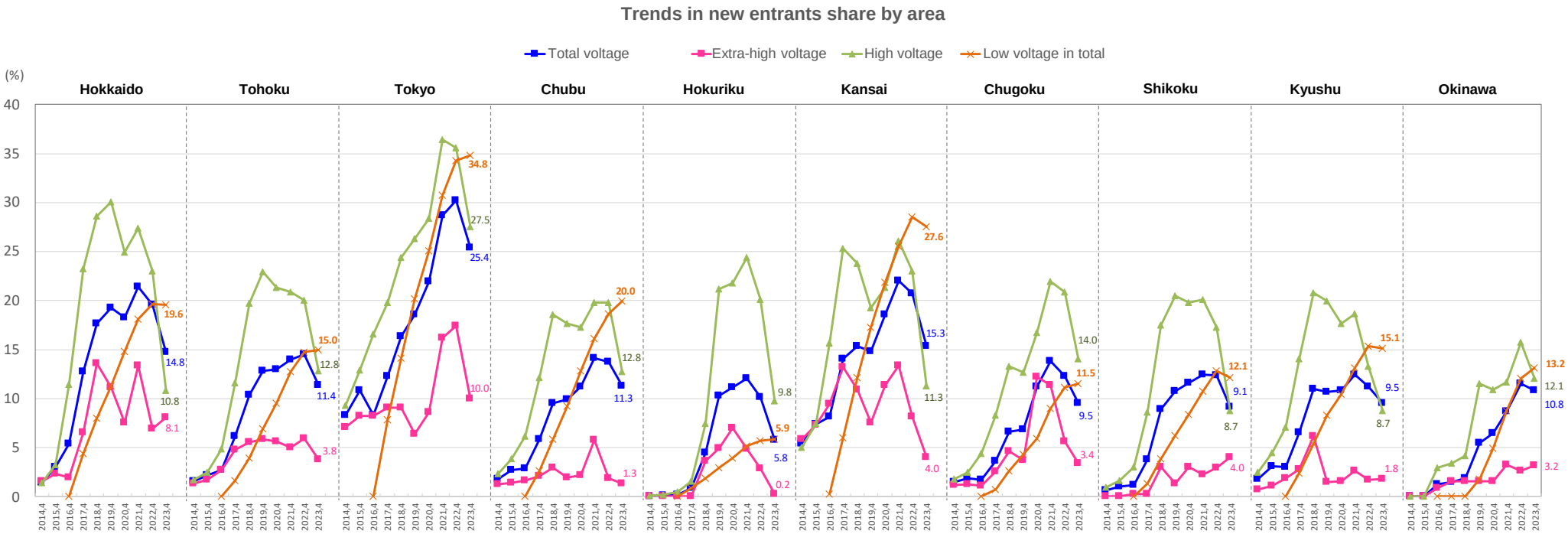
*"New entrants" refer to electricity retailers other than general electric utilities. Subsidiaries of general electric utilities are also included in new entrants.
(Source: Monthly electricity generation/reception report, Electricity Trading Report)

	2012/4	2013/4	2014/4	2015/4	2016/4	2017/4	2018/4	2019/4	2020/4	2021/4	2022/4	2023/ 4	2023/12
New entrants share in total demand	2.3%	2.6%	3.1%	4.0%	5.2%	9.2%	12.7%	14.0%	16.2%	19.9%	19.9%	16.0%	**17.0%**
New entrants share in extra-high/high-voltage demand	3.7%	4.2%	5.0%	6.5%	8.2%	12.1%	14.9%	14.5%	15.8%	19.4%	17.7%	11.4%	**12.5%**
New entrants share in low-voltage demand	-	-	-	-	0.1%	4.6%	8.8%	13.2%	16.9%	20.6%	23.6%	23.6%	**24.1%**

Medium- to long-term trends

Trends in new entrants share by area (by fiscal year)

○ Looking at the share of new entrants in electricity sales by area for all voltages, there is a decrease in all areas compared to the same month last year. The decrease is particularly remarkable in high voltage. Tokyo is one of the areas where new entrants hold a high share of electricity sales.



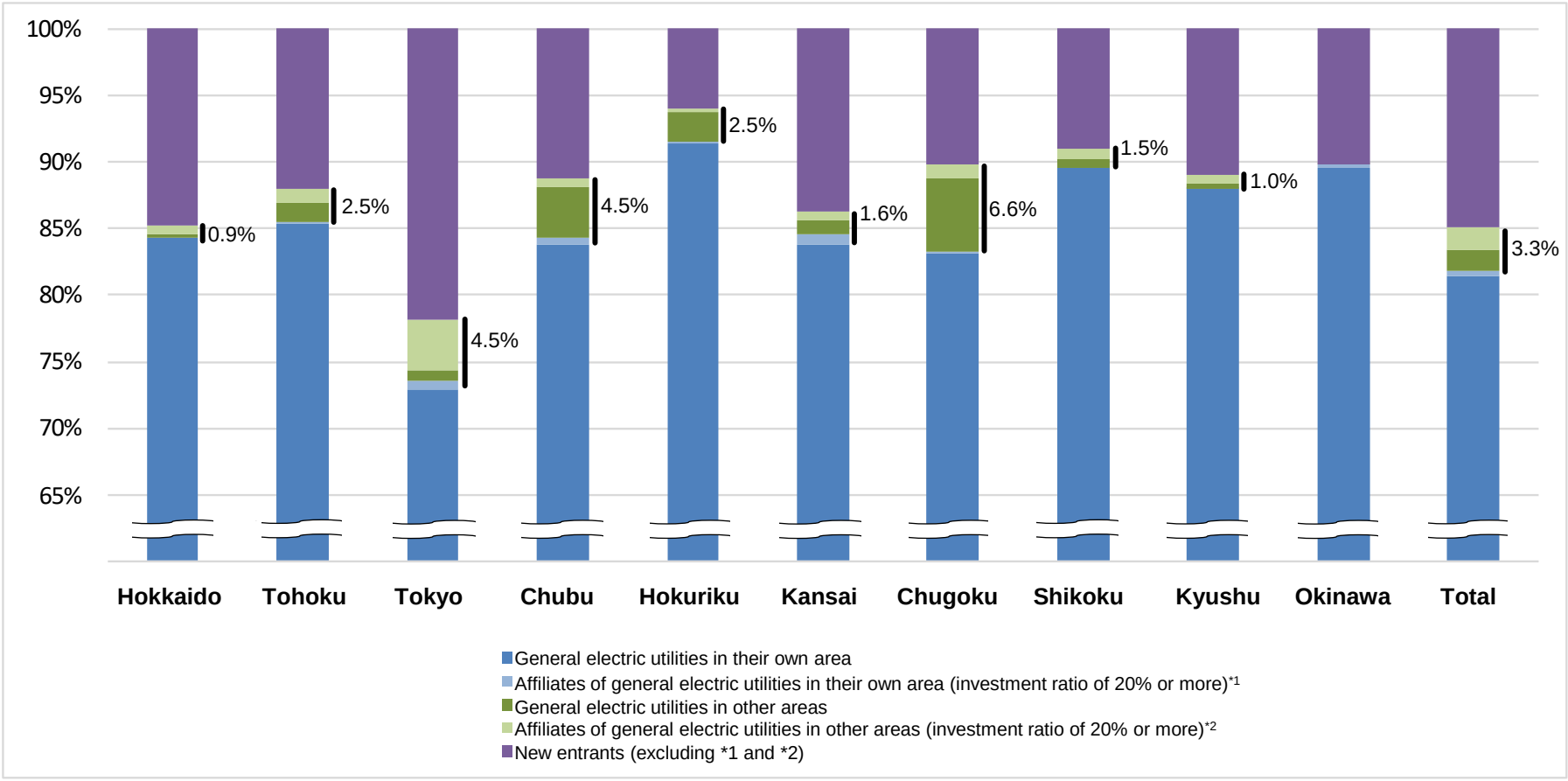
*"New entrants" refer to electricity retailers other than general electric utilities. Subsidiaries of general electric utilities are also included in new entrants.

(Source: Monthly electricity generation/reception report, Electricity Trading Report)

Market share by area

○ Supply by general electric utilities and their affiliated companies to areas outside their service areas was approximately 3.3% of the total (4.6% as of December 2022). Compared to December 2022, the share of general electric utilities and their affiliated companies declined in all areas except Hokkaido.

Market share by area (December 2023)



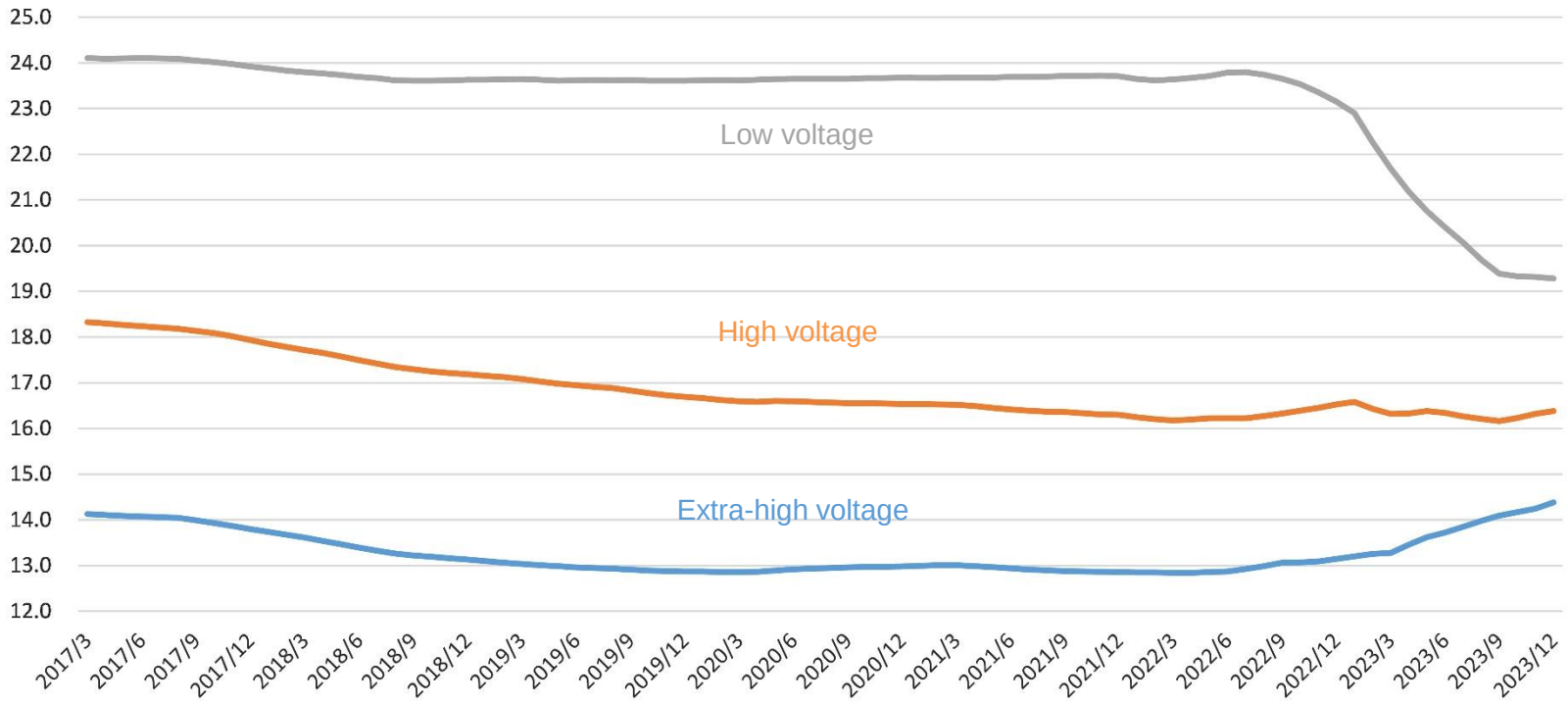
(Source) Electricity Trading Report
(Note) Based on electricity sales volume

Medium- to long-term trends

Trends in electricity unit price (national average) (excluding fuel cost adjustment unit price, FIT levy and consumption tax, 12-month moving average)

○ After electricity liberalization, the unit price of electricity (excluding fuel cost adjustment unit price, FIT levy, and consumption tax) has seen a decrease for low voltage and high voltage due to the impact of the drastic change mitigation project and other measures. However, a slight increase has been observed recently. The extra-high voltage market has also seen an upward trend recently.

Trends in electricity unit price (national average)

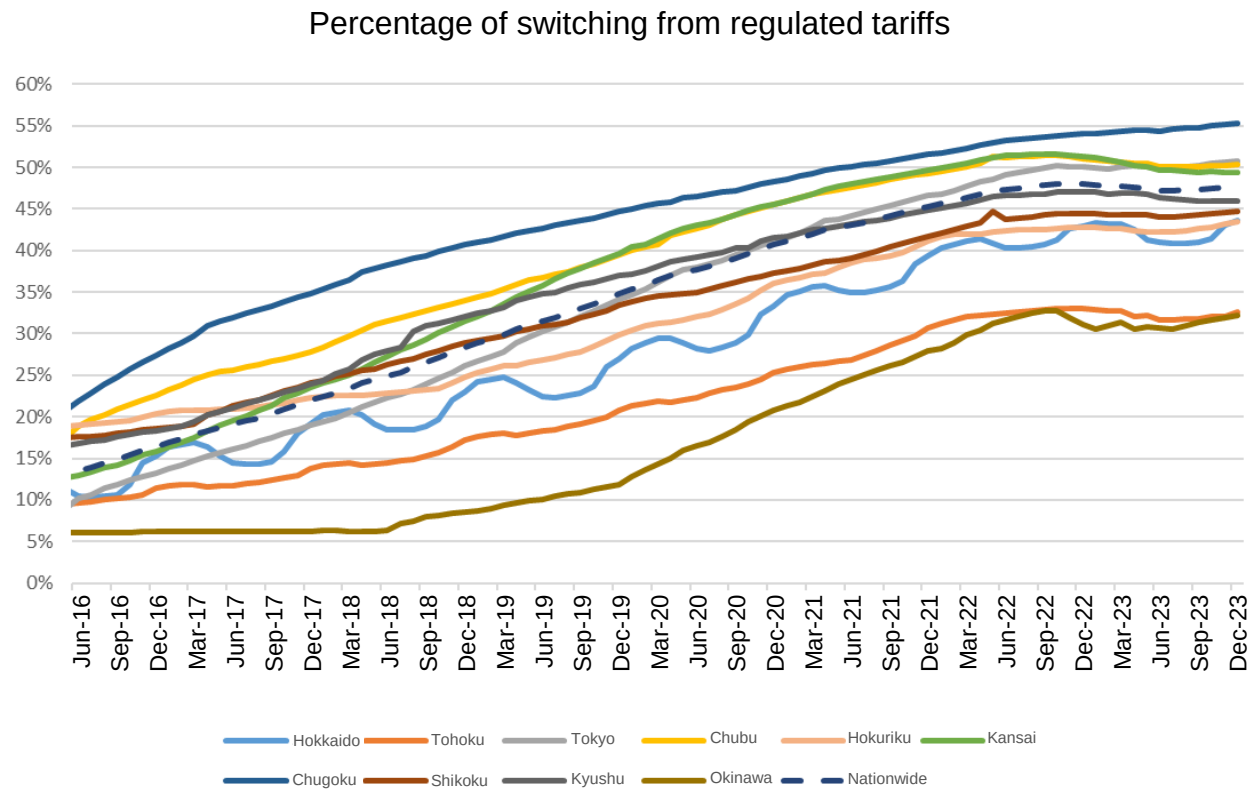


(Notes)
• 12-month moving average
• Excluding fuel cost adjustment unit price, FIT levy, and consumption tax
(For exclusion of the fuel cost adjustment unit price [yen/kWh], the meter-rate figures published by the general electricity utility in each area are used for all electricity retailers.)
(Source)
Prepared by the Electricity and Gas Market Surveillance Commission Secretariat from Electricity Trading Reports

Medium- to long-term trends

Trends in switching (low voltage) (1)

○ Switching from the regulated tariff menu of general electric utilities to voluntary rate menus and new entrants has been on an upward trend since 2016. However, no major fluctuations have been seen recently. As of December 2023, the nationwide switching rate was 47.8%.



	December 2023
Hokkaido	43.7%
Tohoku	32.6%
Tokyo	50.8%
Chubu	50.3%
Hokuriku	43.4%
Kansai	49.4%
Chugoku	55.3%
Shikoku	44.7%
Kyushu	45.9%
Okinawa	32.2%
Nationwide	47.8%

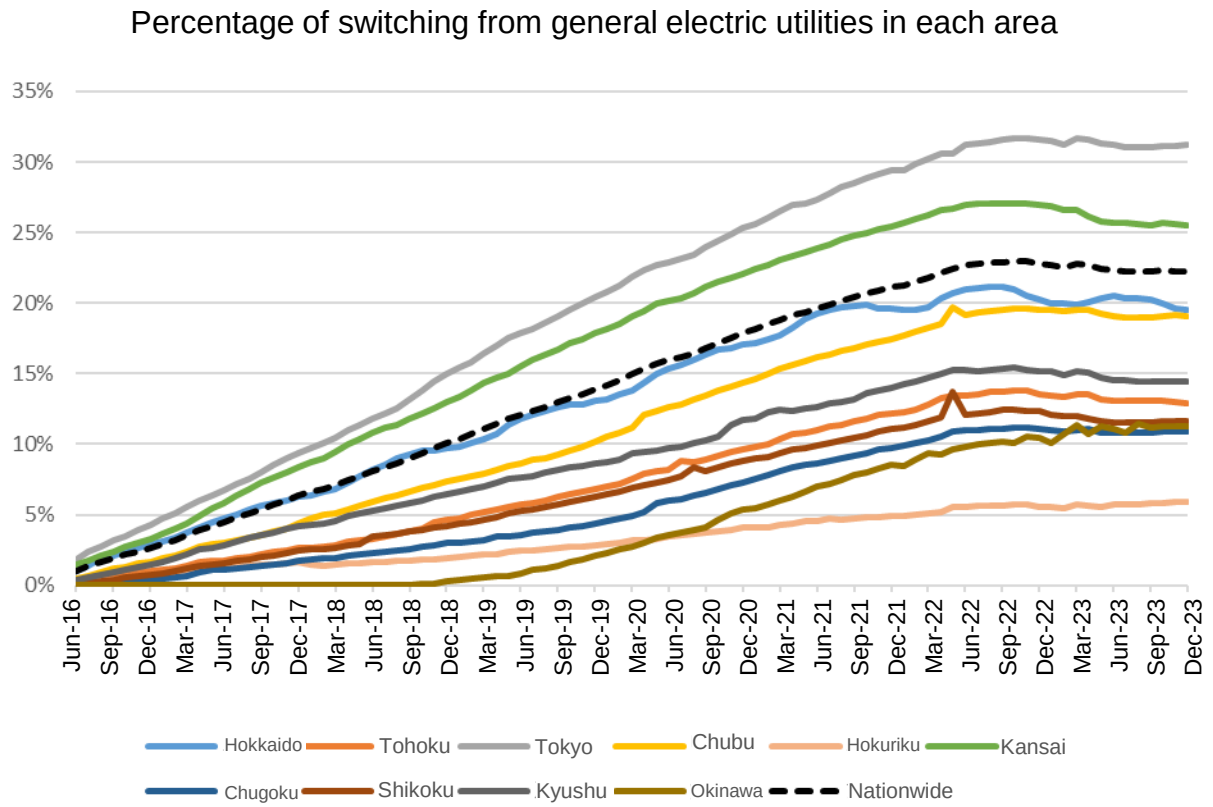
*For Okinawa, calculations are based only on low-voltage electricity (switching in high-voltage electricity is not included).

(Source) Monthly electricity generation/reception report, Electricity Trading Report
(Note) Low voltage: Calculations are based on the number of contracts.

Medium- to long-term trends

Trends in switching (low voltage) (2)

○ Switching from general electric utilities in each area to new entrants and other business operators (including general electric utilities that supply electricity outside their areas) has indicated no major fluctuations recently. As of December 2023, the nationwide switching rate was 22.3%.



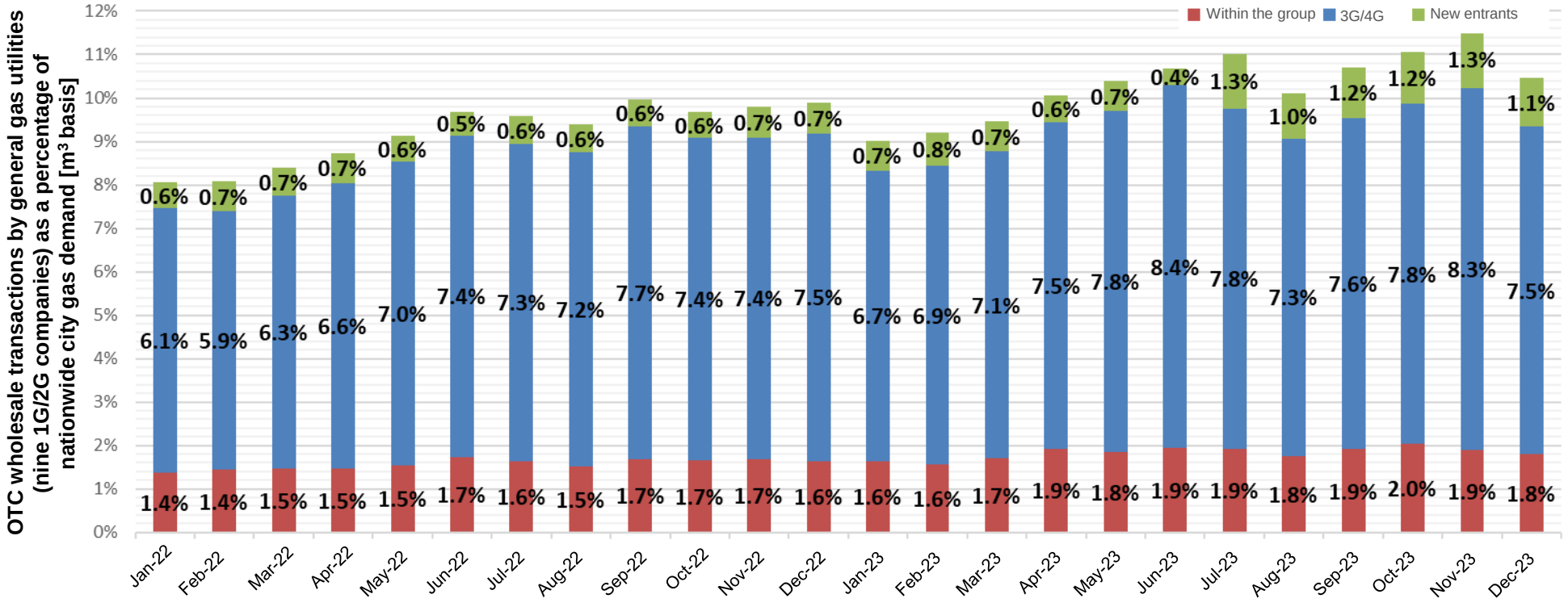
	Dec-23
Hokkaido	19.5%
Tohoku	12.9%
Tokyo	31.2%
Chubu	19.1%
Hokuriku	5.9%
Kansai	25.6%
Chugoku	10.9%
Shikoku	11.6%
Kyushu	14.4%
Okinawa	11.3%
Nationwide	22.3%

(Source) Electricity Trading Report
(Note) Low voltage: Calculations are based on the number of contracts.

Medium- to long-term trends

Status of OTC transactions of general gas utilities (9 companies: 1G/2G)

- ○ In order to understand the actual status of wholesale transactions in the city gas sector, gas wholesale transactions of nine 1G/2G companies*1 were monitored (covering data from January 2020 and showing data for the last two years available, from January 2022).
- ○ As of the end of December 2023, the ratio of OTC wholesale supply of 1G/2G*2 to the retail supply of city gas nationwide*3 was approximately 10%.
- ○ The ratio of OTC wholesale supply to new entrants (companies that are not general gas utilities) was approximately 1.1%. (The share of retail sales volume by new entrants was approximately 21.6% [as of the end of December 2023]).



*1 1G: TOKYO GAS, Osaka Gas, Toho Gas 2G: Hokkaido Gas, Gas Bureau, City of Sendai, SHIZUOKA GAS, HIROSHIMA GAS, Saibu Gas, Nihon Gas (Kagoshima)

*2 Includes terminal exit wholesale, pipe connection point wholesale, demand point wholesale (One-touch wholesale/Start-up wholesale), and liquid wholesale (lorry, etc.) Regarding liquid wholesale, conversions were made on the assumption that 1 ton of liquefied natural gas ≈ 1,220 m^3 and do not take into account calorific value adjustments, etc.

*3 Based on 45 MJ.

*4 3G/4G companies refer to general gas utilities that primarily receive wholesale gas supply from other business operators and provide retail supply through its own pipeline network.

*5 Group companies are defined as companies with a capital relationship of 20% or more.

Medium- to long-term trends

Usage status of Start-up Wholesale measure (as of the end of December 2023)

○ To contribute to the goal of the gas system reform, the nine general gas utilities (1G/2G) began a voluntary initiative called “Start-up Wholesale” in FY2020 to support the entry of new business operators.

○ Regarding Start-up Wholesale, the number of inquiries made to wholesalers, the number of contracts concluded, the number of contract negotiations underway, and the number of contract negotiations completed are as follows (as of the end of December 2023).

Wholesaler name	No. of inquiries	Contracts concluded	Contracts under negotiation	Contract negotiations completed*
Tokyo Gas	22	4	0	18
Osaka Gas	11	4	1	6
Toho Gas	11	2	1	8
Hokkaido Gas	16	2	2	12
Shizuoka Gas	18	6	6	6
Saibu Gas	15	3	4	8
Hiroshima Gas	6	1	0	5
Gas Bureau, City of Sendai	8	0	2	6
Nippon Gas	5	1	0	4
Total	**112**	**23**	**16**	**73**

* The number of contract negotiations completed includes negotiations that were explicitly discontinued due to failure to reach an agreement and cases in which an inquiry was received from a business operator considering use but did not lead to negotiations. The number also includes cases in which there was no further contact, no initiation of contract negotiations, or no progress in negotiations for more than three months from the inquiry date.

Electricity market monitoring

○ So far, the Working Group Meeting and Specialized Meeting for Fee Examination have conducted monitoring reports as shown below.

- 1st monitoring: August 2, 2013, 1st Working Group Meeting for Fee Examination (January-mid-July 2013 report)
- 2nd monitoring: December 9, 2013 4th Working Group Meeting for Fee Examination (Mid-July-mid-November 2013 report)
- 3rd monitoring: June 23, 2014 6th Working Group Meeting for Fee Examination (Mid-November 2013-March 2014 report)
- 4th monitoring: October 30, 2014 9th Working Group Meeting for Fee Examination (April-August 2014 report)
- 5th monitoring: June 25, 2015 13th Working Group Meeting for Fee Examination (September 2014-March 2015 report)
- 6th Monitoring: January 22, 2016 4th Specialized Meeting for Fee Examination (April-September 2015 report)
- 7th Monitoring: June 17, 2016 8th Specialized Meeting for Fee Examination (October 2015-March 2016 report)
- 8th Monitoring: September 27, 2016 11th Specialized Meeting for Fee Examination (April-June 2016 report)
- 9th Monitoring: December 19, 2016, 14th Specialized Meeting for Fee Examination (July-September 2016 report)
- 10th Monitoring: March 31, 2017 16th Specialized Meeting for Fee Examination (October-December 2016 report)
- 11th Monitoring: June 27, 2017 19th Specialized Meeting for Fee Examination (January-March 2017 report)
- 12th Monitoring: September 29, 2017 22nd Specialized Meeting for Fee Examination (April-June 2017 report)
- 13th Monitoring: December 26, 2017, 25th Specialized Meeting for Fee Examination (July-September 2017 report)
- 14th Monitoring: March 29, 2018 28th Specialized Meeting for Fee Examination (October-December 2017 report)
- 15th Monitoring: June 19, 2018 31st Specialized Meeting for Fee Examination (January-March 2018 report)
- 16th Monitoring: September 20, 2018 33rd Specialized Meeting for Fee Examination (April-June 2018 report)
- 17th Monitoring: December 17, 2018, 35th Specialized Meeting for Fee Examination (July-September 2018 report)
- 18th Monitoring: April 25, 2019 37th Specialized Meeting for Fee Examination (October-December 2018 report)
- 19th Monitoring: June 25, 2019 39th Specialized Meeting for Fee Examination (January-March 2019 report)
- 20th Monitoring: September 13, 2019 41st Specialized Meeting for Fee Examination (April-June 2019 report)
- 21st Monitoring: December 17, 2019, 44th Specialized Meeting for Fee Examination (July-September 2019 report)
- 22nd Monitoring: March 31, 2020 46th Specialized Meeting for Fee Examination (October-December 2019 report)
- 23rd Monitoring: June 30, 2020 48th Specialized Meeting for Fee Examination (January-March 2020 report)
- 24th Monitoring: September 8, 2020 50th Specialized Meeting for Fee Examination (April-June 2020 report)
- 25th Monitoring: December 15, 2020, 53rd Specialized Meeting for Fee Examination (July-September 2020 report)
- 26th Monitoring: April 16, 2021 59th Specialized Meeting for Fee Examination (October-December 2020 report)
- 27th Monitoring: June 29, 2021 62nd Specialized Meeting for Fee Examination (January-March 2021 report)
- 28th Monitoring: October 1, 2021 65th Specialized Meeting for Fee Examination (April-June 2021 report)
- 29th Monitoring: December 21, 2021, 68th Specialized Meeting for Fee Examination (July-September 2021 report)
- 30th Monitoring: March 24, 2022 71st Specialized Meeting for Fee Examination (October-December 2021 report)
- 31st Monitoring: June 23, 2022 74th Specialized Meeting for Fee Examination (January-March 2022 report)
- 32nd Monitoring: September 26, 2022 77th Specialized Meeting for Fee Examination (April-June 2022 report)
- 33rd Monitoring: December 22, 2022, 80th Specialized Meeting for Fee Examination (July-September 2022 report)
- 34th Monitoring: March 27, 2023 83rd Specialized Meeting for Fee Examination (October-December 2022 report)
- 35th Monitoring: June 27, 2023 86th Specialized Meeting for Fee Examination (January-March 2023 report)
- 36th Monitoring: September 29, 2023 89th Specialized Meeting for Fee Examination (April-June 2023 report)
- 37th Monitoring: December 26, 2023 92th Specialized Meeting for Fee Examination (July-September 2023 report)

○ This time, we conducted a monitoring report for the October to December period of 2023. We will continue to monitor the electricity market.