Ministry of Economy,
Trade and Industry

Monitoring report of voluntary efforts and competitive status
July to September 2023 period

(Tentative translation)

Tuesday, December 26, 2023

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

(Reference materials are omitted)

July to September 2023 period

Major indicators

○ The major indicators for this period are as follows.

				Contents of this report	Reference		
				July to September 2023	The same period last year (July to September 2022)	FY2022 (April 2022-March 2023)	FY2021 (April 2021 - March 2022)
JEPX market	Percentage to electricity sales *3			38.7%	39.9%	40.1%	39.9%
	Day-Ahead market	Bidding	Sell volume compared to the same period last year	1.0×	0.9×	1.0×	1.0×
			Buy volume compared to the same period last year	1.0×	0.9×	0.9×	1.1×
		Contract	Contracted volume	83.8 billion kWh	85.2 billion kWh	318.5 billion kWh	327.2 billion kWh
			Contracted volume compared to the same period last year	1.0×	0.9×	1.0×	1.0×
			Average contracted price (system price)	11.7 yen/kWh	24.8 yen/kWh	20.4 yen/kWh	13.5 yen/kWh
		Occurrence rate of market splitting between the east and west market		22.2%	31.0%	34.9%	32.1%
	Intraday market	Contract	Contracted volume	1.57 billion kWh	1.51 billion kWh	4.94 billion kWh	4.18 billion kWh
			Average contracted price	13.2 yen/kWh	28.4 yen/kWh	22.9 yen/kWh	14.5 yen/kWh
	Forward market	Contract	Contracted volume	0kWh	3 million kWh	17 million kWh	47 million kWh
OTC transactions	Supply to outside the group			10.80 billion kWh	14.02 billion kWh	56.43 billion kWh	51.71 billion kWh
Retail market (Reference) *1	Electricity sales			220.9 billion kWh *2	217.2 billion kWh *2	805.4 billion kWh	832.1 billion kWh
		New entrants	Electricity sales	37.8 billion kWh	43.8 billion kWh	154.6 billion kWh	178.6 billion kWh
			Electricity sales compared to the same period last year	0.9×	0.9×	0.9×	1.2×
			Share of new entrants	17.2% (as of September)	19.5% (as of September)	—	—

*1 Source: Electricity Trading Report
*2 In the Electricity Trading Report, to avoid an excessive burden on businesses when tabulating data, the electricity sales volume and the sales amount recorded from the N-1 meter reading date to the day before the N-month meter reading date were allowed to be recognized as N-month data. Since most companies report their performance up to the meter reading date, it does not match the actual performance for N-month demand.
*3 The percentage of electricity sales indicates the average value for the relevant period.

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 gross bidding
  - ● 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

July to September 2023 period

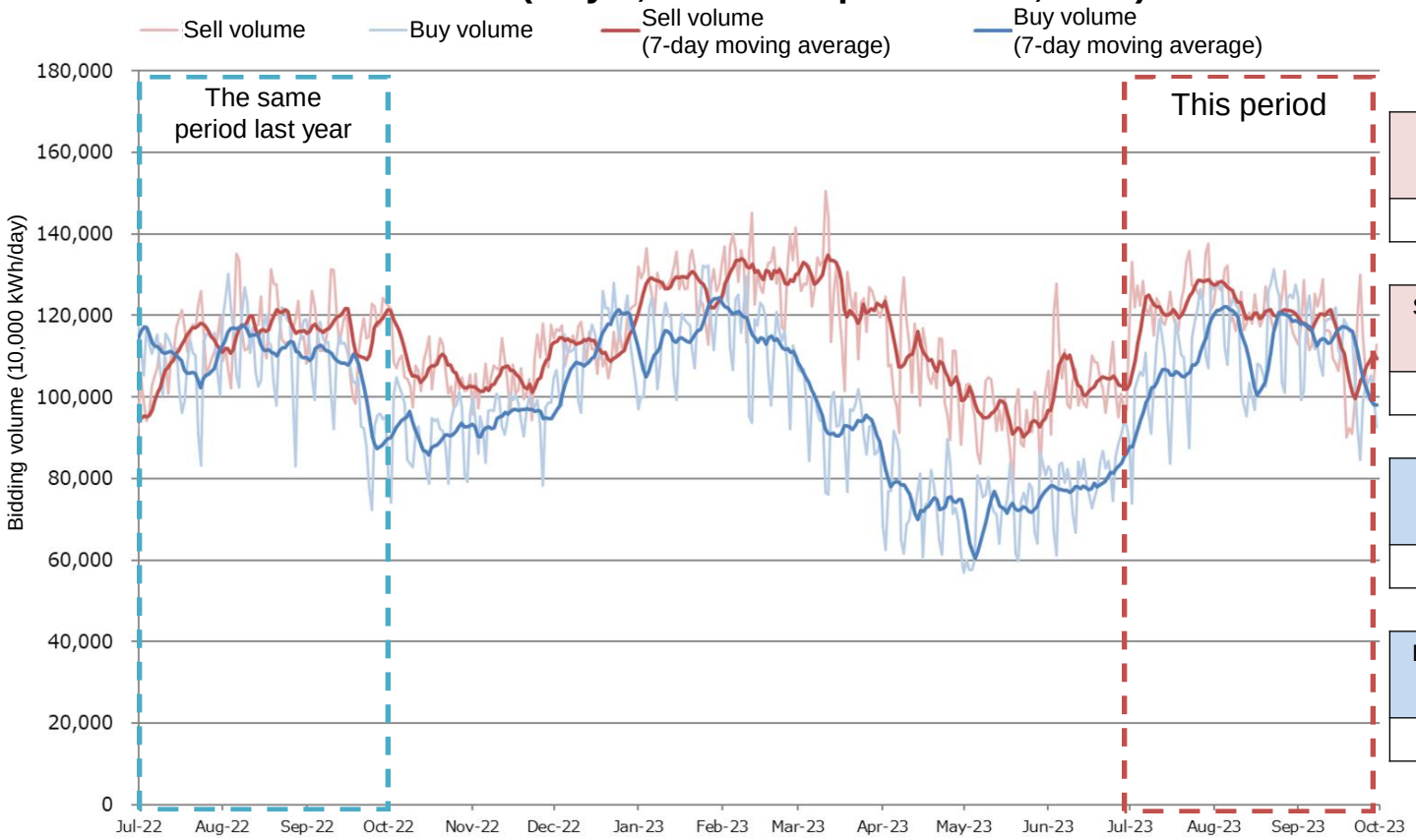
Bidding volume in the day-ahead market

○ During this period, the bidding volume in the day-ahead market was 109.8 billion kWh for sell volume and 101.9 billion kWh for buy volume.

○ Compared to the same period last year, the sell volume was 1.0 times higher, and the buy volume was 1.0 times higher.

Day-Ahead market: Trends in bidding volume

(July 1, 2022 to September 30, 2023)



Main data

Sell volume (July to September 2023)
109.8 billion kWh

Sell volume compared to the same period last year (vs. July to September 2022)
1.0×

Buy volume (July to September 2023)
101.9 billion kWh

Buy volume compared to the same period last year (vs. July to September 2022)
1.0×

July to September 2023 period

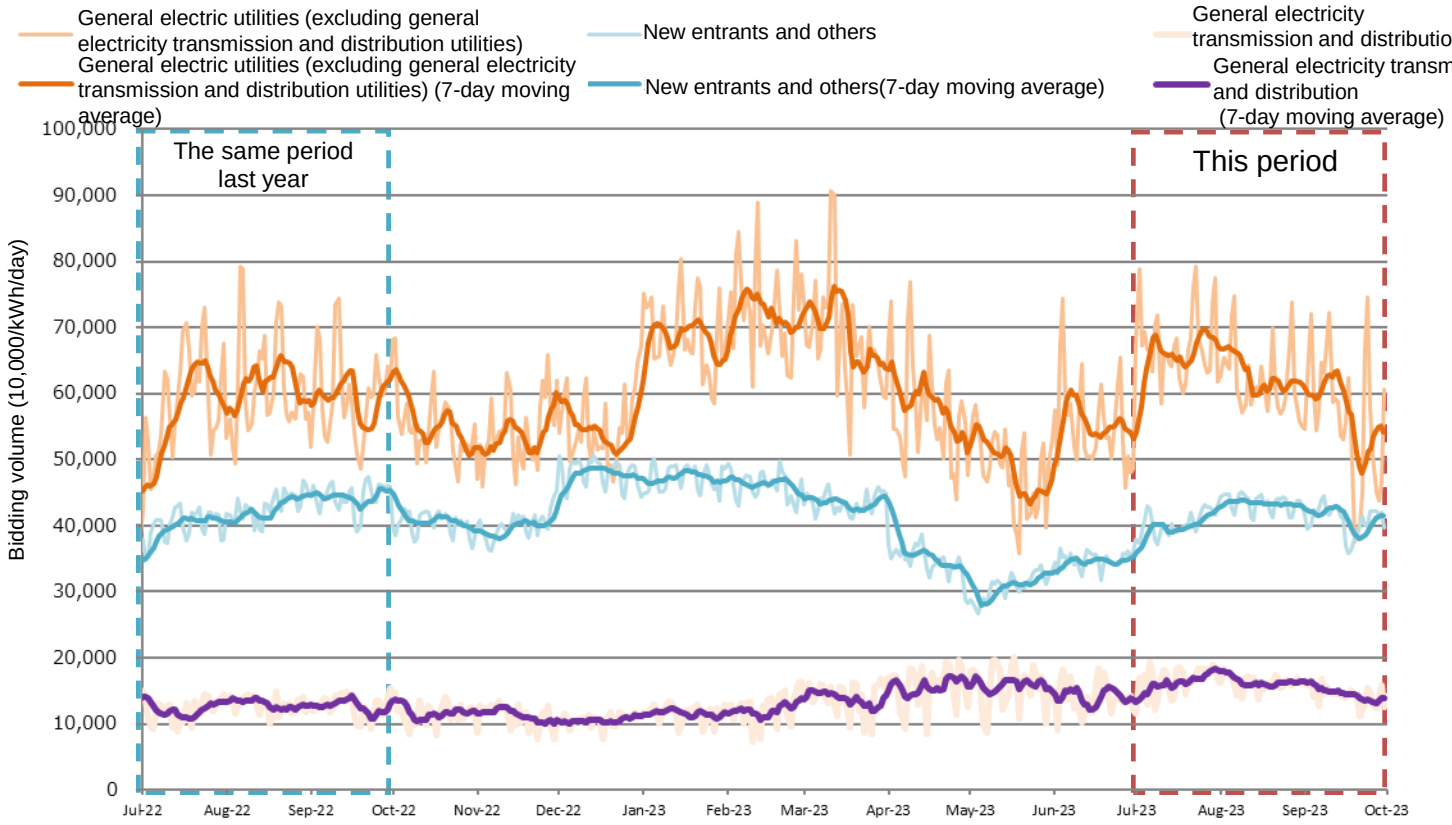
Sell volume in the day-ahead market by business operator category

○ The sell volume in the day-ahead market during this period was 57 billion kWh for general electric utilities (excluding general electricity transmission and distribution utilities), 38.3 billion kWh for new entrants and other business operators, and 14.5 billion kWh for general electricity transmission and distribution utilities.

○ Compared to the same period last year, the increase was 1.0 times for general electric utilities, 1.0 times for new entrants and other business operators, and 1.3 times for general electricity transmission and distribution utilities.

Day-Ahead market: Trends in sell volume

(July 1, 2022 to September 30, 2023)



Main data

Sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) (July to September 2023)
57 billion kWh
Comparison of sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) for the same period last year (vs. July to September 2022)
1.0×
Sell volume by new entrants and other business operators (July 2023 to September 2023)
38.3 billion kWh
Comparison of sell volume by new entrants and other business operators for the same period last year (vs. July to September 2022)
1.0×
Sell volume by general electricity transmission and distribution utilities (July 2023 to September 2023)
14.5 billion kWh
Comparison of sell volume by general electricity transmission and distribution utilities for the same period last year (vs. July 2023 to September 2023)
1.3×

* A new sell volume graph by general electricity transmission and distribution utilities was added for the sell volume by general electric utilities, excluding their FIT sell volume.
* 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.

July to September 2023 period

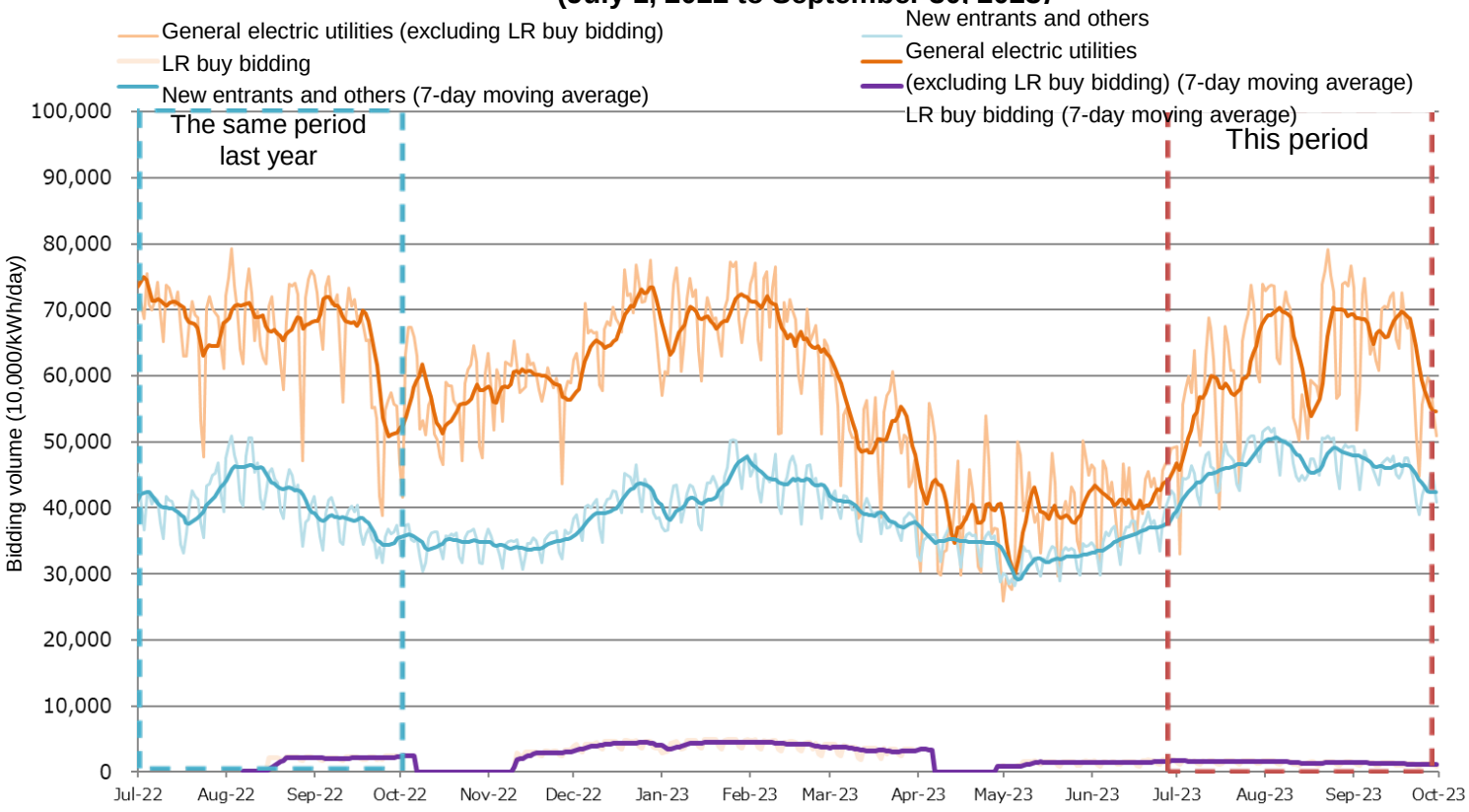
Buy volume in the day-ahead market by business operator category

○ The buy volume in the day-ahead market during this period was 57.8 billion kWh for general electric utilities (excluding LR buy bidding), 42.8 billion kWh for new entrants and other business operators, and LR buy bid volume by general electricity transmission and distribution utilities was 1.3 billion kWh.

○ Compared to the same period last year, the increase was 0.9 times for general electric utilities (excluding LR buy bidding) and 1.1 times for new entrants and other business operators.

Day-Ahead market: Trends in buy volume

(July 1, 2022 to September 30, 2023)



Main data

Buy volume by general electric utilities (excluding LR buy bidding) (July 2023 to September 2023)
57.8 billion kWh
Comparison of buy volume by general electric utilities for the same period last year (excluding LR buy bidding) (vs. July to September 2022)
0.9×
Buy volume by new entrants and other business operators (July 2023 to September 2023)
42.8 billion kWh
Comparison of buy volume by new entrants and other business operators for the same period last year (vs. July to September 2022)
1.1×
LR buy volume by general electricity transmission and distribution utilities (July 2023 to September 2023)
1.3 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.

July to September 2023 period

Contracted volume in the day-ahead market

○ The contracted volume in day-ahead market during this period was 83.8 billion kWh.
○ Compared to the same period last year, it was 1.0 times higher.

Day-Ahead market: Trends in contracted volume

(July 1, 2022 to September 30, 2023)

Main data

Contracted volume (July to September 2023)
83.8 billion kWh

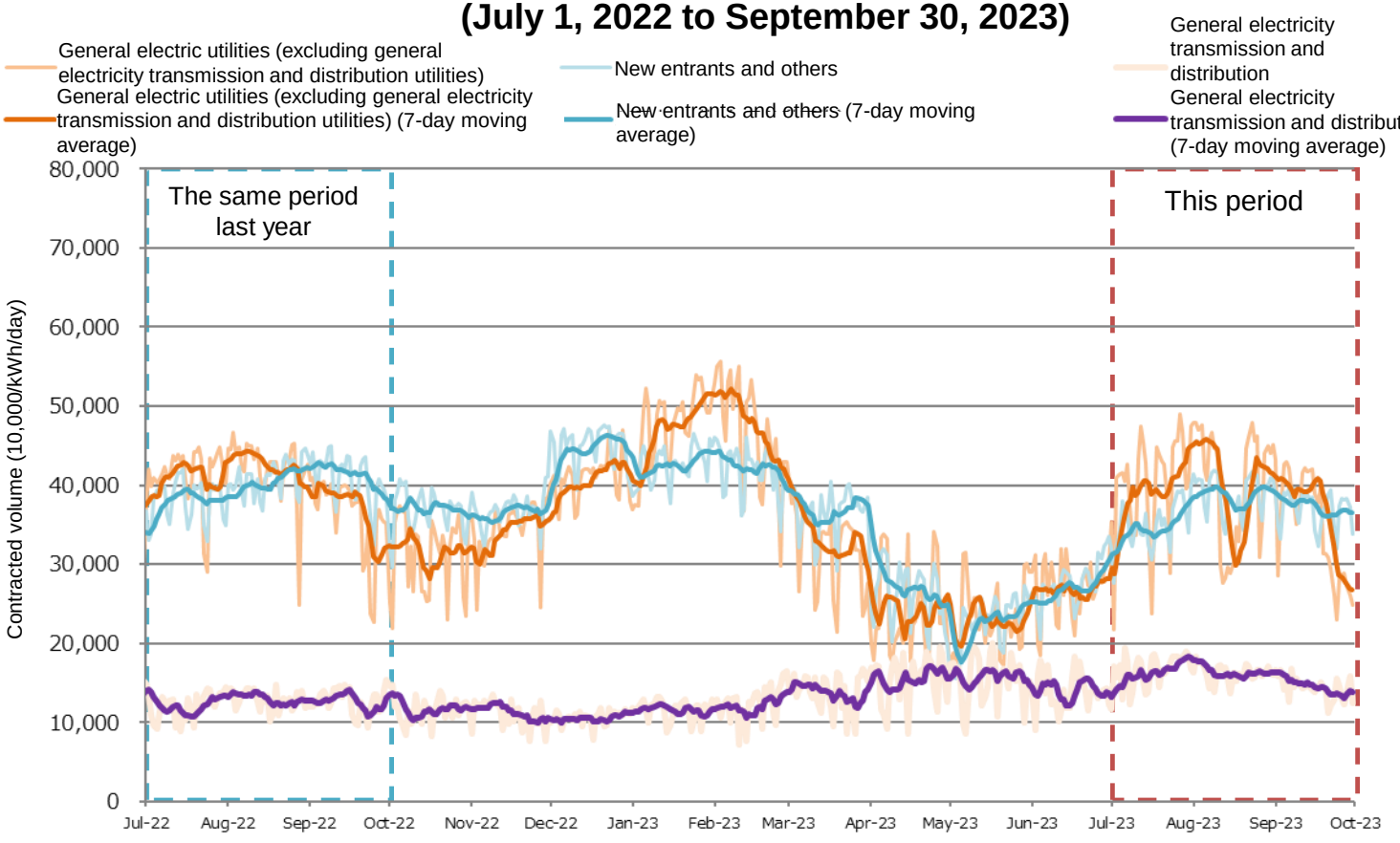
Comparison of contracted volume for the same period last year (vs. July to September 2022)
1.0×

July to September 2023 period

Contracted sell volume in the Day-Ahead market by business operator category

- ○ The contracted sell volume in the day-ahead market during this period was 35.3 billion kWh for general electric utilities (excluding general electricity transmission and distribution utilities), 34 billion kWh for new entrants and other business operators, and 14.5 billion kWh for general electricity transmission and distribution utilities.
- ○ Compared to the same period last year, the increase was 1.0 times for general electric utilities, 0.9 times for new entrants and other business operators, and 1.3 times for general power transmission and distribution utilities.

Day-Ahead market: Trends in contracted sell volume (July 1, 2022 to September 30, 2023)



Main data

Contracted sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) (July 2023 to September 2023)
35.3 billion kWh
Comparison of contracted sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) for the same period last year (vs. July to September 2022)
1.0×
Contracted sell volume by new entrants and other business operators (July 2023 to September 2023)
34 billion kWh
Comparison of contracted sell volume by new entrants and other business operators for the same period last year (vs. July to September 2022)
0.9×
Contracted sell volume by general electricity transmission and distribution utilities (July 2023 to September 2023)
14.5 billion kWh
Comparison of contracted sell volume by general electricity transmission and distribution utilities for the same period last year (vs. July to September 2022)
1.3×

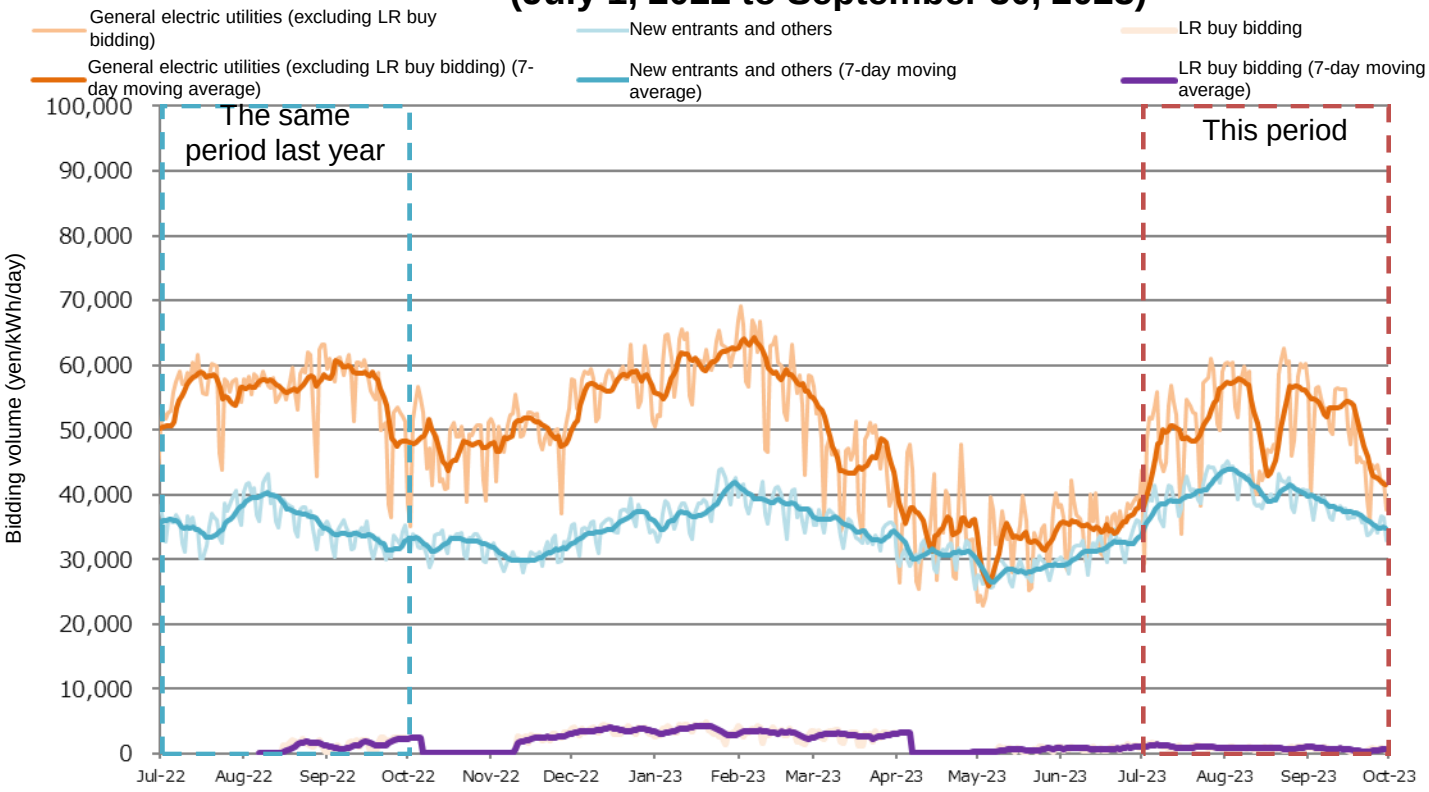
* A new contracted sell volume graph by general power transmission and distribution utilities was added for the contracted sell volume by general electric utilities, excluding their FIT contracted sell volume.
* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO 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.

July to September 2023 period

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

- ○ The contracted buy volume in the day-ahead market during this period was 46.8 billion kWh for general electric utilities (excluding LR buy bidding), 36.2 billion kWh for new entrants and other business operators, and LR contracted buy volume by general electricity transmission and distribution utilities was 800 million kWh.
- ○ Compared to the same period last year, the increase was 0.9 times for general electric utilities (excluding LR buy bidding) and 1.1 times for new entrants and other business operators.
- ○ The contracted buy volume by the general electric utilities exceeds the contracted sell volume. Until two periods ago, the contracted sell volume from new entrants and other business operators exceeded the contracted buy volume, but as in the previous period, the contracted buy volume from new entrants and other business operators has exceeded the contracted sell volume this period as well.

Day-Ahead market: Trends in contracted buy volume (July 1, 2022 to September 30, 2023)



Main data

Buy volume by general electric utilities (excluding LR buy bidding) (July 2023 to September 2023)
46.8 billion kWh
Comparison of buy volume by general electric utilities for the same period last year (excluding LR buy bidding) (vs. July to September 2022)
0.9×
Buy volume by new entrants and other business operators (July 2023 to September 2023)
36.2 billion kWh
Comparison of buy volume by new entrants and other business operators for the same period last year (vs. July to September 2022)
1.1×
LR buy volume by general electricity transmission and distribution utilities (July 2023 to September 2023)
0.8 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.

July to September 2023 period

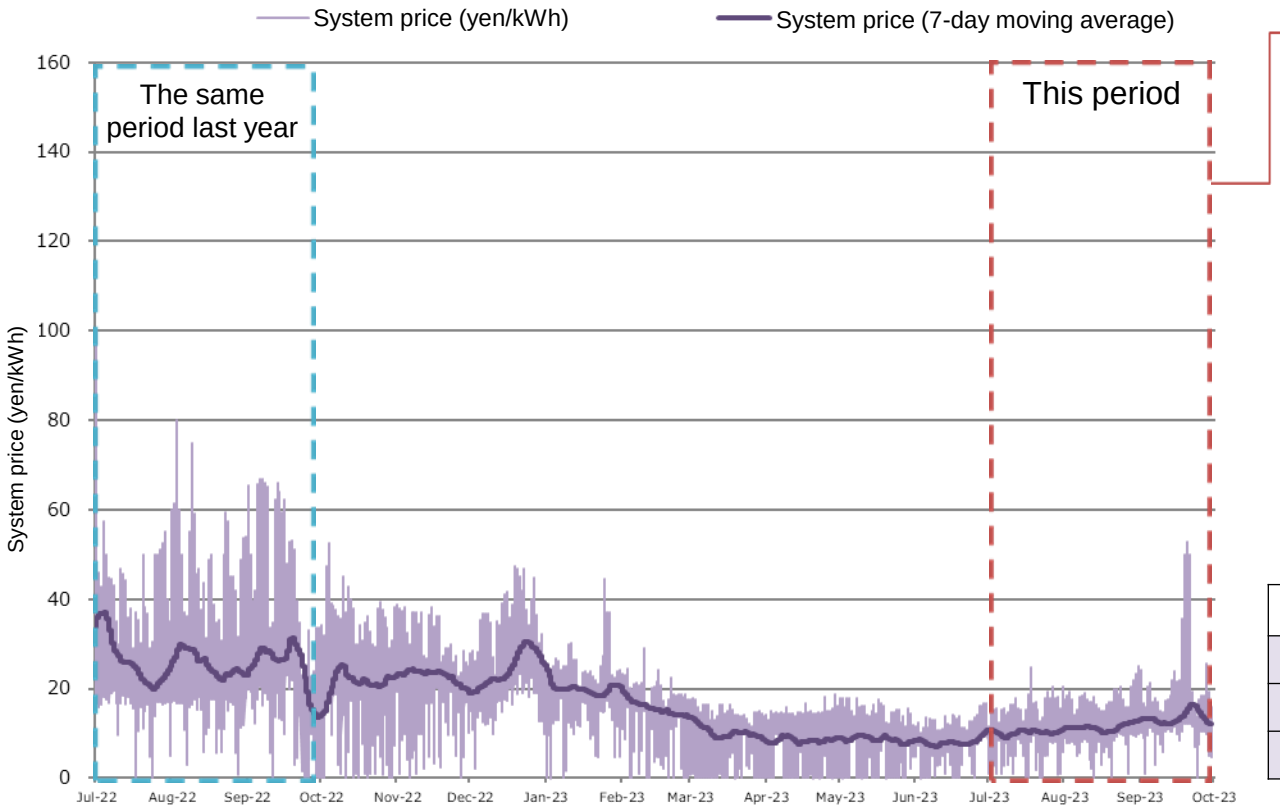
System price in day-ahead market

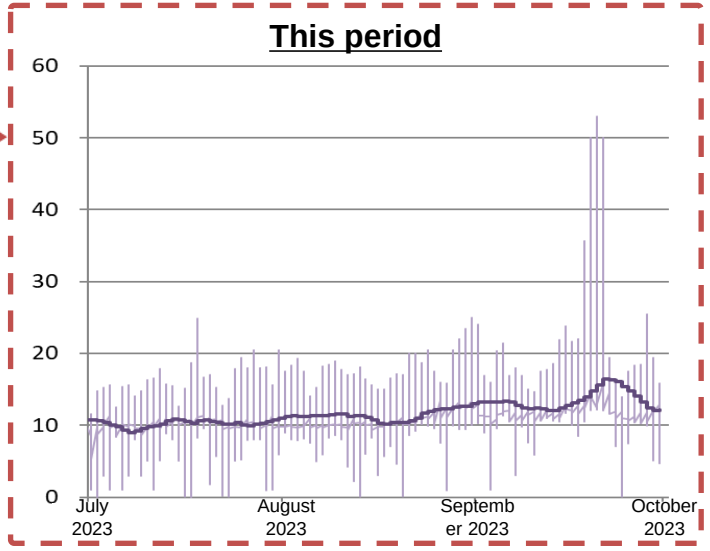
○ The average system price in the day-ahead market during this period was 11.7 yen/kWh.

○ It decreased by 13.1 yen compared to the average of 24.8 yen/kWh for the same period last year. (LNG spot price decreased from an average of $47.0/MMBtu during the same period last year to an average of $12.6/MMBtu during this period.)

Day-Ahead market: Trends in system price

(July 1, 2022 to September 30, 2023)





Main data

Unit: yen/kWh

	This period	The same period last year	Difference
Average system price	11.7	24.8	-13.1
Highest value	52.9	100.0	-47.1
Lowest value	0.01	0.01	+0.0

*1 Maximum price for this period: 1 day, 1 frame in total
*2 Lowest price for this period: 3 days, 40 frames in total

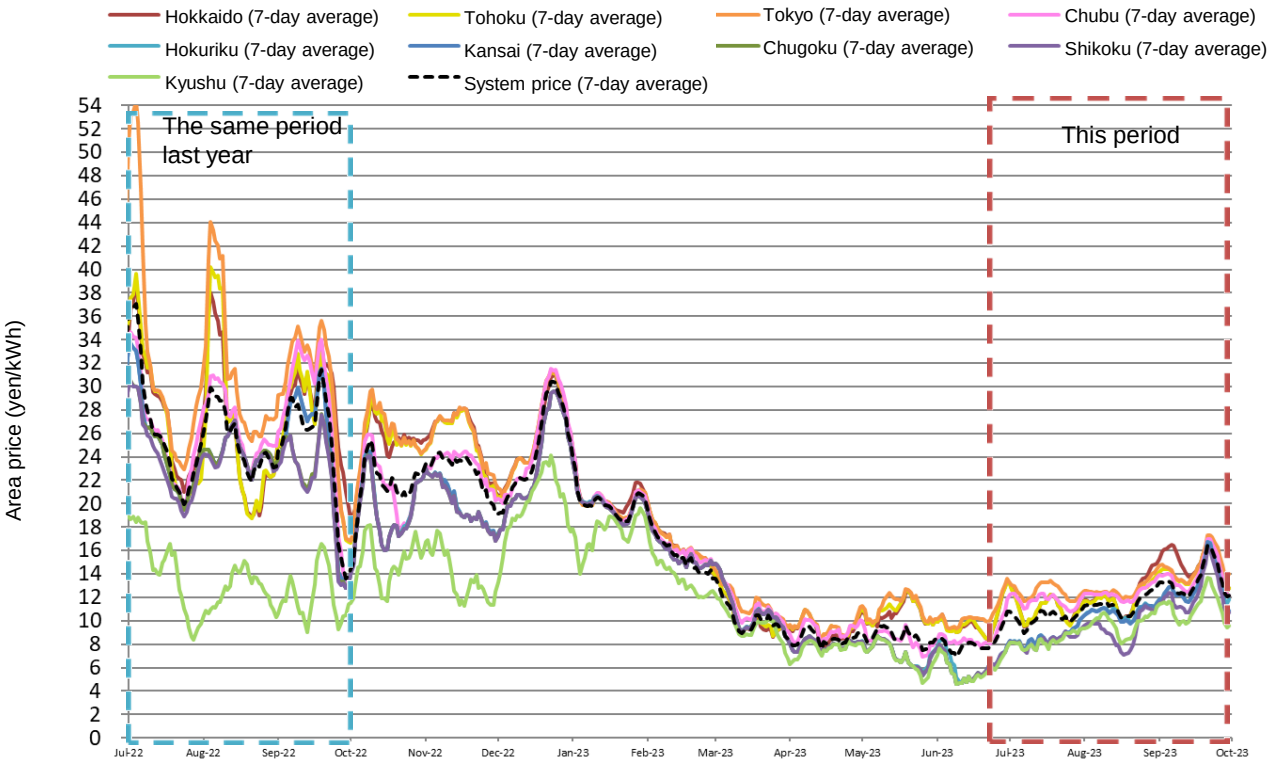
July to September 2023 period

Area price in day-ahead market

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

Day-Ahead market: Trends in area price

(July 1, 2022 to September 30, 2023)



Average price within the period

Unit: yen/kWh

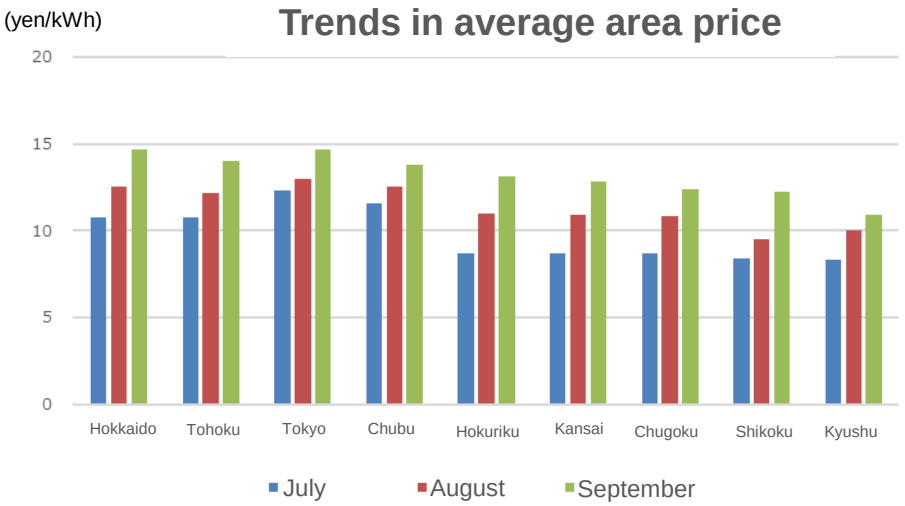
	This period	The same period last year	Difference
System price	11.7	24.8	-13.1
Hokkaido	12.6	26.8	-14.2
Tohoku	12.3	26.5	-14.2
Tokyo	13.3	30.2	-16.9
Chubu	12.6	26.0	-13.4
Hokuriku	10.9	24.0	-13.1
Kansai	10.8	24.0	-13.2
Chugoku	10.6	23.0	-12.4
Shikoku	10.1	22.6	-12.6
Kyushu	9.7	12.8	-3.1

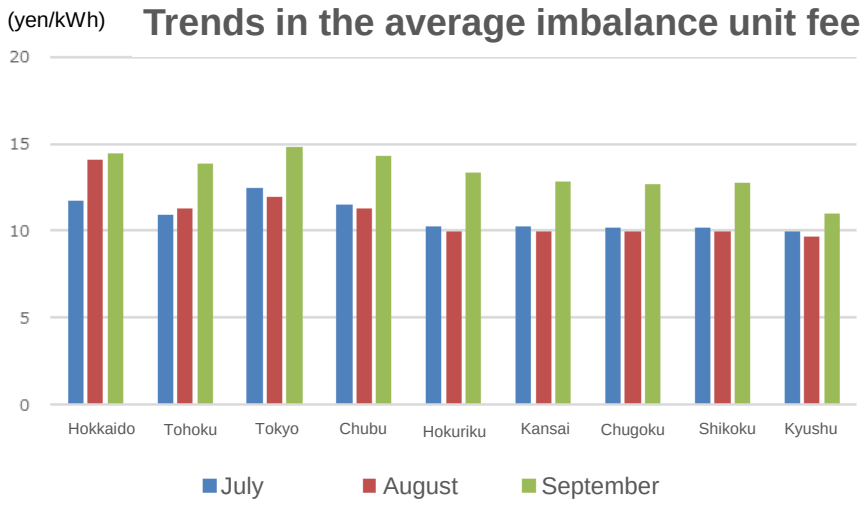
July to September 2023 period

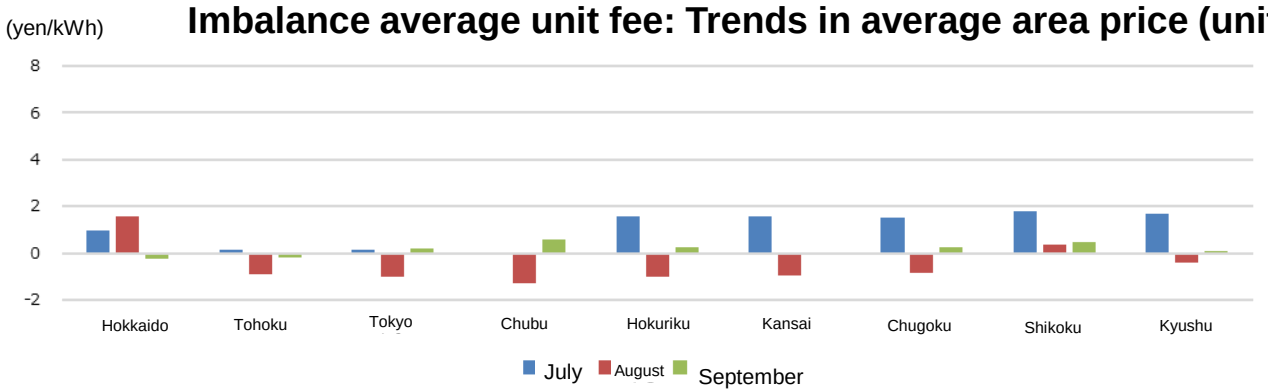
Trends in imbalance unit fee and area price

○ Comparing trends in the imbalance unit fee and area price in each area (monthly averages), a discrepancy can be seen in July and August. In particular, the imbalance unit fees in the Hokkaido and Hokuriku to Kyushu areas exceeded the area price by more than 1.5 yen.

○ The maximum difference between the two areas was 1.59 yen, the minimum was 0.00 yen, and the average was 0.74 yen.







Source: Prepared by the Executive Bureau of the Electricity and Gas Market Surveillance Commission based on the final values of the imbalance amount (as of November 13, 2023) published on the Imbalance Prices Calculation Service site.

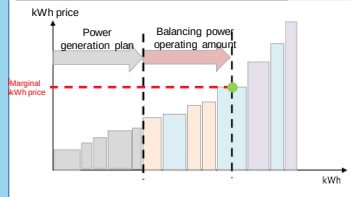
* The structure of the imbalance fee system was changed on April 1, 2022.

(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

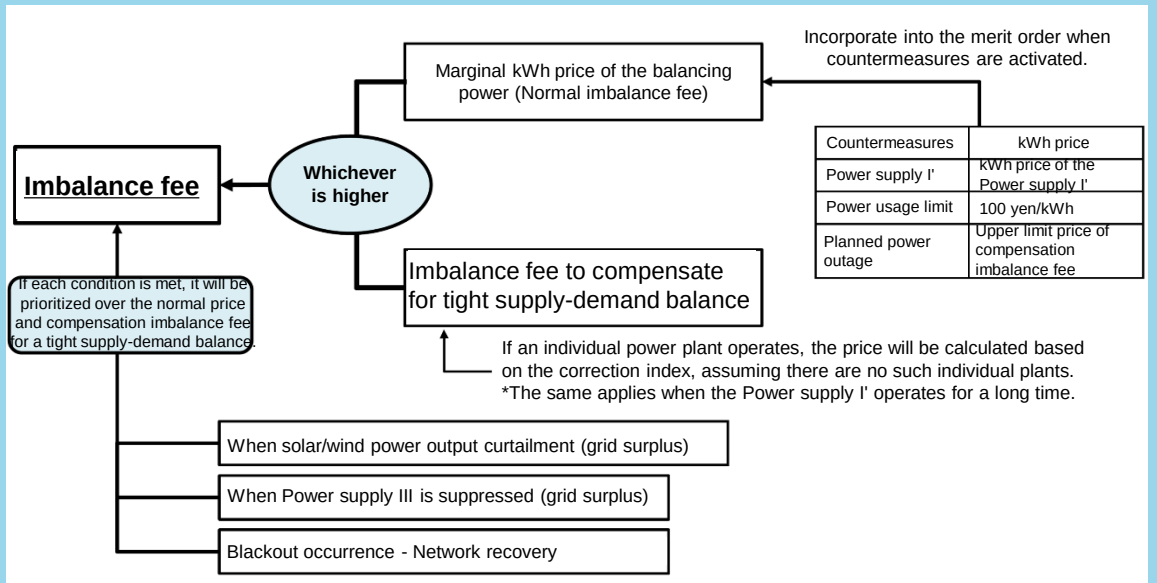


System based on the kWh price of the balancing power

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).

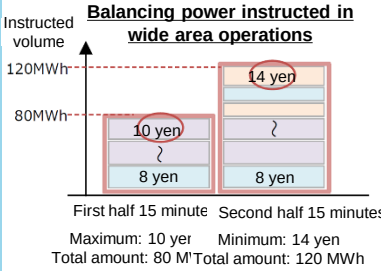
Measures:
(1) Give grid users incentives to help balance supply and demand across the grid.
(2) By reflecting the kWh price of the balancing power in the imbalance fee, general electricity transmission and distribution utilities can recover the supply-demand balancing cost.



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.

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

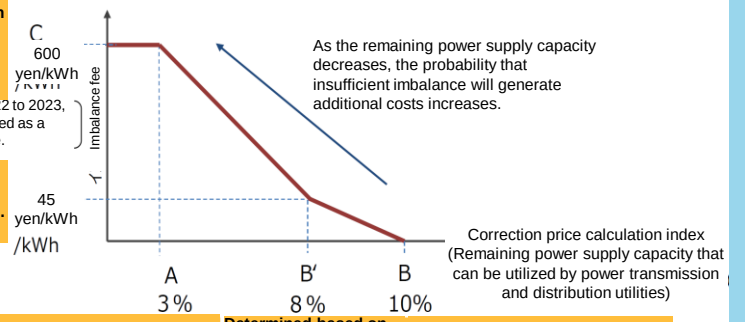
* From FY2023, wide-area operations will be in 5-minute increments, and the price will be calculated as a weighted average of 5 minutes x 6 frames.

○ 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'.



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'.

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July to September 2023 period

Day-Ahead market splitting status between areas

- ○ The market splitting occurrence rate remains high for the Chubu-Hokuriku interconnection line and the Chubu-Kansai interconnection line, exceeding 50% on average during this period.
- ○ Compared to the same period last year, the rates of the Hokkaido-Honshu interconnection line, Tokyo-Chubu interconnection line (FC), and Chugoku-Kyushu interconnection line were decreased; in particular, Chugoku-Kyushu interconnection line decreased significantly.

Monthly splitting occurrence rate for interconnection lines between each area

Chubu-Hokuriku interconnection line

April	May	June	July	August	September	Average for this period
34.4%	33.6%	65.6%	75.8%	56.3%	32.0%	54.9%
(same period last year)	12.8%	17.4%	24.2%	18.1%		

Hokuriku-Kansai interconnection line

April	May	June	July	August	September	Average for this period
0.1%	2.6%	7.1%	0.3%	2.4%	12.6%	5.0%
(same period last year)	0.0%	0.3%	0.0%	0.1%		

Hokkaido-Honshu interconnection line

April	May	June	July	August	September	Average for this period
7.1%	4.7%	3.9%	4.0%	13.0%	20.2%	12.3%
(same period last year)	26.3%	19.7%	29.0%	25.0%		

Kansai-Chugoku interconnection line

April	May	June	July	August	September	Average for this period
0.0%	0.0%	0.6%	1.5%	2.4%	9.2%	4.3%
(same period last year)	1.5%	0.0%	13.3%	4.8%		

Tohoku-Tokyo interconnection line

April	May	June	July	August	September	Average for this period
2.3%	5.6%	10.6%	31.3%	18.5%	10.8%	20.3%
(same period last year)	20.1%	30.6%	11.4%	20.8%		

Chugoku-Shikoku interconnection line

April	May	June	July	August	September	Average for this period
0.0%	0.0%	0.0%	3.7%	20.4%	2.2%	8.8%
(same period last year)	12.3%	4.2%	3.2%	6.6%		

Tokyo-Chubu interconnection line (FC)

April	May	June	July	August	September	Average for this period
20.3%	57.5%	35.6%	19.0%	13.1%	34.9%	22.2%
(same period last year)	39.2%	26.5%	27.2%	31.0%		

Chugoku-Kyushu interconnection line

April	May	June	July	August	September	Average for this period
4.4%	5.2%	3.8%	8.9%	22.4%	34.9%	21.9%
(same period last year)	83.9%	88.8%	69.5%	80.8%		

Kansai-Shikoku interconnection line

April	May	June	July	August	September	Average for this period
0.0%	0.0%	0.6%	5.2%	22.1%	10.9%	12.8%
(same period last year)	13.8%	4.2%	16.5%	11.4%		

Chubu-Kansai interconnection line

April	May	June	July	August	September	Average for this period
34.5%	36.2%	72.6%	76.1%	58.6%	44.5%	59.9%
(same period last year)	12.8%	17.1%	24.2%	18.0%		

* The numbers (percentages) in the table show the market splitting in each interconnection line (ratio of the number of products in which market splitting occurred out of the number of products handled each month (48 frames per 30 minutes/day x number of days)).

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

July to September 2023 period

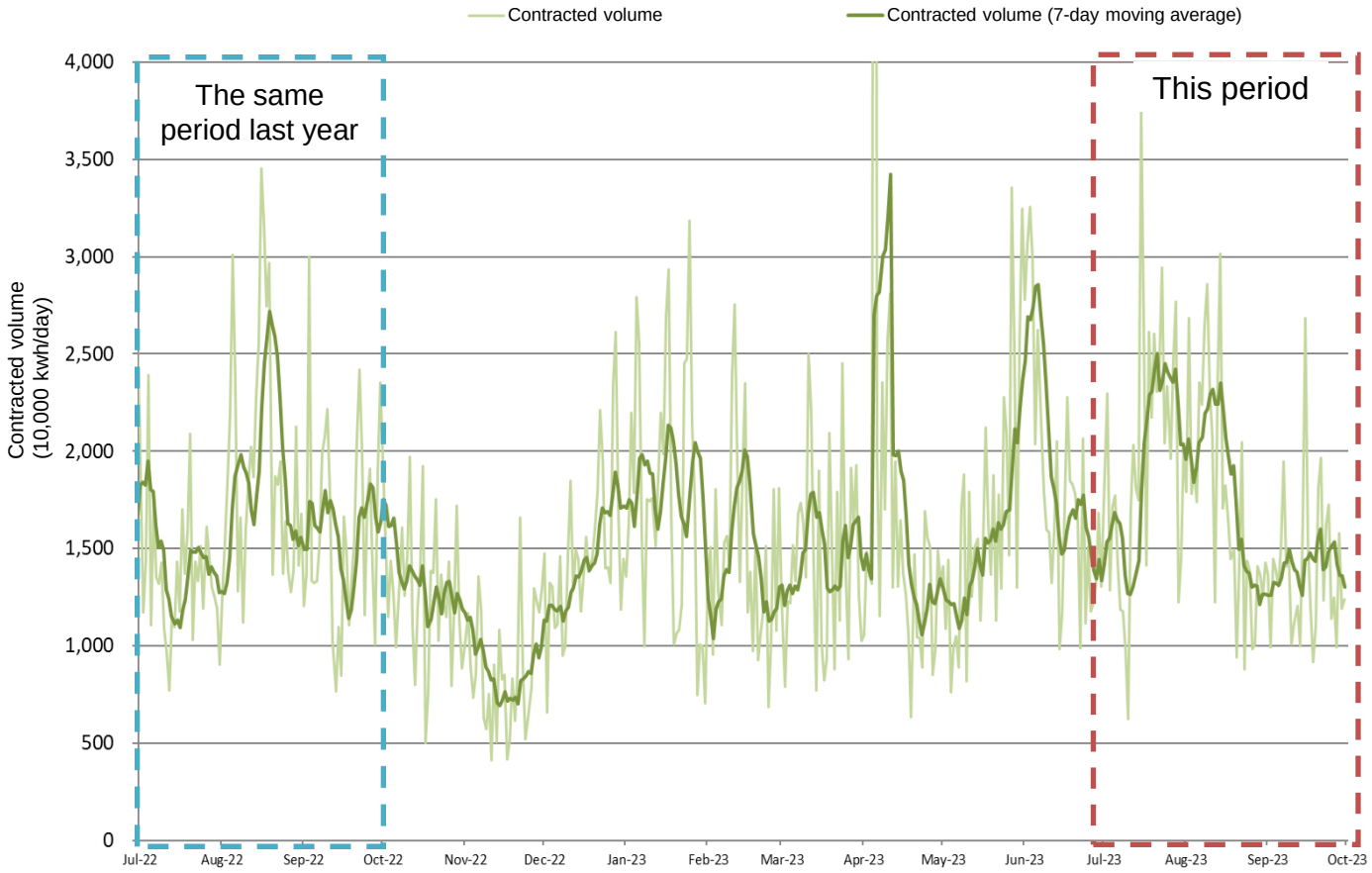
Contracted volume in the intraday market

○ Contracted volume in the intraday market during this period was 1.57 billion kWh.

○ Compared to the same period last year, it was 1.0 times higher.

Intraday market: Trends in contracted volume

(July 1, 2022 to September 30, 2023)



Main data

Contracted volume (July to September 2023)
1.57 billion kWh

Comparison of contracted volume for the same period last year (vs. July to September 2022)
1.0×

July to September 2023 period

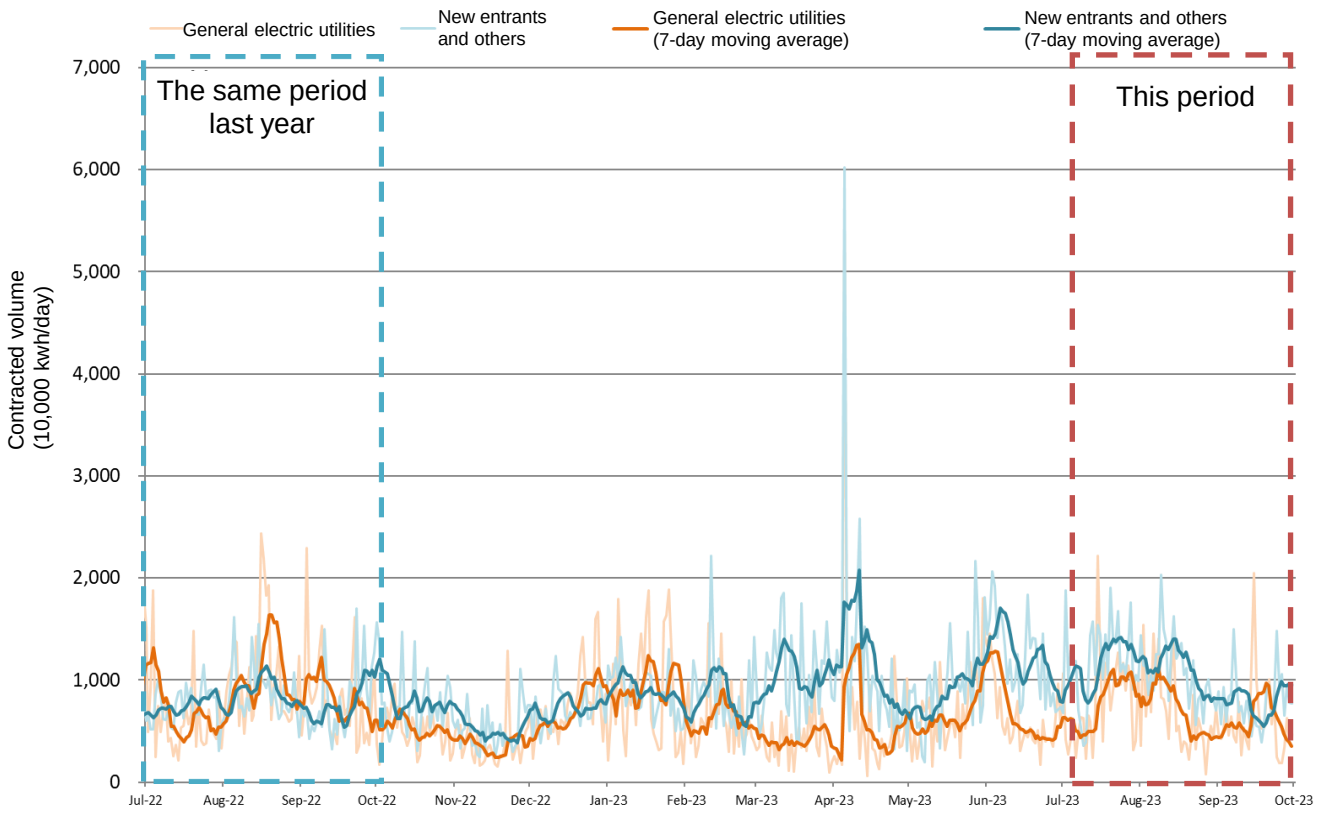
Intraday market contracted sell volume by business operator category

○ During this period, the intraday market contracted sell volume was 630 million kWh for general electric utilities and 940 million kWh for new electric power and other business operators.

○ Compared to the same period last year, the increase was 0.8 times for general electric utilities and 1.3 times for new entrants and other business operators.

Intraday market: Trends in contracted sell volume

(July 1, 2022 to September 30, 2023)



Main data

Contracted sell volume by general electric utilities (July to September 2023)
630 million kWh

Comparison of contracted sell volume by general electric utilities for the same period last year (vs. July to September 2022)
0.8×

Contracted sell volume by new entrants and other business operators (July to September 2023)
940 million kWh

Comparison of contracted sell volume by new entrants and other business operators for the same period last year (vs. July to September 2022)
1.3×

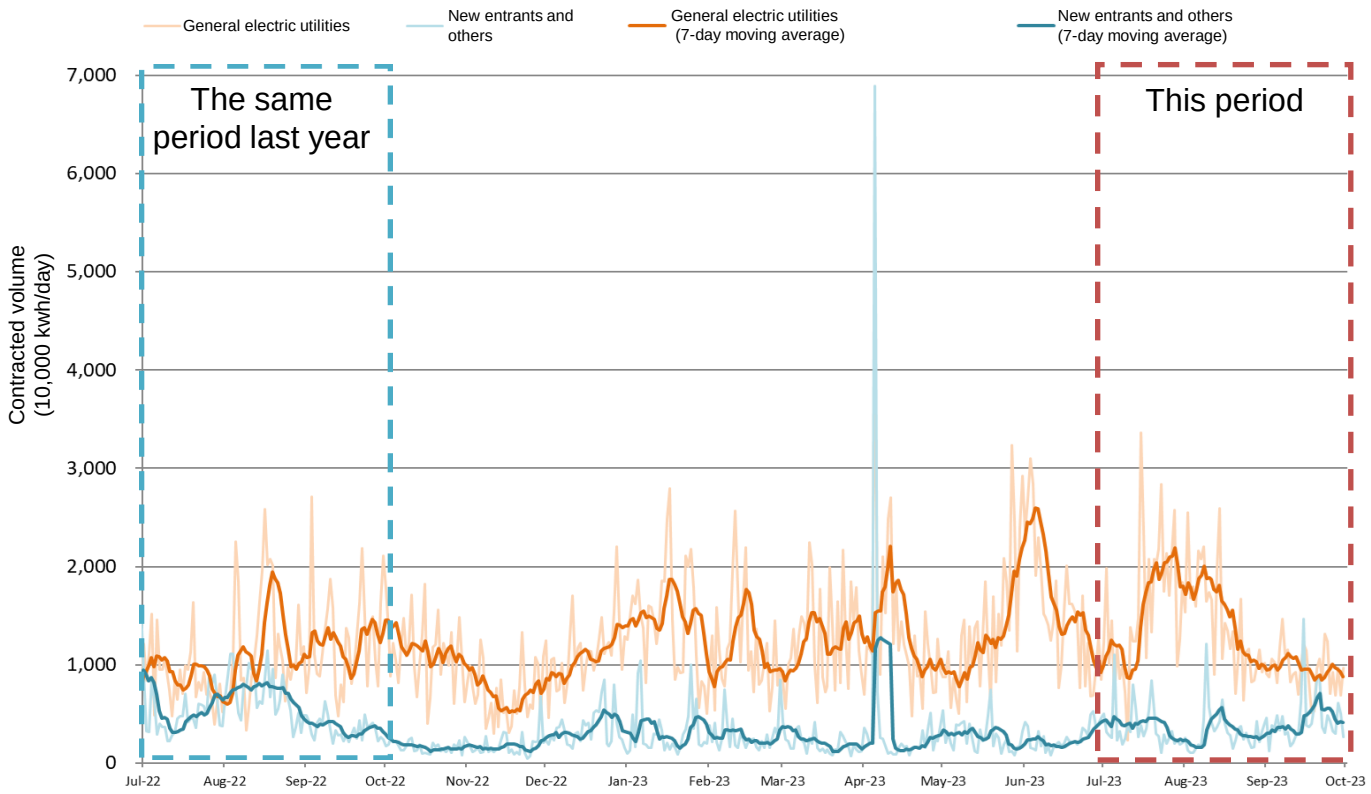
* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, and JERA.

July to September 2023 period

Intraday market contracted buy volume by business operator category

- ○ During this period, the intraday market contracted buy volume was 1.22 billion kWh for general electric utilities and 350 million kWh for new electric power and other business operators.
- ○ Compared to the same period last year, the increase was 1.2 times for general electric utilities and 0.7 times for new entrants and other business operators.
- ○ The contracted buy volume by general electric utilities exceeds the contracted sell volume, and the contracted sell volume by the new entrants and other business operators exceeds the contracted buy volume.

Intraday market: Trends in contracted buy volume
(July 1, 2022 to September 30, 2023)



Main data

Contracted buy volume by general electric utilities (July to September 2023)
12.2 billion kWh

Comparison of contracted buy volume by general electric utilities for the same period last year (vs. July to September 2022)
1.2 ×

Contracted buy volume by new entrants and other business operators (July to September 2023)
3.5 billion kWh

Comparison of contracted buy volume by new entrants and other business operators for the same period last year (vs. July to September 2022)
0.7 ×

* 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.

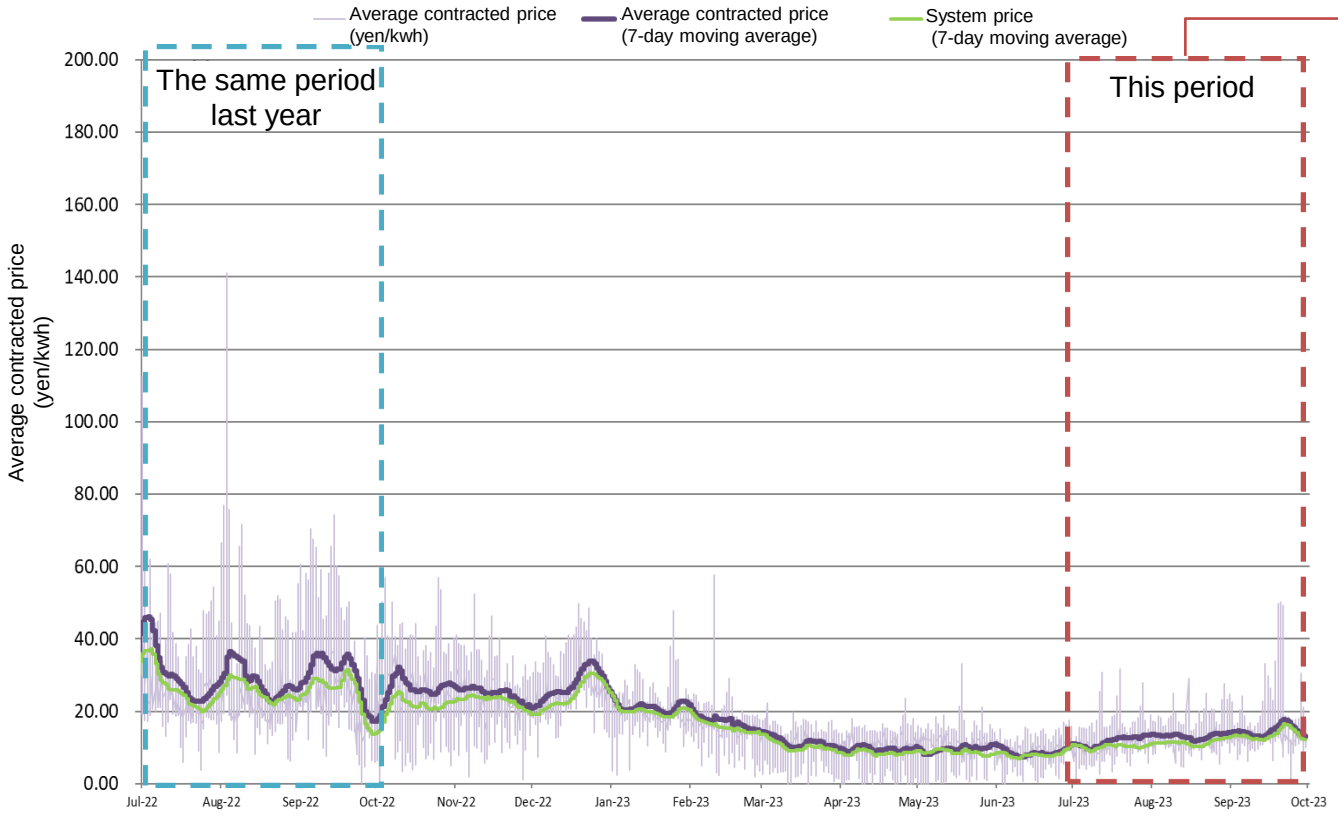
July to September 2023 period

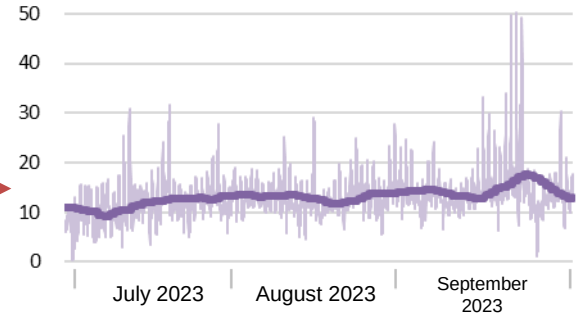
Average contracted price in the intraday market

○ The average contracted price in the intraday market during this period was 13.2 yen/kWh. This was a 53.5% decrease compared to the average of 28.4 yen/kWh for the same period last year.

○ The average contracted price in the intraday market during this period exceeded the average system price by 1.5 yen/kWh.

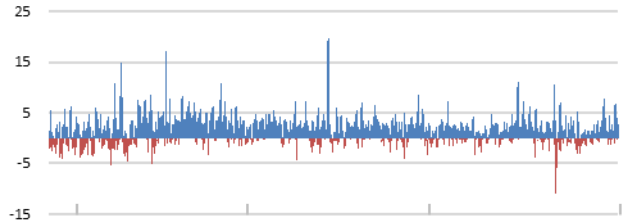
Intraday market: Trends in the average contracted price (July 1, 2022 to September 30, 2023)





Price difference (Average intraday market price - system price)

Maximum difference (positive): +19.74 yen/kWh (02:00, August 15)
Maximum difference (negative): - 10.92 yen/kWh (17:00, September 20)



Main data

Unit: yen/kWh

	This period	The same period last year	Difference
Intraday market Average contracted price	13.2	28.4	-15.2
(Reference) Day-Ahead market Average system price	11.7	24.8	-13.1
Highest value	50.2	141.2	-91.0
Lowest value	0.44	0.08	+0.36

Highest value: September 20, 2 frames in total
Lowest value: July 2, one frame in total

July to September 2023 period

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

○ There were no contract performances in the forward market during this period.
○ Furthermore, the electricity futures contract performance during this period was 238,711 MWh for TOCOM and 3,789,684 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 (Same quarter of the previous year)
Contracted volume	**Total**	0	**0**	**0**	**0**	**0**	**0**	**2,620**
	Tokyo	0	0	0	0	0	0	2,620
	Kansai	0	0	0	0	0	0	0
Sell bid	**Total**	**1,492,382**	**370,104**	**884,088**	**95,690**	**142,500**	**0**	**205,904**
	Tokyo	423,202	43,344	373,368	4,090	2,400	0	174,376
	Kansai	1,069,180	326,760	510,720	91,600	140,100	0	31,528
Buy bid	**Total**	**5,538,148**	**808,248**	**3,574,680**	**169,570**	**985,650**	**0**	**6,970,874**
	Tokyo	163,036	136,416	0	26,620	0	0	1,510,106
	Kansai	5,375,112	671,832	3,574,680	142,950	985,650	0	5,460,768

(Reference) Comparison of contracted volume between the futures market [*2] (TOCOM, EEX) and base load market

(TOCOM)

Item	Area	Total (this quarter)	Base load	Daytime road	(Reference) Total (Same quarter of the previous year)
Contracted volume	**Total**	**238,711**	**207,050**	**31,661**	**564,678**
	Tokyo	182,776	154,939	27,836	298,576
	Kansai	55,936	52,111	3,824	266,102

(EEX)

Item	Area	Total (this quarter)	Base load	Peak load	(Reference) Total (Same quarter of the previous year)
Contracted volume	**Total**	**3,789,684**	**3,607,584**	**182,100**	**1,533,504**
	Tokyo	3,209,916	3,063,240	146,676	1,179,048
	Kansai	579,768	544,344	35,424	354,456

(Base load market [*3])

Item	Products	Area	Total (this quarter)	(Reference) Total (Same quarter of the previous year)
Contracted volume	Short-term products	**Total**	**3,881,556**	**8,093,364**
		Tokyo	1,020,540	-
		Kansai	2,843,496	-
		Kyushu	17,520	-
	Long-term products	**Total**	**1,722,216**	**-**
		Tokyo	868,116	-
		Kansai	844,464	-
		Kyushu	9,636	-

* 1. In the forward market, the contracted volume of each product is converted into kWh (24-hour products, total number of days including holidays × 24 hours; daytime products, number of days excluding holidays × 10 hours), and aggregated by contracted month.
* 2. Futures market data is aggregated based on data published on the JPX and EEX websites.
* 3. Base load market is calculated based on JEPX public data and converted to kWh. There is no comparison from the same period last year due to the addition of long-term products and area reorganization in this year.

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 gross bidding
  - ● 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

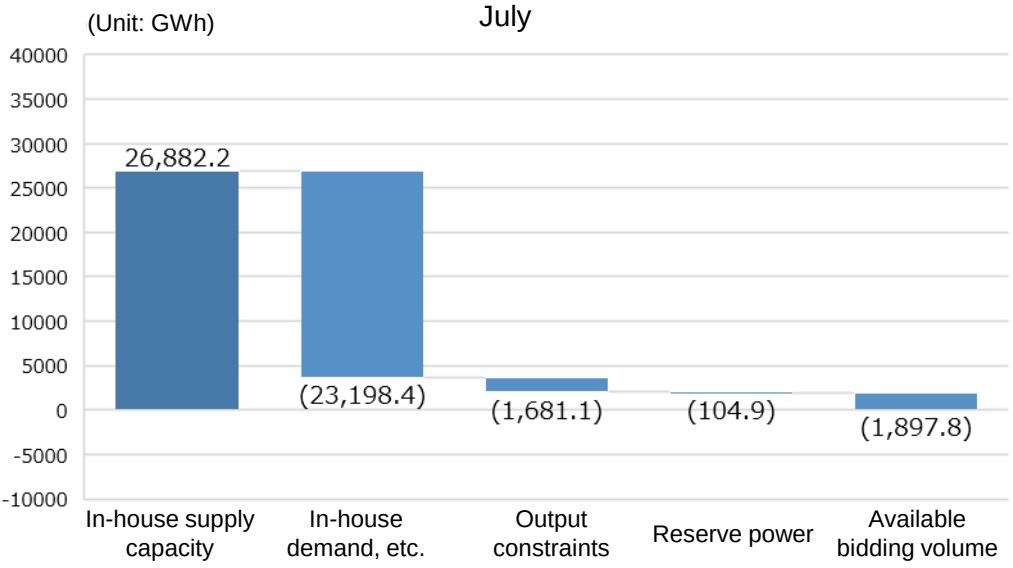
[Medium- to long-term trend report]

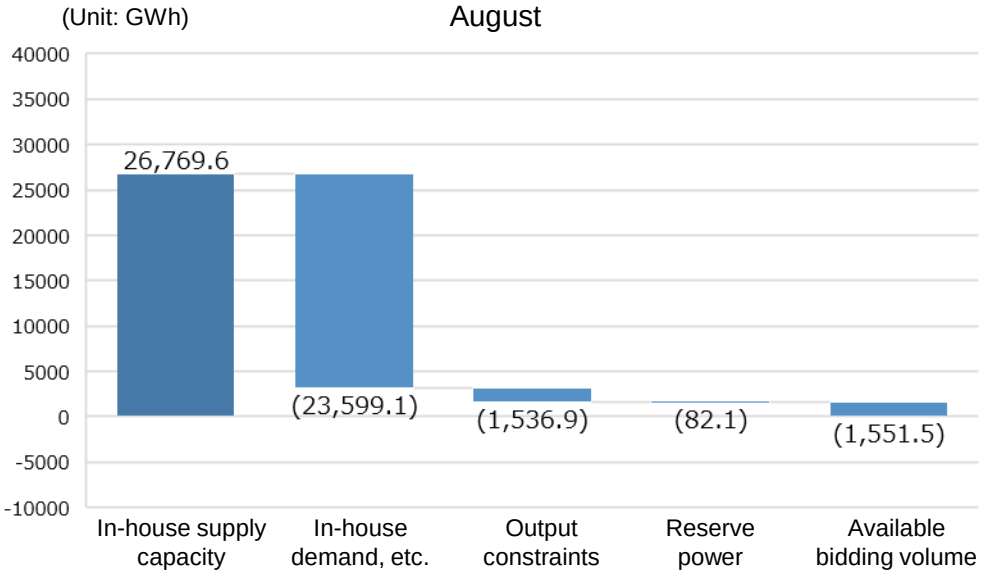
- ◆ Wholesale electricity market
  - ● JEPX market
    - Trends in contracted volume
    - Trends in contracted price
    - Trends in the market splitting occurrence rate
  - ● JEPX spot price and fuel cost
- ◆ Retail market
  - ● Trends in new entrants share by area
  - ● Market share by area
  - ● 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

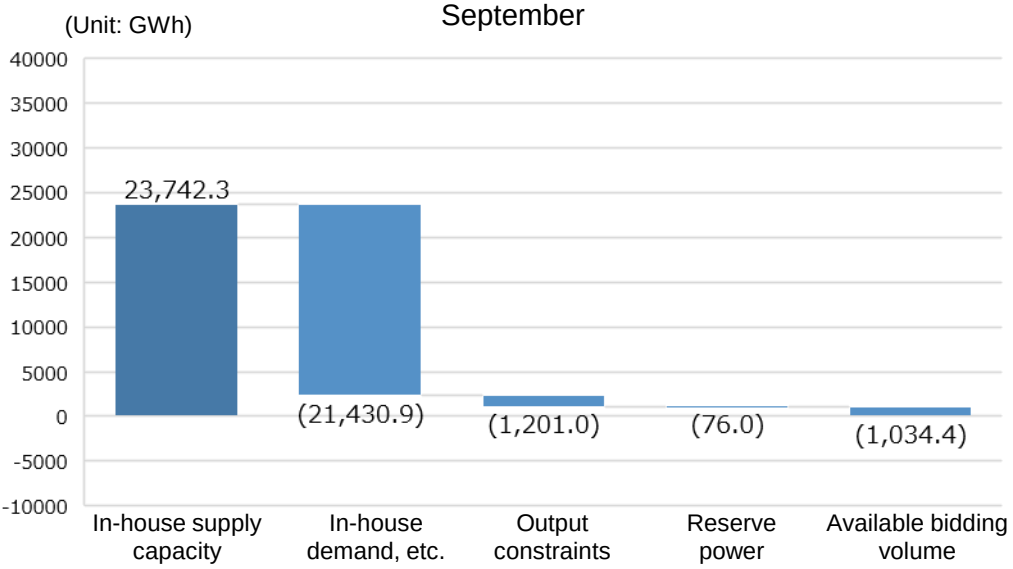
July to September 2023 period

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

○ The total available bidding volume on the sample date of each month (data aggregated over seven days each month) is approximately 4% to 7% of the in-house supply capacity (July: 7.1%, August: 5.8%, September: 4.4%).







[Date for aggregation of available bidding volume]

◆ The secretariat designated seven sample days each month and evaluated based on data provided by general electric utilities and JERA.
- July includes two days (July 12, 19) when the average price per frame in the intraday market soared to more than 30 yen/kWh.
- September includes four days (September 18, 19, 20, 21) when the system price soared to 30 yen/kWh or more, and two days (September 14, 28) when the average price per frame in the intraday market soared to 30 yen/kWh or more.

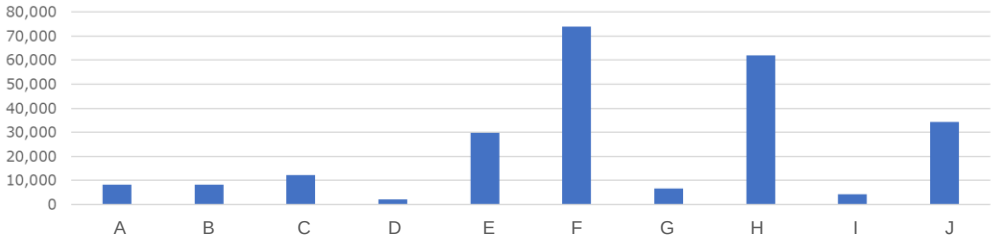
◆ Each data was collected using the specified data submission format on days when the price rises above 30 yen/kWh in the day-ahead market and the intraday market

July to September 2023 period

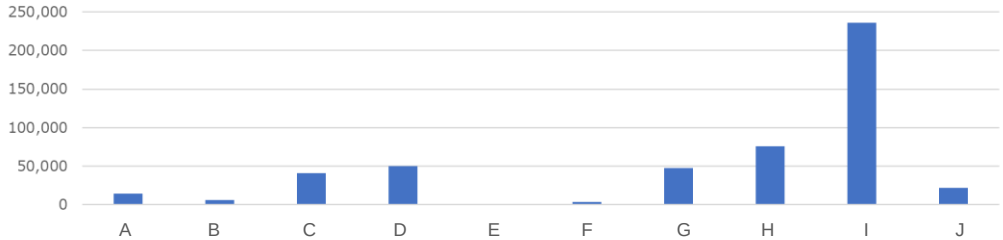
Intraday market for general electric utilities: Contract status by buyer and seller

- Contracted volume as a seller and buyer in the intraday market for the general electric utilities and JERA was aggregated.
- On the seller side, the main operators include H Electric Power, F Electric Power, and E Electric Power; on the buyer side, the main operators include I Electric Power, H Electric Power, and C Electric Power. There is a tendency for the contracted volume to be high in July and August, when demand is high.

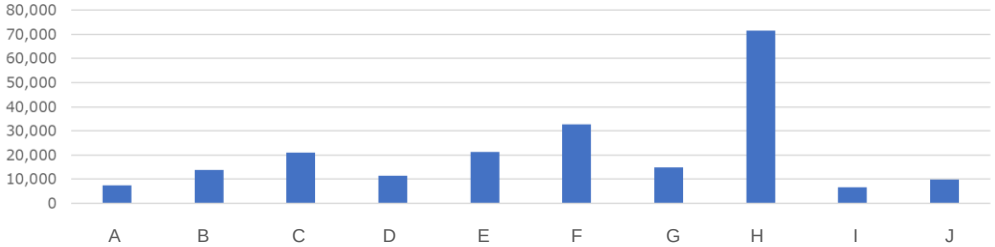
Contracted volume by seller in the intraday market, July 2023 (Unit: MWh)



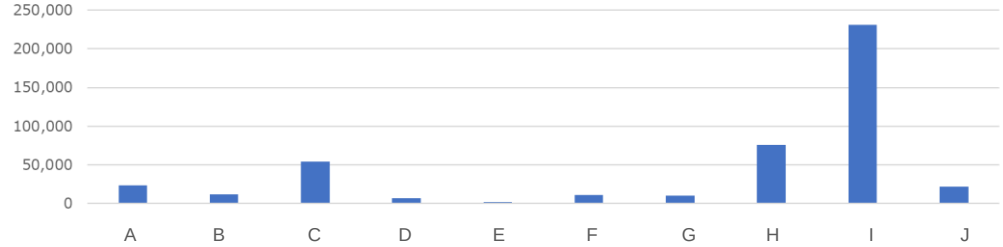
Contracted volume by buyer in the intraday market, July 2023 (Unit: MWh)



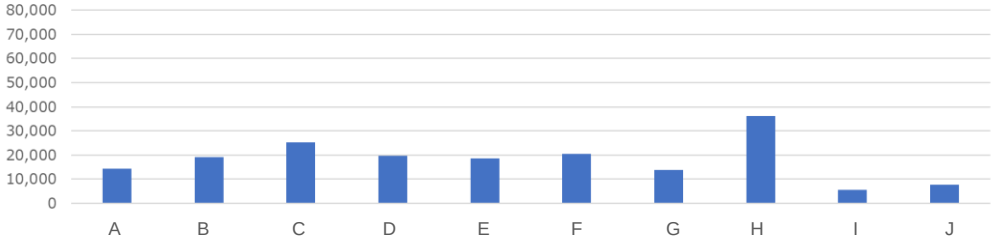
Contracted volume by seller in the intraday market, August 2023 (Unit: MWh)



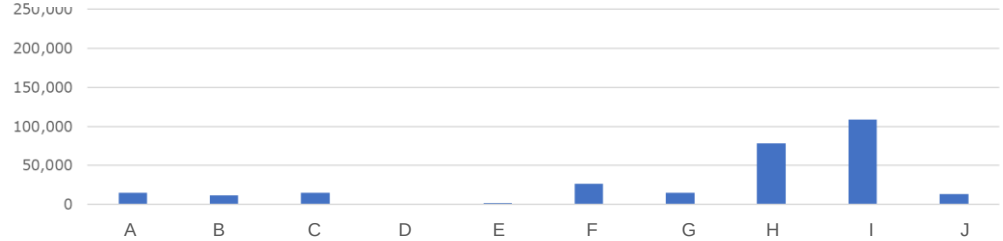
Contracted volume by buyer in the intraday market, August 2023 (Unit: MWh)



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



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



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

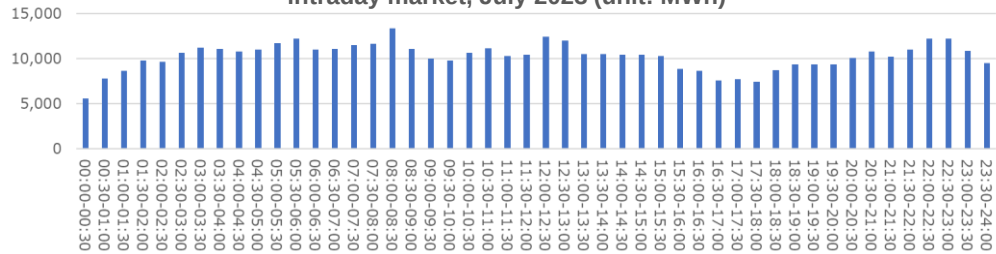
July to September 2023 period

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

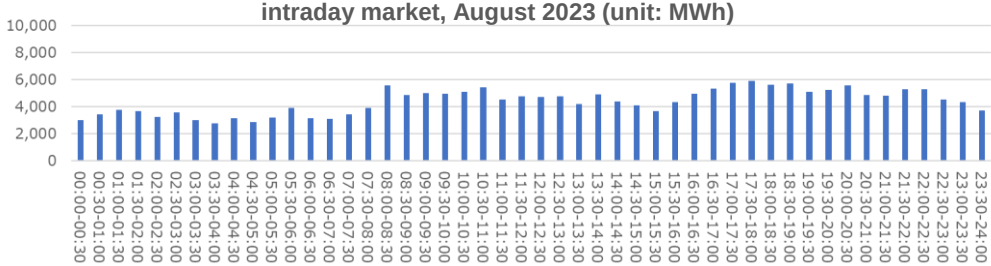
- The figure below shows the contracted volume in the intraday market for the general electric utilities and JERA, broken down by seller and buyer for each product frame.
- On the seller side, a peak can be seen during the lighting zone, and on the buyer side, there is a tendency for the contracted volume to be large throughout the day during the demand season of July and August.

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

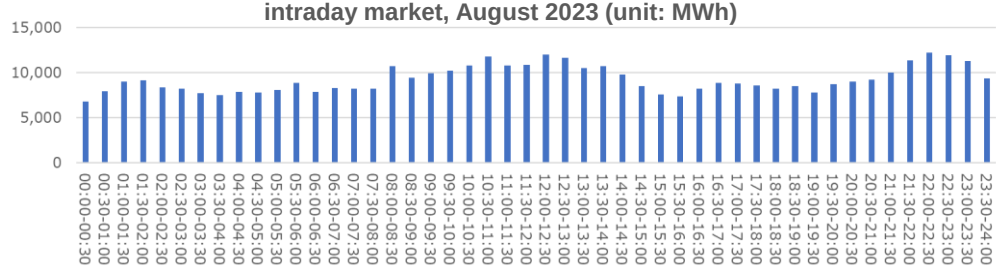
Contracted volume by buyer and product period in the intraday market, July 2023 (unit: MWh)



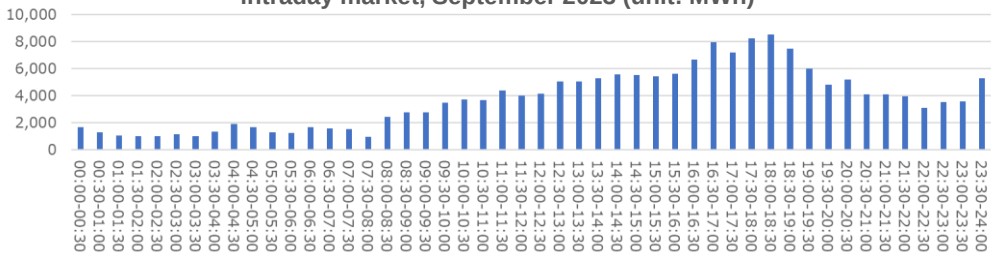
Contracted volume by seller and product period in the intraday market, August 2023 (unit: MWh)



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



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



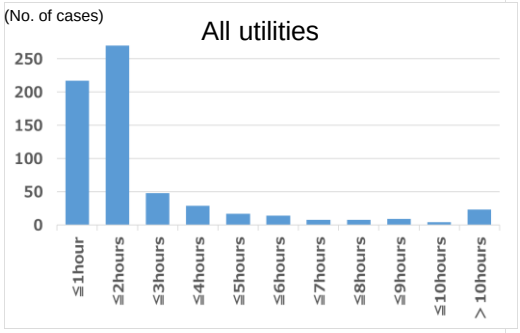
Contracted volume by buyer and product period in the intraday market, September 2023 (unit: MWh)

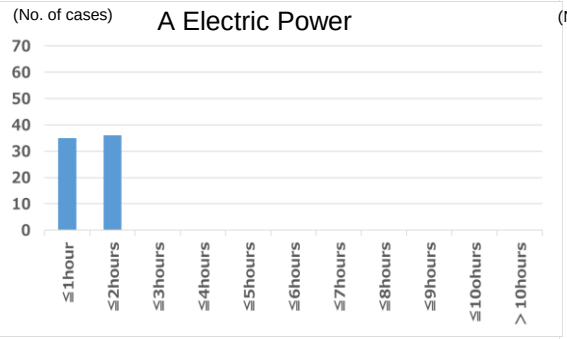
*Aggregated from JEPX data (undisclosed)
*Calculated for general electric utilities (excluding Okinawa Electric Power) and JERA

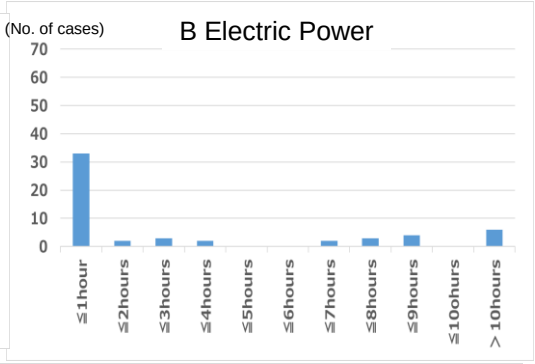
July to September 2023 period

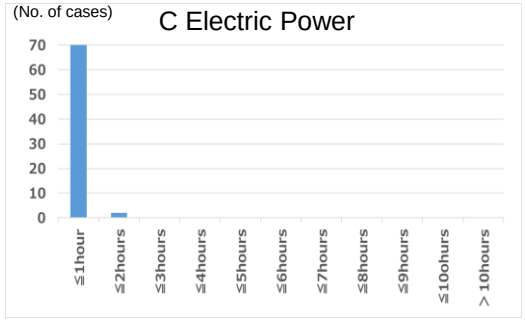
Status of withdrawal of sell bids by general electric utilities
(Distribution of number of cases by remaining time until GC)

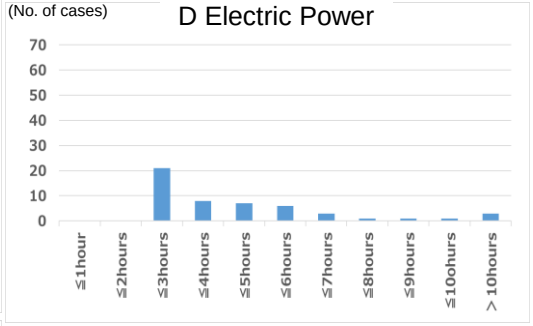
○ For the tree sampling days (July 19, August 10, September 20), the distribution of the number of utilities was checked to see how many hours before GC they withdrew their sell bids. It was found that the trend that the distribution concentrates in the period between “one hour before GC” and “two hours before GC” has continued. The number of cases corresponding to “1 hour before” was 217, increased from the previous quarter (198 cases).

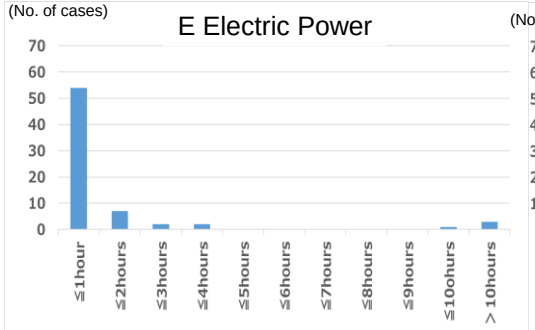


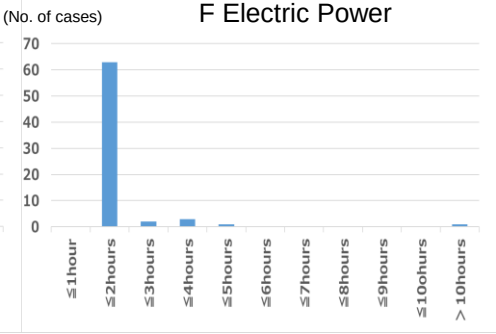


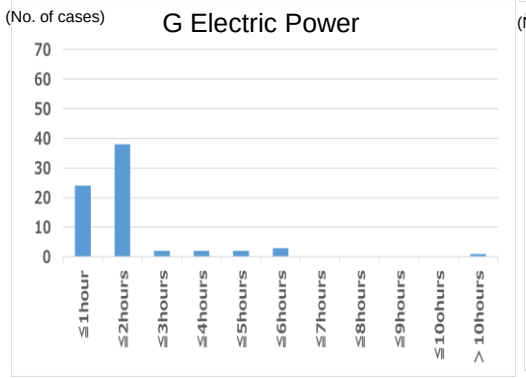


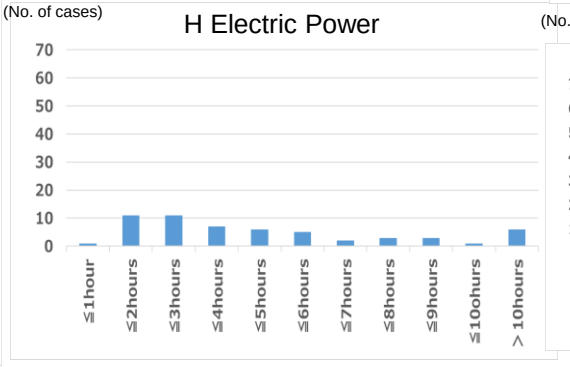


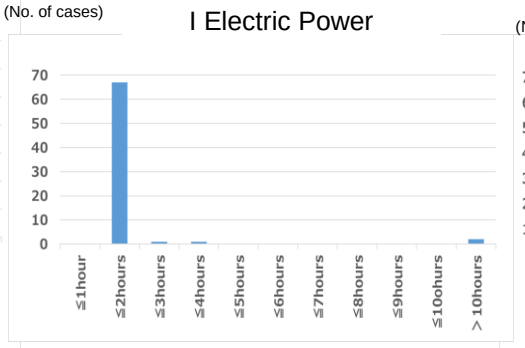


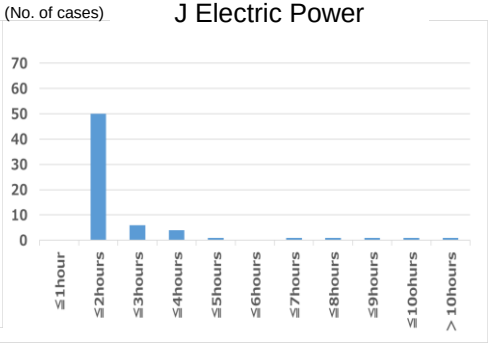










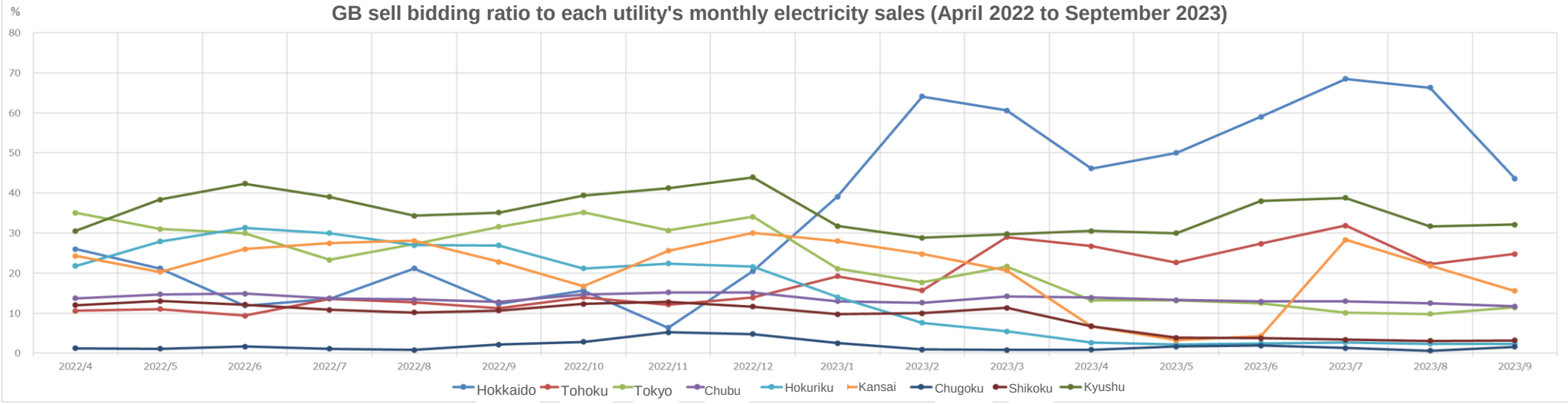


* The number of sell bids on the board was checked at 59 minutes and 59 seconds every hour. The time until the GC was calculated using the time when there were no sell bids on the board as the withdrawal time.
* Only "00-minute" frames (e.g., 01:00) were counted, and "30-minute" frames (e.g., 01:30) were not counted. Frames with always 0 sell bids were excluded from the calculations.
* The secretariat sampled the characteristic days of each month. (July: Days when the price soared by 30 yen or more (Intraday market average price). August: Weekdays when the average system price was the lowest in August (excluding the low demand period during the Bon Festival period). September: Weekdays that include the time period when the average system price was the highest over the course of three months.)

July to September 2023 period

Status of gross bidding implementation by general electric utilities

- ○ As of September 2023, the ratio of the gross bidding sell volume to the electricity sales volume of each general electric utility has remained roughly the same, except for some utilities, although there were differences in the progress of each utility.
- ○ Hokkaido Electric Power increased the ratio by the end of FY2022 to achieve its annual transaction target of 30%, and has maintained a high ratio since then.
- ○ Chugoku Electric Power has reduced gross bidding since November 2021. According to the utility, “On days when market prices are expected to be extremely high or low, there is a risk of a supply shortage or surplus, so we refrain from gross bidding that involves buying at a high price or selling at a low price.”
- ○ It has been confirmed that Hokuriku Electric Power has not conducted gross bidding since March 2023. According to the utility, “The market price often remains lower than the marginal cost of coal-fired power that is subject to gross bidding, and there is a risk that only the repurchase portion of gross bidding will be executed, resulting in a shortage of reduction ranges in thermal power supply.”
- ○ Note that, based on the discussion at the 87th Specialized Meeting for Fee Examination (July 28, 2023), gross bidding has been suspended starting from October 1, 2023.



(unit: %)

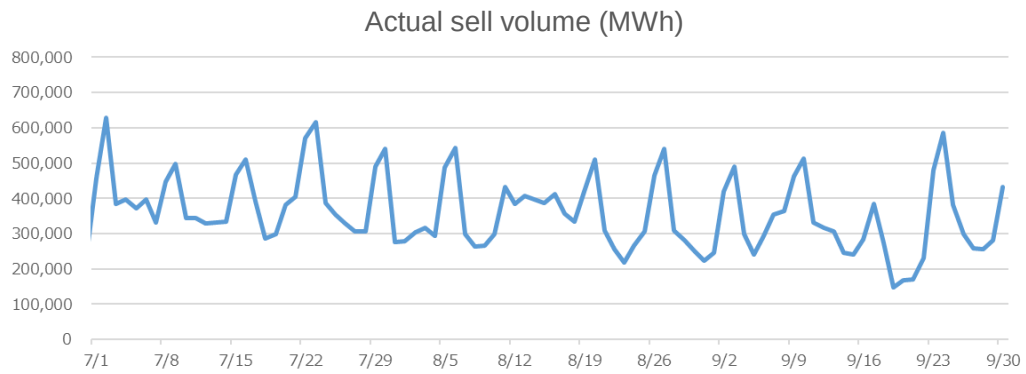
	Trading volume target	2022/4	2022/5	2022/6	2022/7	2022/8	2022/9	2022/10	2022/11	2022/12	2023/1	2023/2	2023/3	2023/4	2023/5	2023/6	2023/7	2023/8	2023/9
Hokkaido	Approx. 30% at the end of FY2019	26.0	21.2	11.9	13.6	21.2	12.3	15.7	6.4	20.5	39.1	64.1	60.6	46.1	50.0	59.0	68.5	66.3	43.6
Tohoku	Approx. 20%	10.6	11.1	9.4	13.6	12.7	11.2	14.0	12.1	13.9	19.2	15.7	29.0	26.7	22.6	27.4	31.9	22.3	24.8
Tokyo	Approx. 20% at the end of FY2018	35.0	31.0	30.0	23.3	27.2	31.6	35.2	30.6	34.0	21.1	17.7	21.7	13.2	13.2	12.5	10.1	9.8	11.5
Chubu	Further increase by about 10%	13.7	14.7	14.9	13.7	13.4	12.8	14.7	15.2	15.1	13.0	12.6	14.2	13.9	13.3	12.9	13.0	12.5	11.7
Hokuriku	20-30% as soon as possible	21.8	27.9	31.3	30	27	26.9	21.2	22.4	21.6	14.0	7.6	5.5	2.6	2.2	2.5	2.7	2.3	2.4
Kansai	Approx. 20% within one year	24.3	20.3	26.0	27.5	28.1	22.8	16.7	25.5	30.0	28.0	24.8	20.7	6.7	3.3	4.3	28.3	21.9	15.5
Chugoku	Approx. 20% within FY2018	1.3	1.1	1.7	1.1	0.9	2.2	2.8	5.2	4.8	2.5	1.0	0.8	0.9	1.7	1.9	1.3	0.6	1.6
Shikoku	Approx. 30% in FY2020	12.0	13.1	12.1	10.8	10.2	10.6	12.3	12.8	11.7	9.7	10.0	11.3	6.8	3.9	3.8	3.4	3.1	3.2
Kyushu	Approx. 30% within 3 years from the start	30.5	38.4	42.3	39.0	34.3	35.1	39.4	41.2	43.9	31.8	28.8	29.8	30.5	30.0	38.0	38.8	31.7	32.1

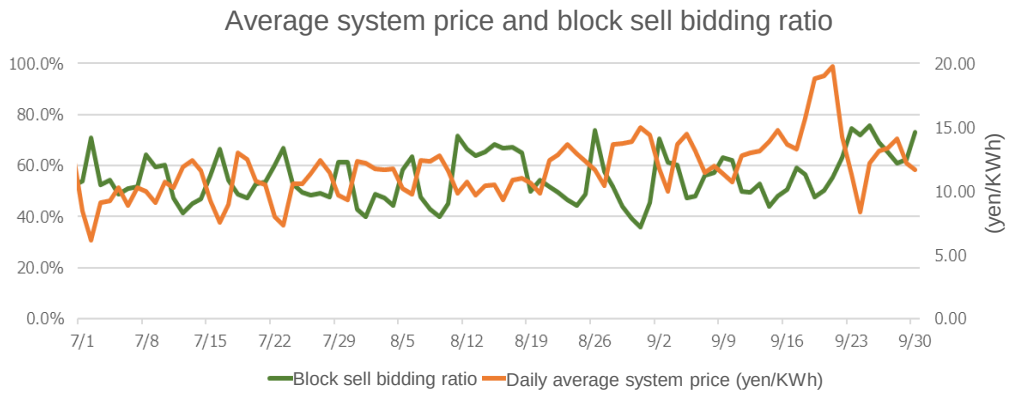
* For Hokkaido Electric Power and Tohoku Electric Power, their trading volume targets are set in conjunction with online bidding, so they are calculated as a percentage of the total sell volume, including online bidding.
* Trading volume target: Excerpt from the 28th Specialized Meeting for Fee Examination materials. Future trading volume targets are presented.
* Hokuriku Electric Power has suspended actual gross bidding since March 2023, and the figures in the table represent the implicit auctions using the GB account.

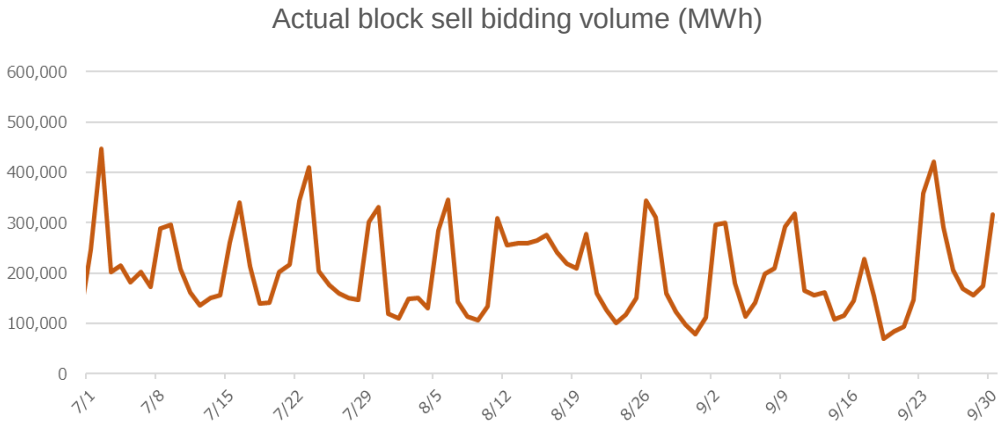
July to September 2023 period

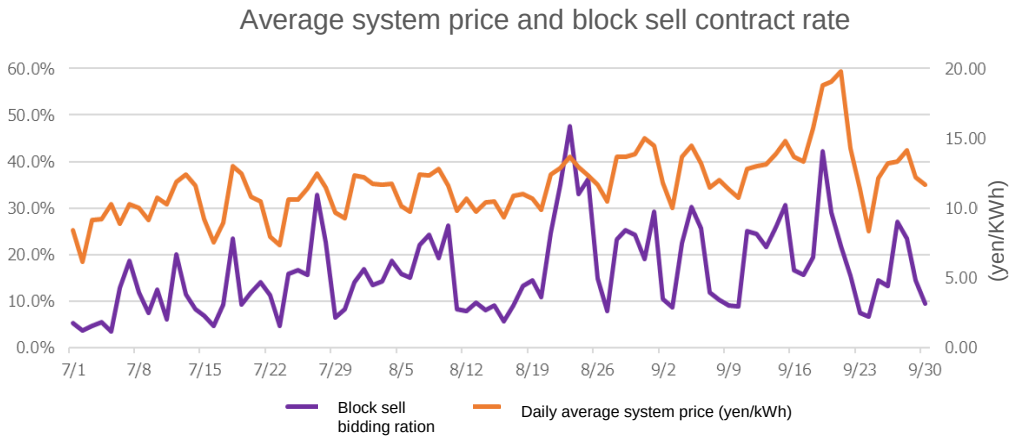
Status of block sell bidding

- ○ The block sell bidding ratio tends to be lower on days when the spot prices rise and higher on days when spot prices fall.
- ○ The block sell contract rate continues to tend to be higher on days when spot prices rise and lower on days when spot prices fall.
- ○ The daily block sell contract rate for the quarter was approximately 16.4%, higher than the 8.1% in the previous quarter.









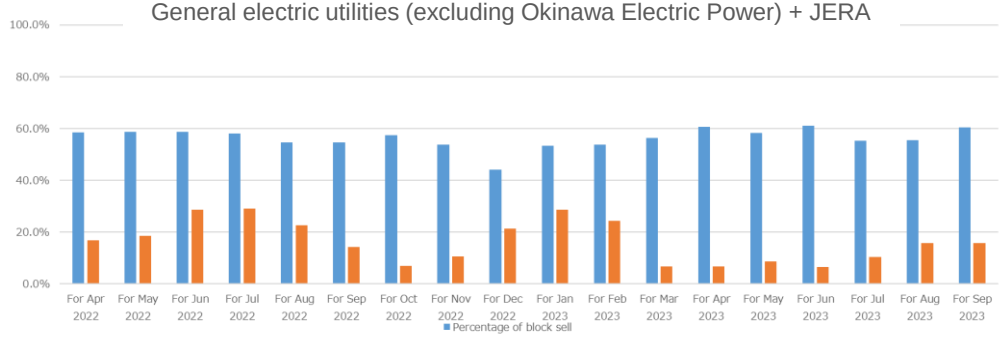
*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa Electric Power) and JERA.
*The block bid ratio is calculated as the ratio of the actual block bidding volume (b) for which no buyer has been determined to the actual sell volume (a).
(a) Actual sell volume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

July to September 2023 period

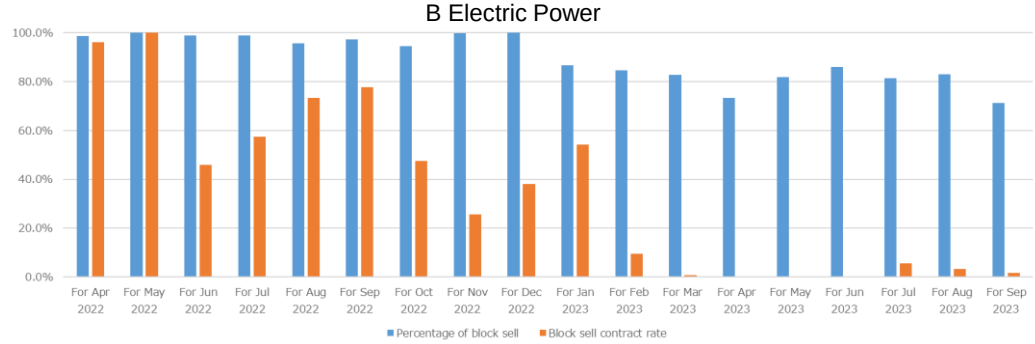
Monthly trends in percentage of block sell and contract rate by business operator (1/2)

○ The contract rates for D Electric Power and E Electric Power are higher than those of other companies.
While the block bidding ratio is high for A Electric Power, B Electric Power, C Electric Power, F Electric Power, J Electric Power, and K Electric Power, the contract rate is limited. Regarding K Electric Power, the bidding method will be changed after the tool revision (scheduled for January 2024).

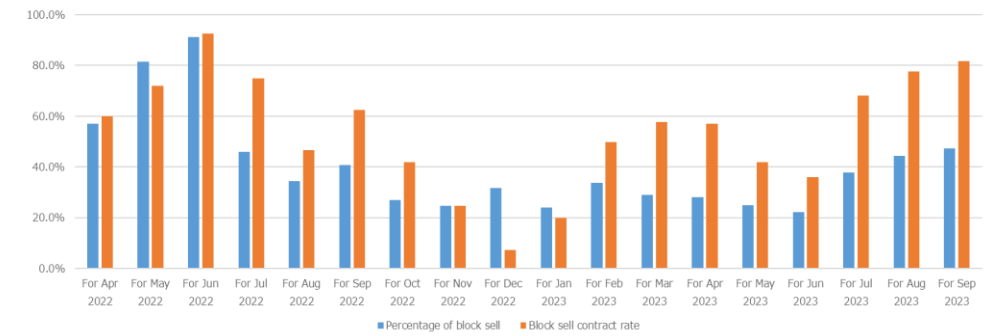
General electric utilities (excluding Okinawa Electric Power) + JERA



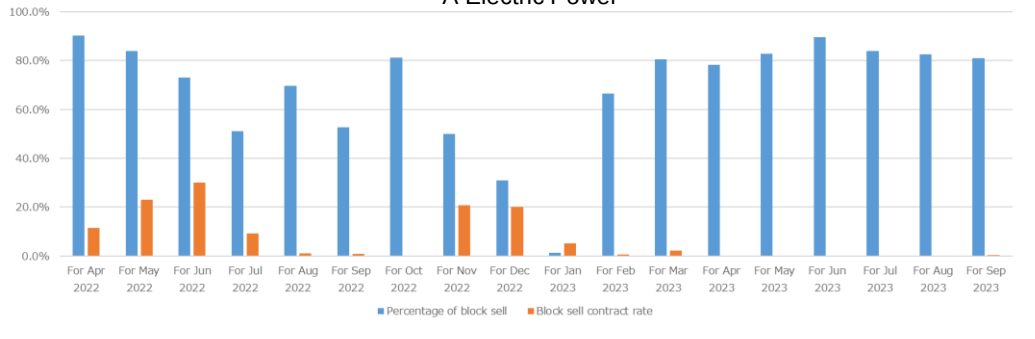
B Electric Power



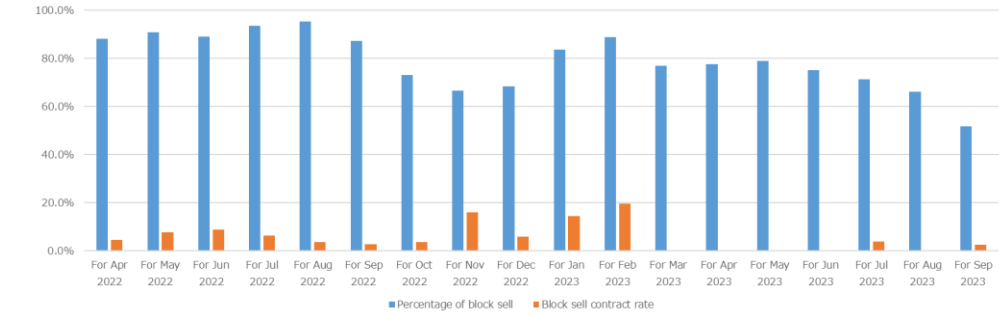
D Electric Power



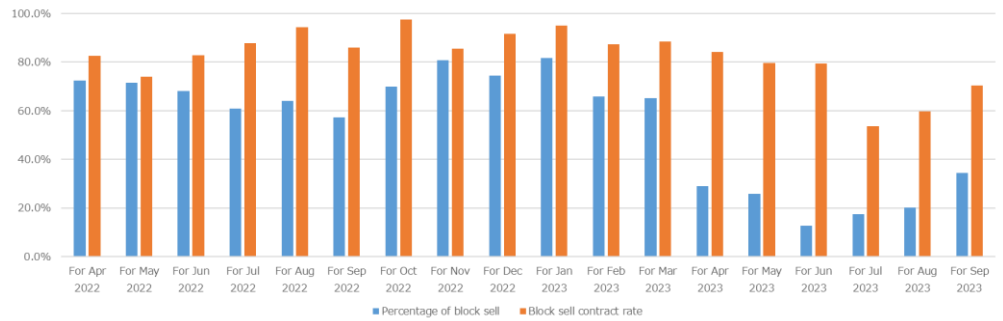
A Electric Power



C Electric Power



E Electric Power

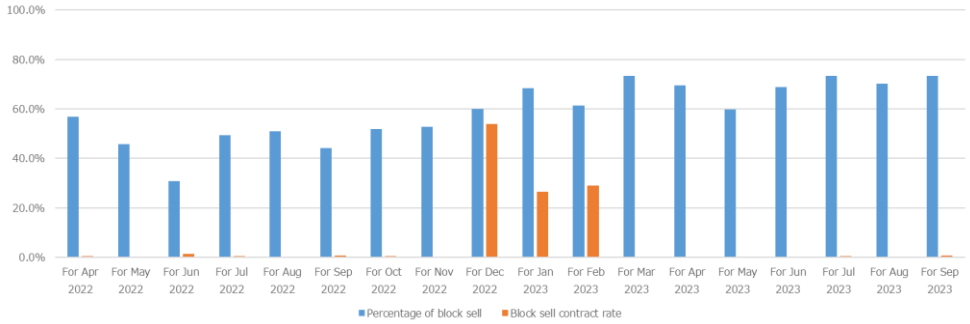


*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa Electric Power) and JERA.

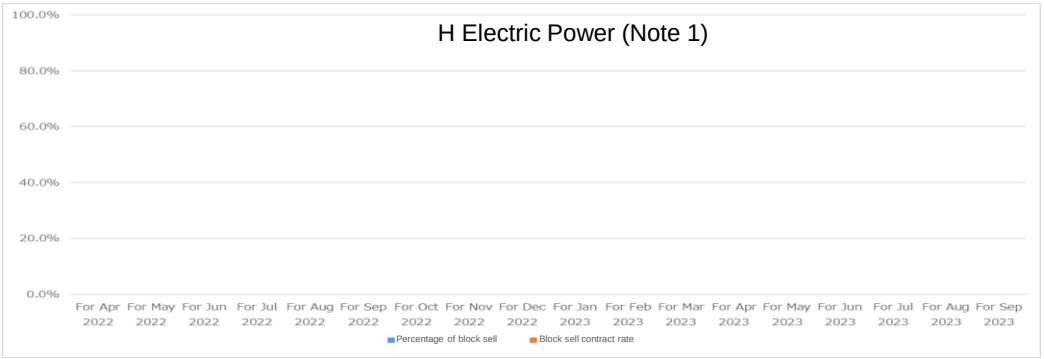
July to September 2023 period

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

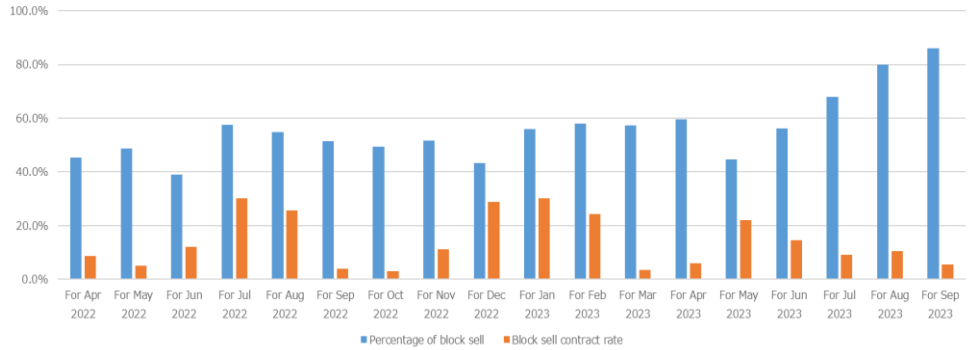
F Electric Power



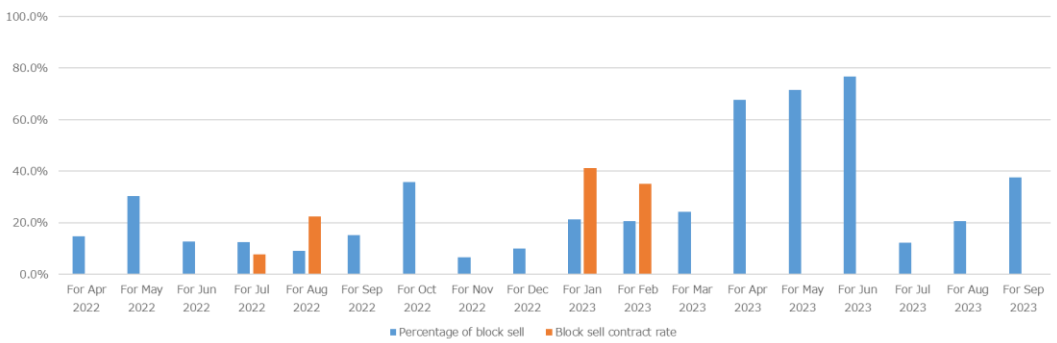
H Electric Power (Note 1)



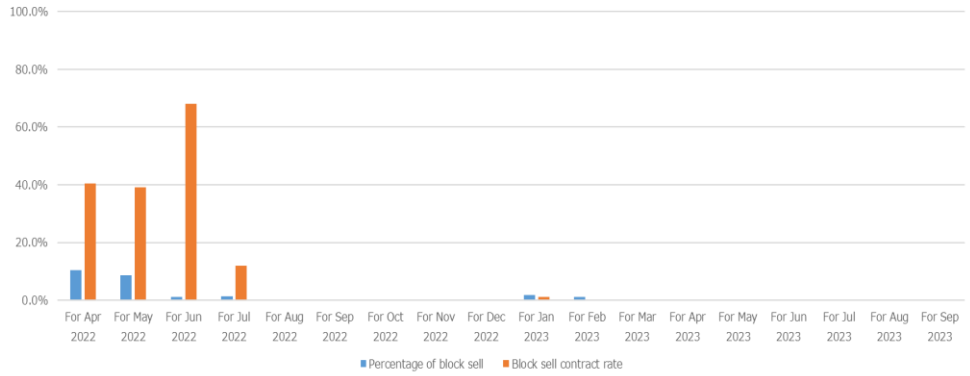
J Electric Power



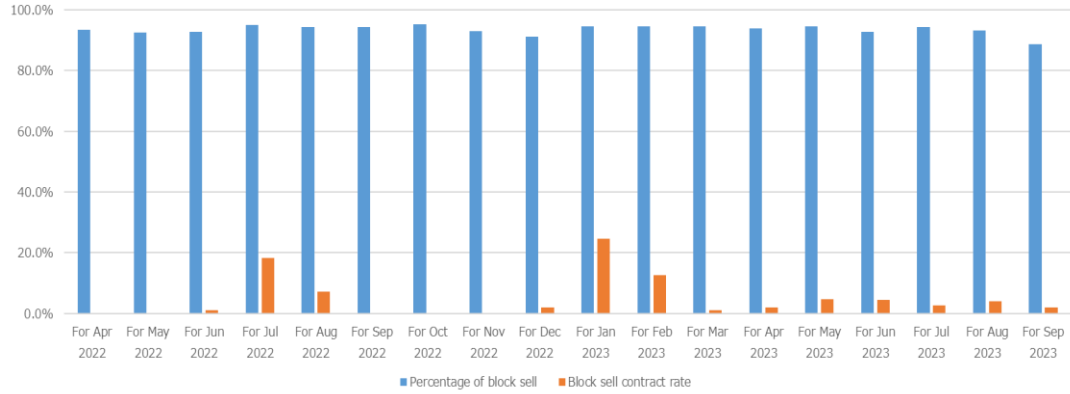
G Electric Power



I Electric Power (Note 2)



K Electric Power



*Calculated based on data provided by general electric utilities (nine companies excluding Okinawa Electric Power) and JERA.
(Note 1) H Electric Power does not conduct block sell bidding.
(Note 2) I-Electric Power has not conducted any block sell bidding this term.

July to September 2023 period

Supply of power for wholesale electricity utilities (J-Power)

○ So far, approximately 619,000 kW*5, or approximately 5%, of the 12,000,000 kW*4 has been supplied. No progress has been seen compared to the same period last year.

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

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

Source: Information provided by general electric utilities

*1: Sending end output, *2: Starting output, *3: Annual total power generation amount, *4: Total equipment output excluding approximately 5 million kW of pumped storage power plant output, *5: For Hokkaido Electric Power, conveniently estimated from the already supplied amount.

* It does not include newly supplied amount since it was a supply to the base load market.

July to September 2023 period

Status of competitive bidding, etc. for public hydroelectric business

○ Local governments manage 2,310,000 kW of hydroelectric power generation projects. Among them, 690,000 kW have been contracted through general competitive bidding. Compared to the same period last year, it remains almost the same, but there was a shift to public proposals at some power plants due to the termination of the FIT. (New)

○ Of the remaining 1.62 million kW, approximately 81% continue to have a private contract with general electric utilities, and approximately 19% is sold as a FIT power source or renovated to apply 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 September 30, 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 proposals	Tohoku Electric Power
	1 hydroelectric power plant	450		Kuji Regional Energy
Akita Prefecture	12 hydroelectric power plants	92,900	Public proposals	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 proposals	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 proposals	Yamagata Power Supply
Tochigi Prefecture	8 hydroelectric power plants	60,700	Public proposals	TEPCO Energy Partner
Tokyo	3 hydroelectric power plants	36,500	Public proposals	ENEOS
Yamanashi Prefecture	1 hydroelectric power plant *2	380	Public proposals	Ennet
Nagano Prefecture	18 hydroelectric power plants *1	61,855	Public proposals	Consortium (Diamond Power, Marubeni Power Retail, UPDATER)
Niigata Prefecture	9 hydroelectric power plants	114,200	General competitive bidding	Tohoku Electric Power
Kyoto	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	**686,765**		

Total number: 19

Total maximum output: 686,765 kW

[29.8% of total hydropower equipment output]

Source: Information provided by public municipalities

*1 Starting from the July to September 2021 report, FIT power sources that shifted to public proposals or general competitive bidding have also been included in the review for the adjustment.
(Nagano Prefecture had set 22 locations to public proposals; however, the number was changed to 18 because 4 locations are currently being replaced due to FIT application, etc. Seven of them are FIT power sources.)

*2 Due to the termination of FIT, shifted to general competitive bidding or public proposals.

July to September 2023 period

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

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

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

[Status of negotiations for mid-term cancellation of existing contracts]

- During this period, public municipalities did not request or consult to cancel or review the basic power supply contract (multi-year long-term contract) with the general electric utilities.

[Continuation of existing private contract]

- General electric utilities have concluded basic contracts (private contracts) with public municipalities and have held contract renewal discussions regarding fees every two years. A power supply contract has already been concluded for the two years from fiscal 2022 to 2023; however, local governments have said they would like to comprehensively consider canceling the contract midway as an option for future business operations.

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

■ The following efforts are made for private contracts with the general electric utilities.

- Establishment of electricity rate plans in partnership with general electric utilities (e.g., environmental value addition plan, investment promotion plan, local industry promotion plan, migration discount plan)

■ Electricity sales contracts are based on public proposals, divided into a general quota and a quota of new regional entrants within the prefecture.

■ After the expiration of the private contract, specific procedures are being handled through general competitive bidding and public proposals.

- Among these, Gunma Prefecture introduced a local production for local consumption type PPA, named “Gunma model,” that matches consumers and electricity retailers, and public proposals from both the consumers and electricity retailers were implemented.

Source: Information provided by general electric utilities and public municipalities

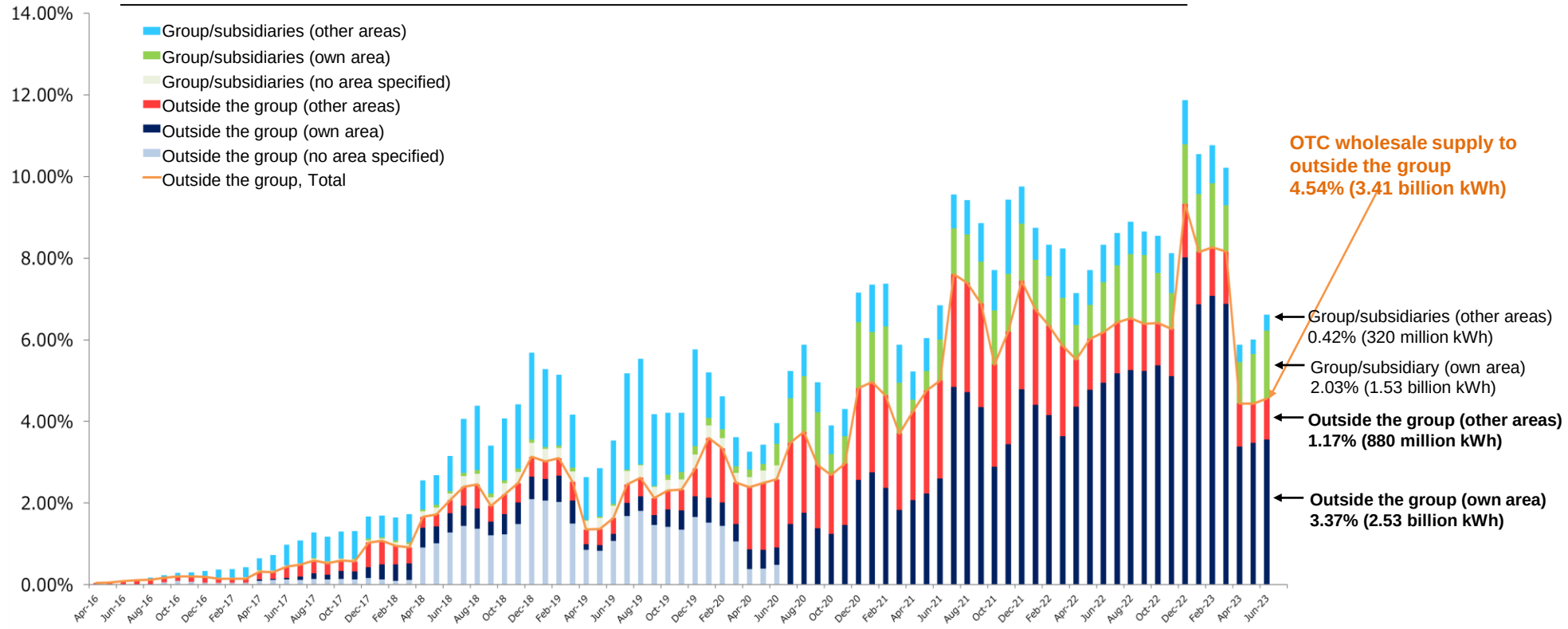
July to September 2023 period

Status of OTC transactions of general electric utilities

○ As of September 2023, the ratio of supply through OTC transactions from general electric utilities to total demand was 6.99%. (5.254 billion kWh (0.9 times compared to the same period last year))

○ 4.54% (3.41 billion kWh) of OTC wholesale supply to outside the group accounts for 26.4% of new electricity demand (12.91 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.

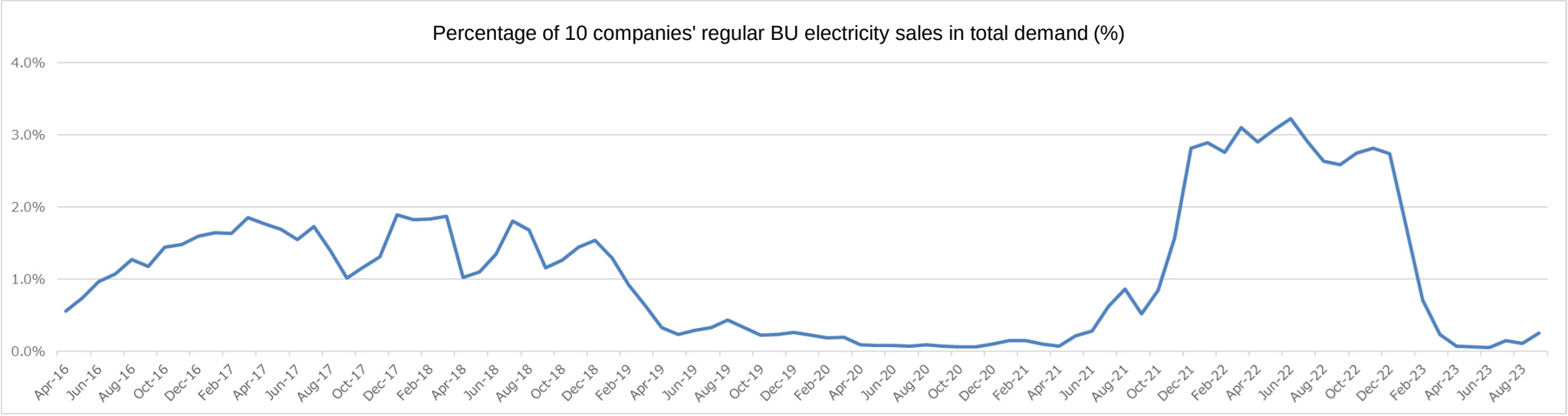
* Regarding ‘area’: Until June 2020, the companies' responses were mixed, with some answering about the "(1) power receiving area" and others about the "(2) usage area." Most responses answering about "(2) usage area" said “No area designation.”
Thus, we notified the utilities to respond regarding only the “power receiving area” to grasp the actual situation, eliminating the “No area designation” category from the July-September 2020 period.

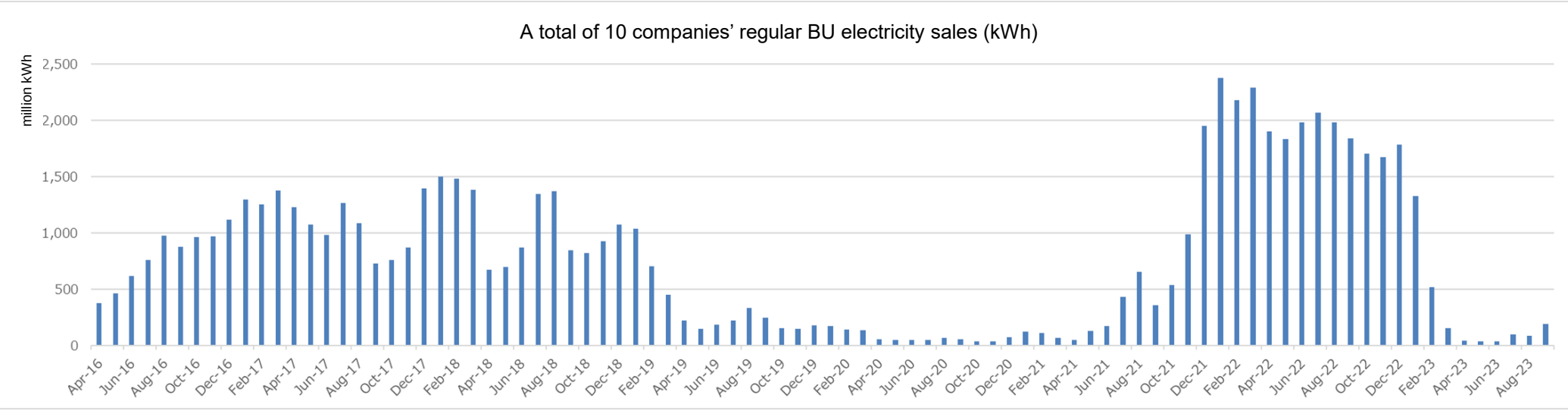
* For JERA, the calculation excluded the wholesale portion of TEPCO Energy Partner and Chubu Electric Power Miraiz.

July to September 2023 period

Trends in regular BU electricity sales

○ As of September 2023, the ratio of regular BU electricity sales to total demand was 0.3% (190 million 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 gross bidding
  - ● 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]

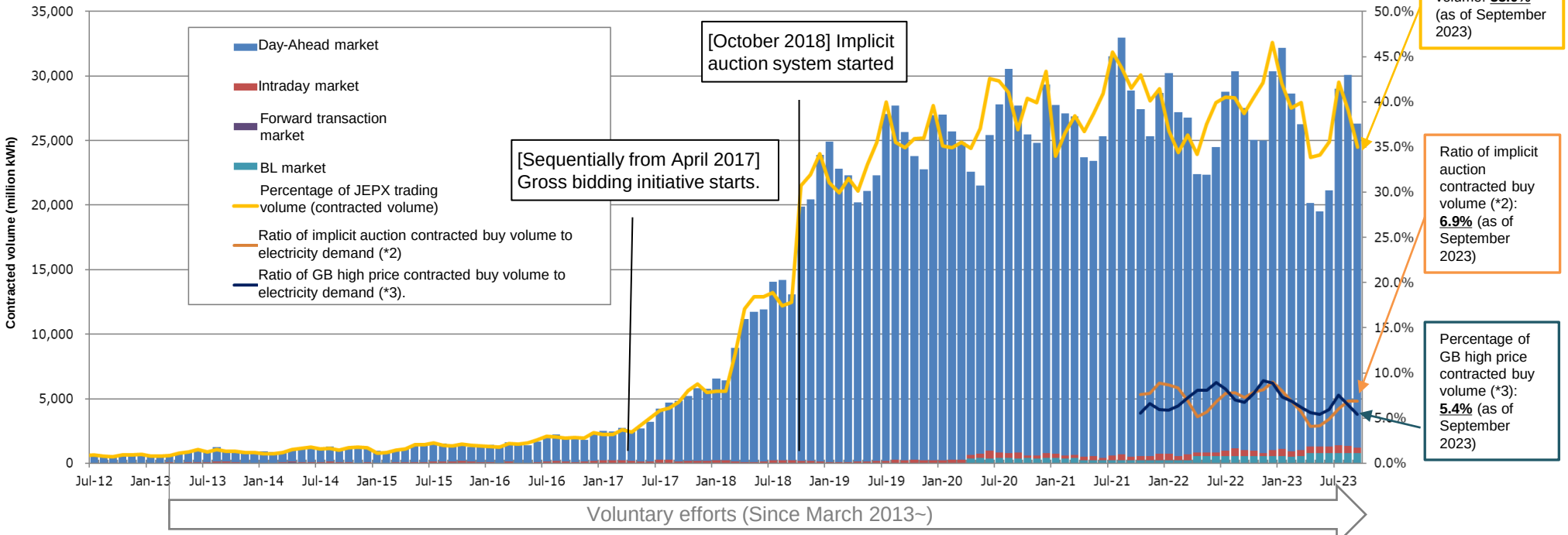
- ◆ Wholesale electricity market
  - ● JEPX market
    - Trends in contracted volume
    - Trends in contracted price
    - Trends in the market splitting occurrence rate
  - ● JEPX spot price and fuel cost
- ◆ Retail market
  - ● Trends in new entrants share by area
  - ● Market share by area
  - ● 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 September 2023, the ratio of JEPX trading volume (contracted volume*1) to Japan's electricity demand was 35.0%.
- ○ The ratios of implicit auction contracted buy volume (*2) and GB high price contracted buy volume (*3) to electricity demand were 6.9% and 5.4%, respectively.

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



	April 2012	April 2013	April 2014	April 2015	April 2016	April 2017	April 2018	April 2019	April 2020	April 2021	April 2022	April 2023	September 2023
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%	**35.0%**
(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%	**33.4%**
(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%	**0.6%**
(Percentage of BL market)	–	–	–	–	–	–	–	–	0.6%	0.4%	0.8%	1.3%	**1.0%**

*1 Total of contracted buy volume of each business operator and each frame (including contracted buy volume in cases where the same business operator contracts both buy and sell in the same frame, such as in implicit auctions by the company).
*2 The implicit auction contracted buy volume is the sum of the contracted volumes of accounts that correspond to implicit auctions as an attribute of JEPX user account data.
*3 Regarding GB high price contracted buy volume, for the regular accounts of the general electric utilities, excluding Kansai Electric Power and Hokuriku Electric Power, the contracted volume was counted at the buy bid price of 999 yen/kWh, Hokuriku Electric Power at 200 yen/kWh, and Kansai Electric Power at 210 yen/kWh or more.

Medium- to long-term trends

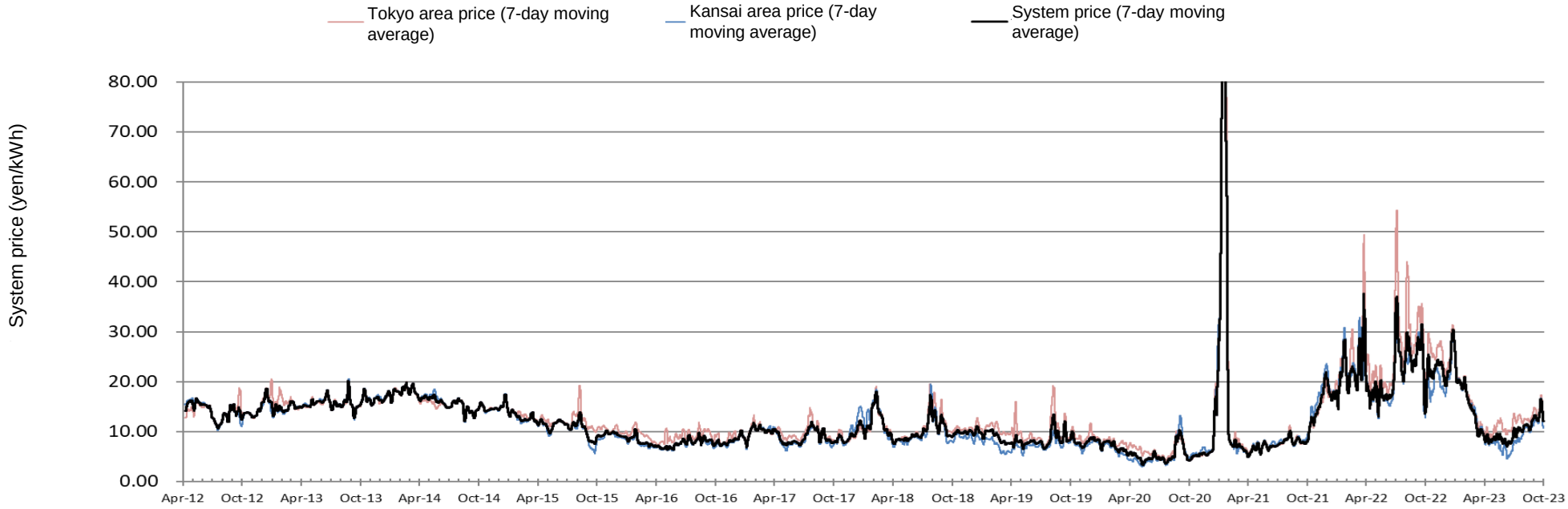
Price trends in the day-ahead market

○ The system price increased in the fall of 2021 and dropped to around 20 yen from April to May 2022. It rose again from the end of June, but fell to around 8 yen in June 2023. It has been on an upward trend since July 2023.

○ In the FY2022 annual evaluation, the price difference between Tokyo and Kansai area prices widened compared to other fiscal years. However, from July to September, the difference shrank compared to the previous quarter. (Previous quarter average: Tokyo area price, 10.6 yen/kWh; Kansai area price, 7.1 yen/kWh)

Day-Ahead market: Trends in system price

(April 1, 2012 to September 30, 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	**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	11.7
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	13.3
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	10.8

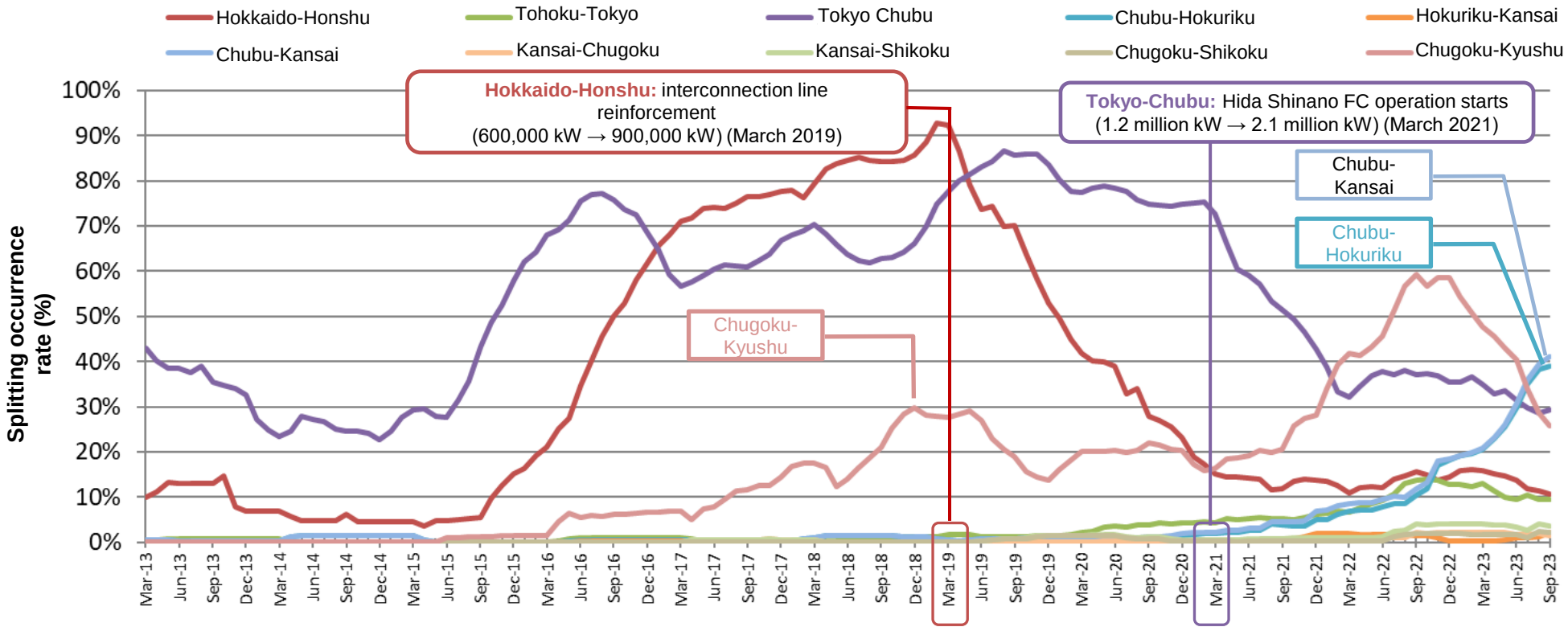
Medium- to long-term trends

Trends in the occurrence rate of market splitting between each area

○ Market splitting regularly occurs for 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. The market splitting rate of Chugoku-Kyushu had been on the rise, but recently, it has been on the decline. On the other hand, there is an upward trend between Chubu-Hokuriku and Chubu-Kansai.

Day-Ahead market: Trends in monthly splitting occurrence rate
(12-month moving average)
(March 2013 to September 2023)



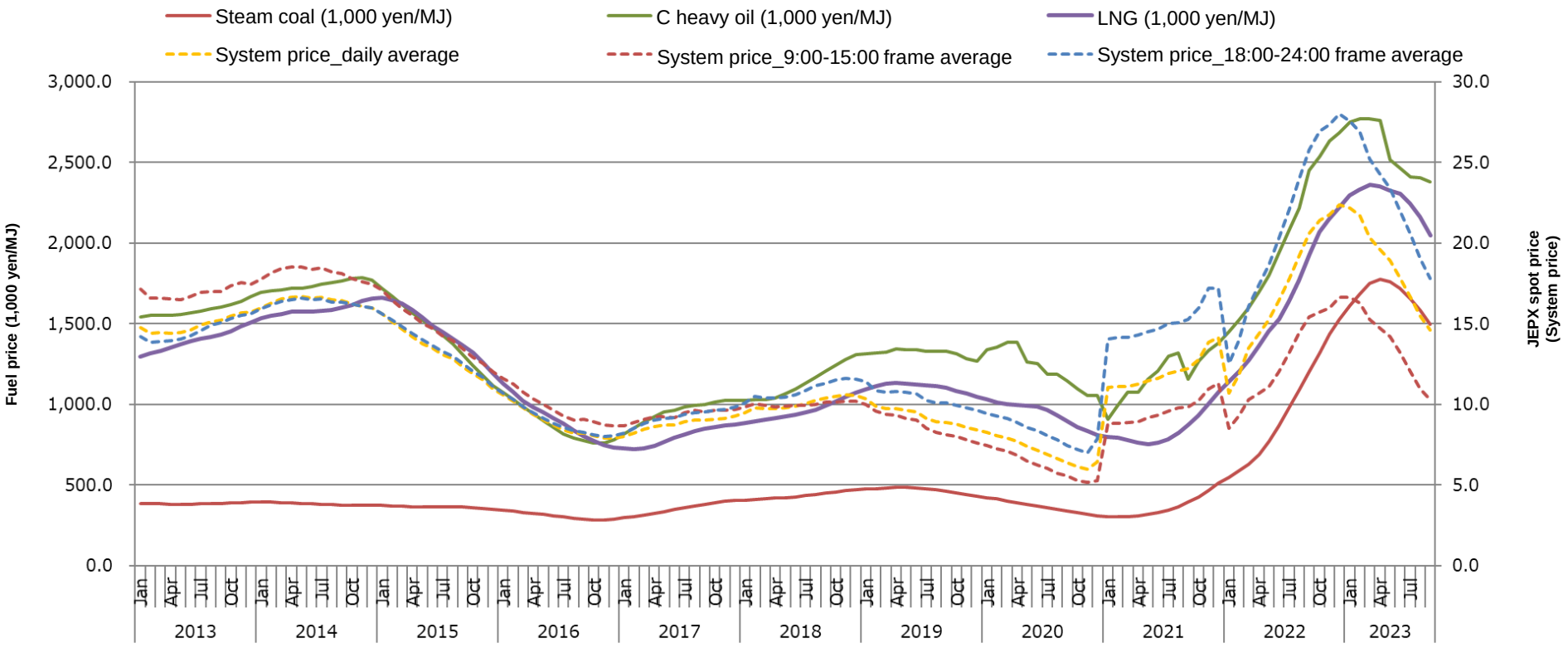
* Monthly splitting occurrence rate (12-month moving average): The 12-month moving average of the monthly sum of the percentage of frames with different area prices in adjacent areas among each frame every 30 minutes in Day-Ahead market.

* 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 day-ahead price and fuel price

○ The long-term trend of JEPX spot prices was similar to that of LNG and C heavy oil prices. However, due to the spike in spot prices in January 2021, the price (12-month moving average) has increased since then. Although it decreased once in January 2022, it has risen again. Entering 2023, fuel prices continue to trend downward.

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



Source: Prepared by the Electricity and Gas Market Surveillance Commission based on the Trade Statistics of Japan, Ministry of Finance (as of November 17, 2023)

* Fuel prices are aggregated import CIF prices using the calorific value shown in the thermal power generation fuel results of the Electricity Survey Statistics.

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

* The system price plummeted in January 2022 because the 12-month moving average (from February last year to January this year) was used. Thus, the soaring single monthly price in January 2021 was out of the calculation range.

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 gross bidding
  - ● 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]

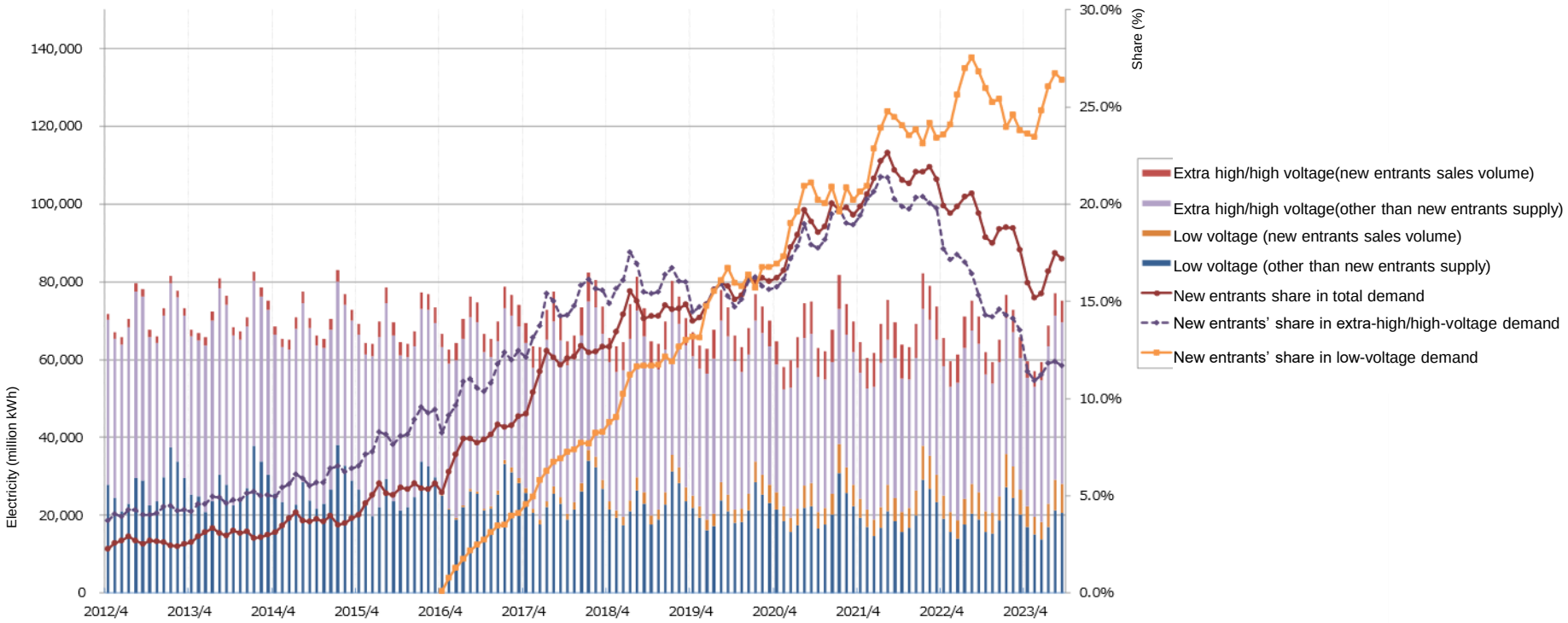
- ◆ Wholesale electricity market
  - ● JEPX market
    - Trends in contracted volume
    - Trends in contracted price
    - Trends in the market splitting occurrence rate
  - ● JEPX spot price and fuel cost
- ◆ Retail market
  - ● Trends in new entrants share by area
  - ● Market share by area
  - ● 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 the total demand for electricity based on the amount of electricity sales has been on the decline since August 2021.
- ○ As of September 2023, the share of new entrants in total demand is **approximately 17.2%**, the share of new entrants in extra-high/high-voltage demand was approximately 11.7%, and that in low-voltage demand was approximately 26.4%.

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



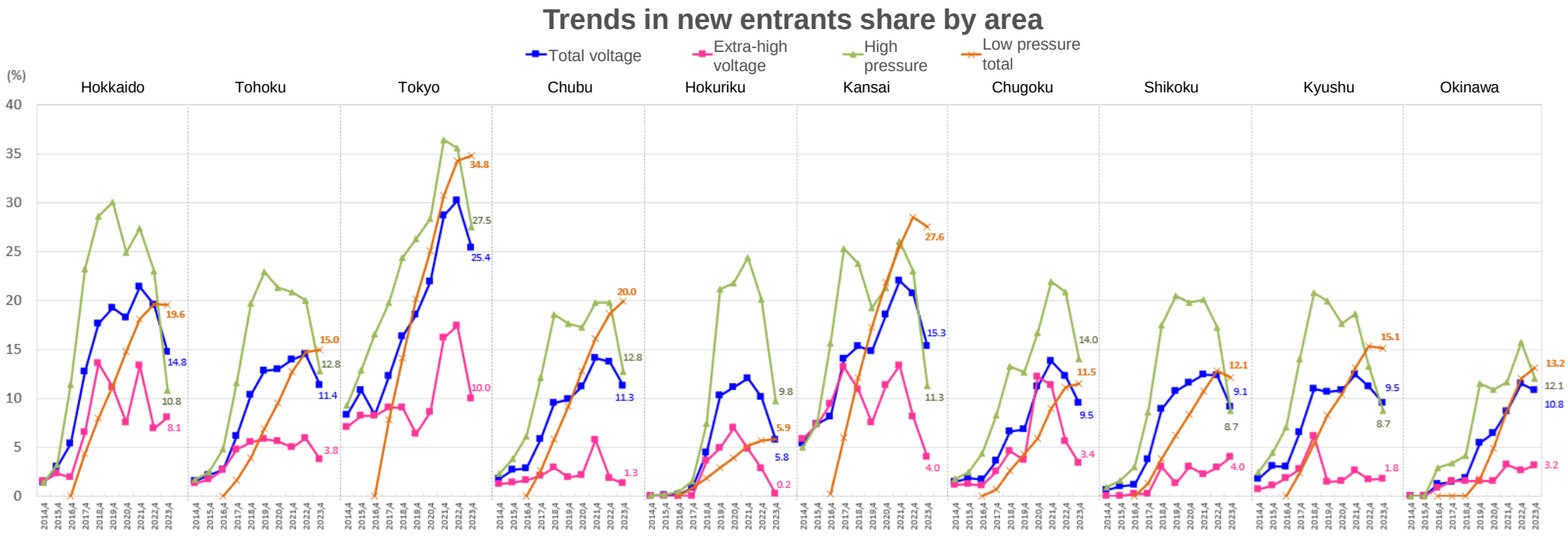
*"New entrants" refers to electricity retailers other than general electric utilities Subsidiaries of general electric utilities are also included in new entrants.
(Source: Monthly electricity generation/reception report, Electricity Trading Report)

New entrants share	2012/4	2013/4	2014/4	2015/4	2016/4	2017/4	2018/4	2019/4	2020/4	2021/4	2022/4	**2023/9**
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%	**17.2%**
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%	**11.7%**
in low-voltage demand	-	-	-	-	0.1%	4.6%	8.8%	13.2%	16.9%	20.6%	23.6%	**26.4%**

Medium- to long-term trends

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

○ Looking at the share of new entrants sales by area for all voltages, there is a decrease in all areas compared to the same month last year. In particular, the decrease at high pressures is remarkable. Tokyo is one of the areas with a high share of new entrants' electricity sales.



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

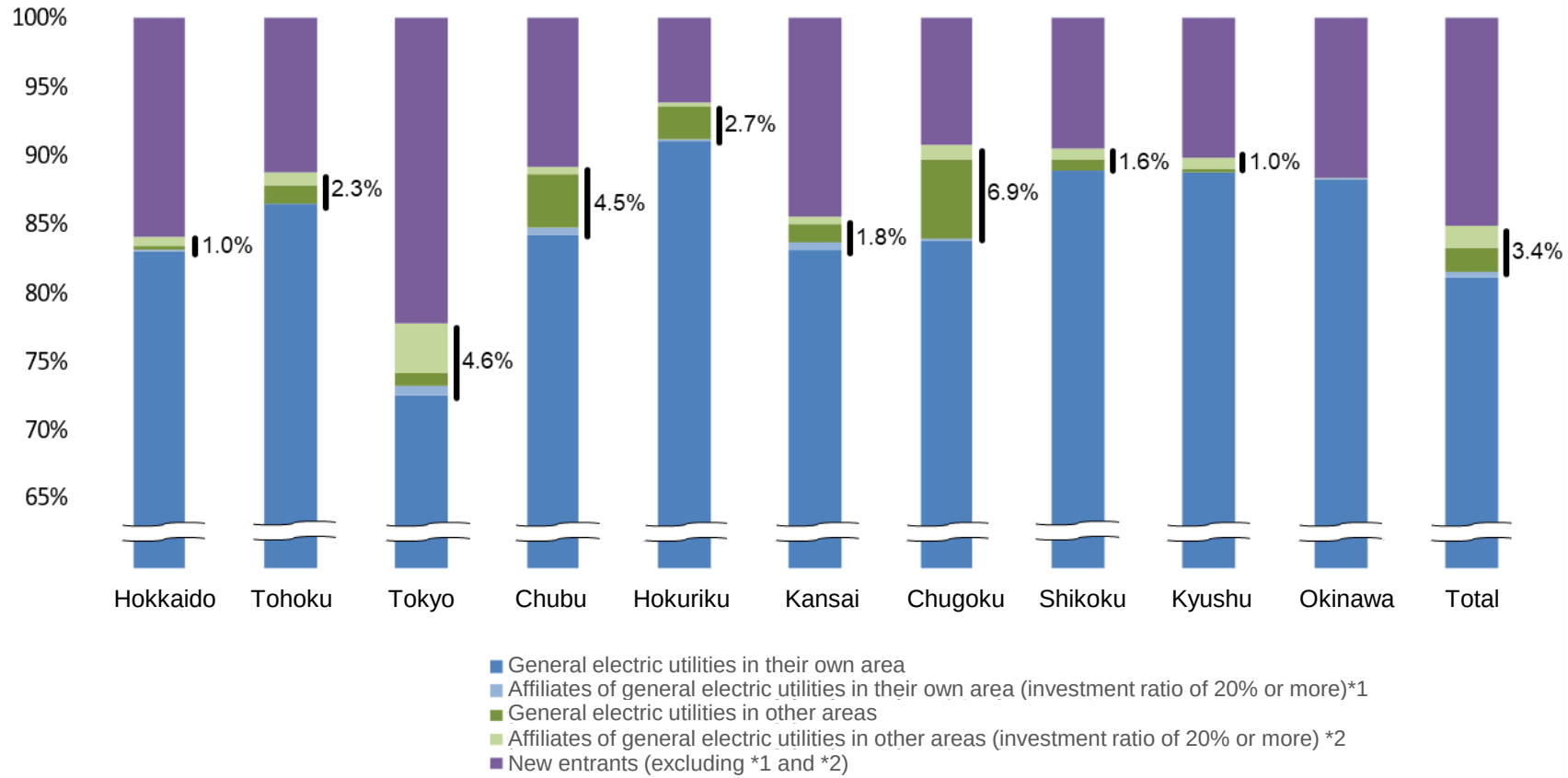
(Source: Monthly electricity generation/reception report, Electricity Trading Report)

Medium- to long-term trends

Market share by area

○ Supply by general electric utilities and their affiliated companies to areas outside the service area was approximately 3.4% of the total (5.4% as of September 2022). By area, out-of-region supplies are being carried out in all regions except Okinawa.

Market share by area (September 2023)

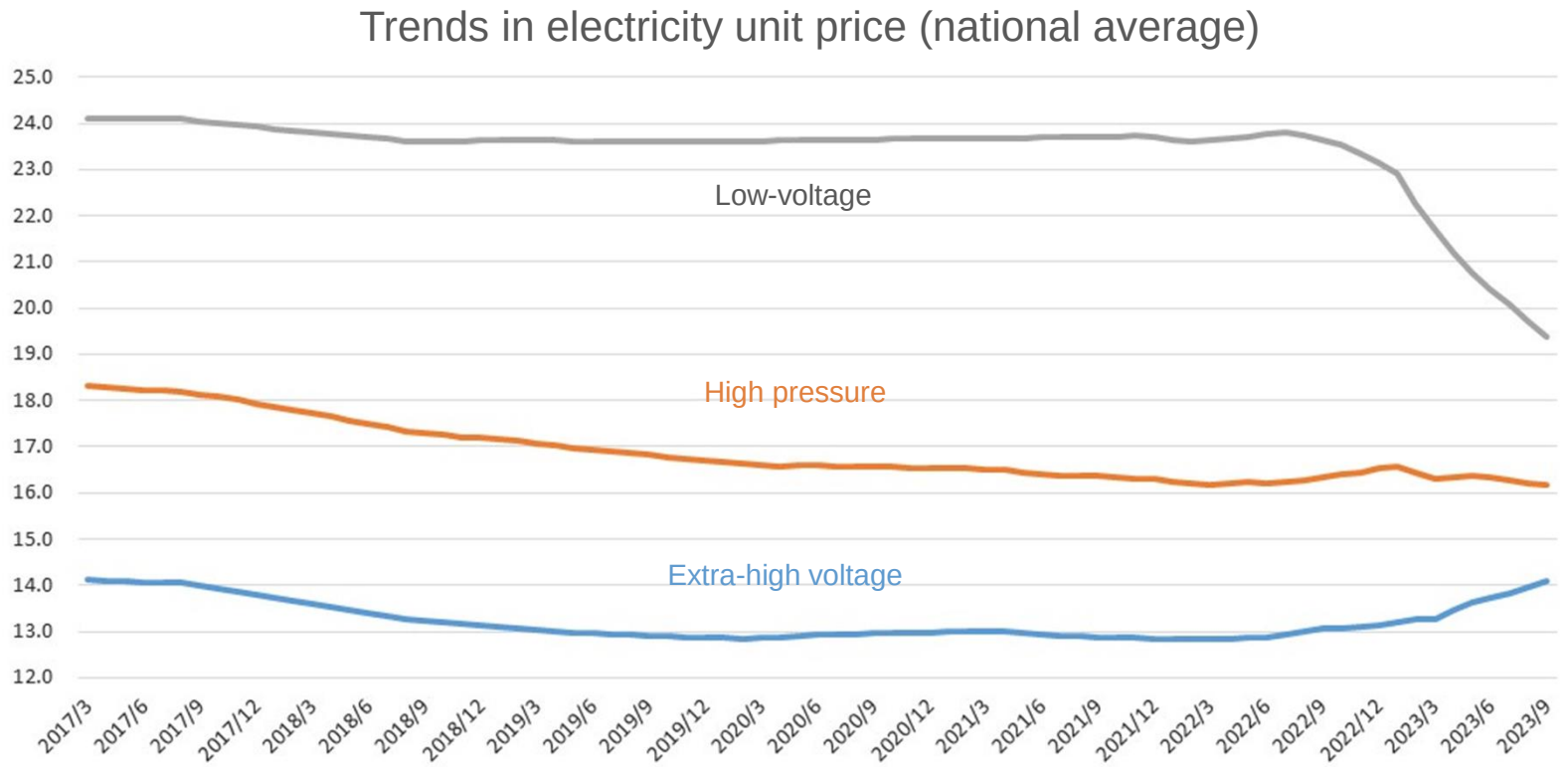


(Source) Electricity Trading Report

(Note) Based on electricity sales amount

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 significant decrease in the unit price at low-voltage due to the impact of subsidies such as the drastic change mitigation project. For extra-high voltage, there has been a recent upward trend.

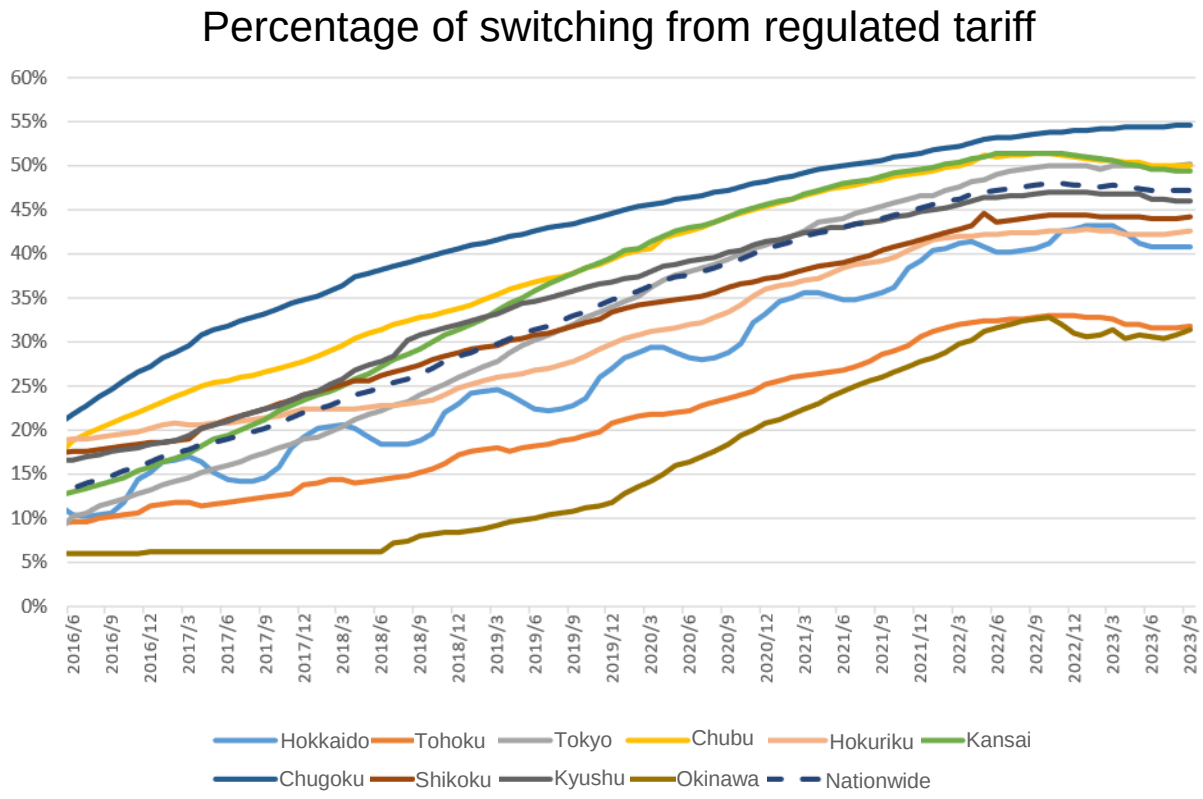


(Remarks)
・12-month moving average
・Excluding fuel cost adjustment unit price, FIT levy, and consumption tax
(When excluding the fuel cost adjustment unit price (yen/kWh), the pay-as-you-go figures published by the general electricity utilities in each area are used for all electricity retailers)
(Source)
Prepared by the Electricity and Gas Market Surveillance Commission Secretariat from the Electricity Trading Report

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, there has been a recent trend towards flatness. As of September 2023, it was 47.2% nationwide.



	September 2023
Hokkaido	40.9%
Tohoku	31.8%
Tokyo	50.3%
Chubu	50.1%
Hokuriku	42.7%
Kansai	49.4%
Chugoku	54.8%
Shikoku	44.3%
Kyushu	46.0%
Okinawa	31.4%
Nationwide	47.2%

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

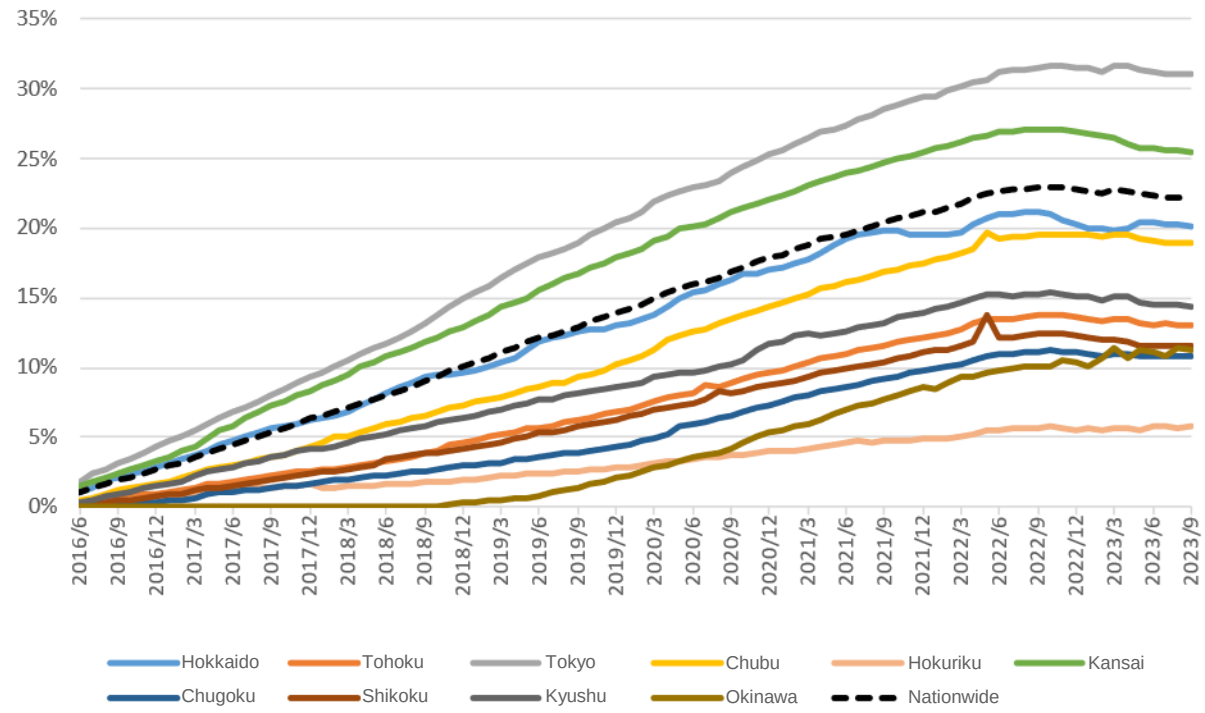
*For Okinawa, calculations are based only on low-voltage lights (high-voltage switching is not included)

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 the area) varies by area. However, there has been a recent trend towards flatness. As of September 2023, it was 22.2% nationwide.

Percentage of switching from general electric utilities in each area

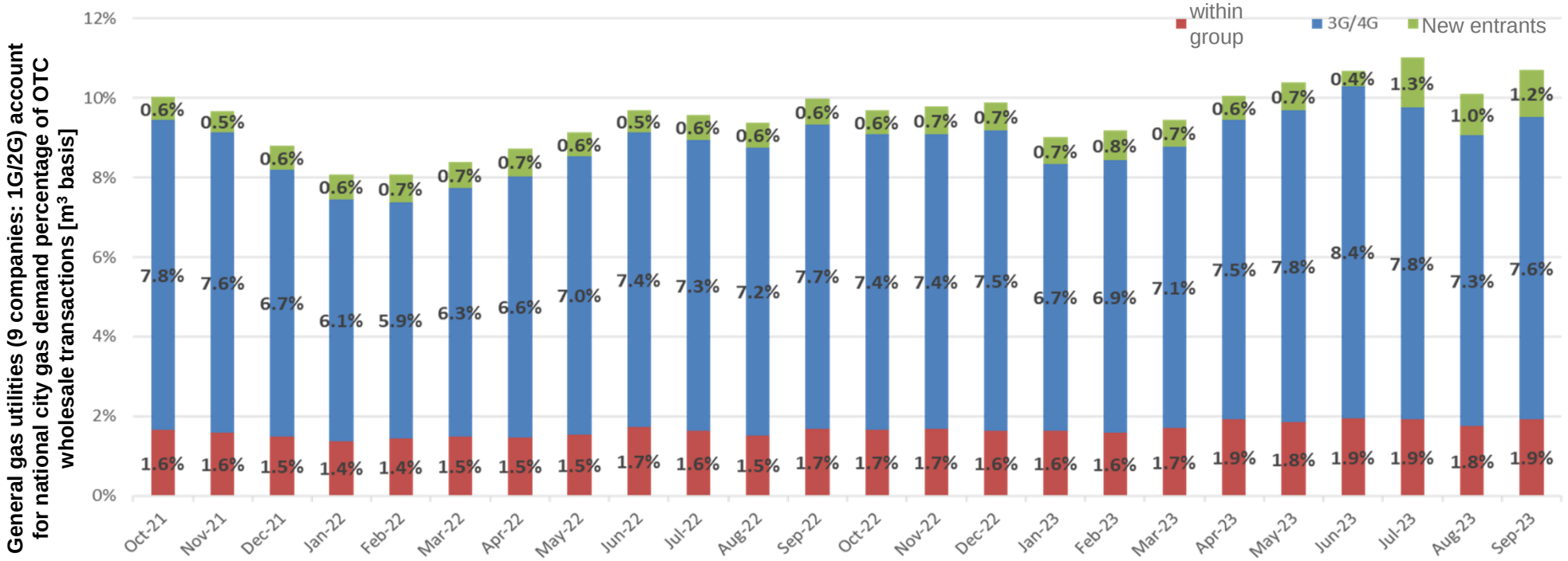


	September 2023
Hokkaido	20.2%
Tohoku	13.1%
Tokyo	31.1%
Chubu	19.0%
Hokuriku	5.9%
Kansai	25.5%
Chugoku	10.8%
Shikoku	11.6%
Kyushu	14.4%
Okinawa	11.2%
Nationwide	22.2%

(Source) Electricity Trading Report
(Note) Low-voltage: based on number of contracts

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 field, a monitoring of gas wholesale transactions of nine 1G/2G companies was conducted.*1 (Monitoring data from January 2020. The most recent two years from October 2021 are shown).
- ○ As of the end of September 2023, the ratio of OTC wholesale supply of 1G/2G *3 to the retail service of city gas nationwide *2 was approximately 11%.
- ○ The ratio of OTC wholesale supply to new entrants (those who are not general gas utilities) was approximately 1.2%. (The share of retail sales volume by new entrants was approximately 20% (as of the end of September 2023)).



*1 1G: Tokyo Gas, Osaka Gas, Toho Gas 2G: Hokkaido Gas, Sendai City Gas Bureau, Shizuoka Gas, Hiroshima Gas, Saibu Gas, Nihon Gas (Kagoshima)
*2 45 MJ base.
*3 Includes base exit wholesale, pipe connection point wholesale, demand point wholesale (One-touch wholesale/Start-up wholesale), and liquid wholesale (lorry, etc.). Regarding liquid wholesale, the conversion is based on the assumption that 1 ton of liquefied natural gas ≈ 1,220 m^3 and does not take into account calorific value adjustments.
*4 3Gs/4Gs are general gas utilities that primarily receive wholesale gas supply from other business operators and provide retail service 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 September 2023)

- ○ To contribute to the goal of 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 September 2023)

Wholesaler name	Number of inquiries	Contract concluded	Under contract negotiation	Contract negotiation completed*
Tokyo Gas	22	4	2 (+2)	16 (-2)
Osaka Gas	11 (+1)	4 (+1)	1	6
Toho Gas	11	2	1	8
Hokkaido Gas	16	2	2	12
Shizuoka Gas	18 (+1)	6	7 (-2)	5 (+3)
Saibu Gas	15	3	4	8
Hiroshima Gas	6	1	0	5
Sendai City Gas Bureau	7	0	2	5
Nippon Gas	11 (+6)	2 (+1)	0	9 (+5)
Total	**117**	**24**	**19**	**74**

* The "number of contract negotiations completed" includes those in which negotiations were explicitly discontinued due to failure to reach an agreement and cases in which there was an inquiry for use but no negotiation was reached. It also includes cases in which there is no further contact, contract negotiations, or progress in talks 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)

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