

Monitoring report of voluntary efforts and competitive status

July to September 2024 period

(Tentative translation)

Thursday, December 26, 2024

Overview of market trends in the period July to September 2024 (1/2)

1. During this period, wholesale electricity market prices soared by 30 yen or more 29 times, compared to eight times in the same period last year.

In July to August, market prices in the western area remained higher than those in the eastern area, as the western area faced several factors such as increased demand associated with higher temperatures, suspension of power sources with lower marginal costs, and fuel constraints caused by Typhoon No. 10 at the end of August.

In September, prices continued to soar in the Hokkaido, Tohoku, Tokyo, Chubu, and Hokuriku areas, as the high-demand period continued due to late summer severe heat, particularly combined with changes in the market splitting status associated with interconnection line work in the central region, during the weeks started September 9 and 16.

- See pp. 12-13 for trends in day-ahead market prices, pp. 15 for changes in the market splitting status and power flow, and pp. 22-32 for the background of soaring market prices in this summer.

2. Amid this market situation of continued price hikes, the contracted volume in the day-ahead market was 70.4 billion kWh, which was close to the level in the same period last year, while the contracted volume in the intraday market was 2.11 billion kWh, 1.3 times that of the same period last year. One of the contributing factors was that general electric utilities under capacity contracts in the capacity market, supplied their electricity to the intraday market after receiving a notification of supply capacity provision, which is issued by the Organization for Cross-regional Coordination of Transmission Operators, JAPAN (OCCTO) at 17:30 or later on the day before a day on which the cross-regional reserve margin is predicted to fall below 8%.

- See pp. 6-11 for trends in the bidding volume and contracted volume in the day-ahead market and pp. 16-18 for trends in the contracted volume in the intraday market.

Overview of market trends in the July to September 2024 period (2/2)

3. **The contracted volume in the futures market was 20.66 billion kWh, five times that of the same period last year.** At the European Energy Exchange (EEX), which accounts for most of the trading, although products being traded had not changed since the same period last year, an increase in the number of companies participating in trading^{*1} pushed hedge demand up for products across short-, medium-, and long-term categories, resulting in higher liquidity and growing trading volumes ^{*1}: From 60 companies in end-September 2023 to 84 in end-September 2024
 - See pp. 21 for trends in the contracted volume in futures market transactions.
4. In the retail market, **supply by general electric utilities and their affiliated companies outside the service areas was approximately 4.1% of the total, an increase by 0.7 points from the same period last year.** In particular, in the Chugoku area, the percentage of supply from outside the area increased, driven mainly by a price increase by Chugoku Electric Power in the extra-high/high voltage category in April 2024. Although a slight decline was observed recently, this percentage is still higher in this area than in other areas.
 - See pp. 53 for market share by area.

【 Quarterly report 】

- **Wholesale electricity market**
 - JPEX market
 - Day-Ahead market
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 - 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 selling 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**
 - JPEX 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
 - Average unit price of low-voltage rates
- **Gas market**
 - Status of OTC transactions of general gas utilities
 - Usage status of Start-up wholesale measure

Major indicators

- The major indicators for this period are as follows.

| | | | | July to September 2024 | Same period last year (July to September 2023) | FY2023 (April 2023-March 2024) | FY2022 (April 2022-March 2023) |
|--------------------------------|-----------------------------------|--|---|---------------------------|---|-----------------------------------|-----------------------------------|
| JEPX market | Percentage to electricity sales*3 | | | 32.4% | 38.7% | 33.4% | 40.1% |
| | Day-Ahead market | Bidding | Sell volume compared to the same period last year | 1.0 (1.2×※5) | 1.0× | 1.0× (1.1×※5) | 1.0× |
| | | | Buy volume compared to the same period last year | 0.9× (1.1×※5) | 1.0× | 0.9× (1.0×※5) | 0.9× |
| | | Contract | Contracted volume | 70.4 billion kWh | 83.8billion kWh | 261.5 billion kWh | 318.5 billion kWh |
| | | | Contracted volume compared to the same period last year | 0.8× (1.0×※5) | 1.0× | 0.8× (0.9×※5) | 1.0× |
| | | | Average contracted price (system price) | 14.2yen/kWh | 11.7yen/kWh | 10.7yen/kWh | 20.4yen/kWh |
| | | Occurrence rate of market splitting between the east and west market | | 42.3% | 22.2% | 33.7% | 34.9% |
| | Intraday market | Contract | Contracted volume | 2.11 billion kWh | 1.57billion kWh | 6.17 billion kWh | 49.4 × kWh |
| | | | Average contracted price | 14.9yen/kWh | 13.2yen/kWh | 11.7yen/kWh | 22.9yen/kWh |
| | Forward market | Contract | Contracted volume | 0.0002 billion kWh | 0kWh | 0.003 billion kWh | 0.017 billion kWh |
| Futures market*4 | | | Contracted volume | 20.66 billion kWh | 4.03 billion kWh | 30.47 billion kWh | - |
| OTC transactions | | | Supply to outside the group | 17.25 billion kWh | 10.80 billion kWh | 38.62 billion kWh | 56.43 billion kWh |
| Retail market (Reference)*1 | Electricity sales | | | 224.7 billion kWh※2 | 220.9 billion kWh※2 | 801.6 billion kWh | 805.4 billion kWh |
| | New entrants | Electricity sales | | 45.7 billion kWh | 37.8 billion kWh | 133.8 billion kWh | 154.6 billion kWh |
| | | Electricity sales compared to the same period last year | | 1.2× | 0.9× | 0.9× | 0.9× |
| | | Share of new entrants | | 20.4%(as of September) | 17.2%(as of September) | - | - |

※1Source: 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 Data added from the October-December 2023 reporting period. (Based on data published on the JPX and EEX websites)

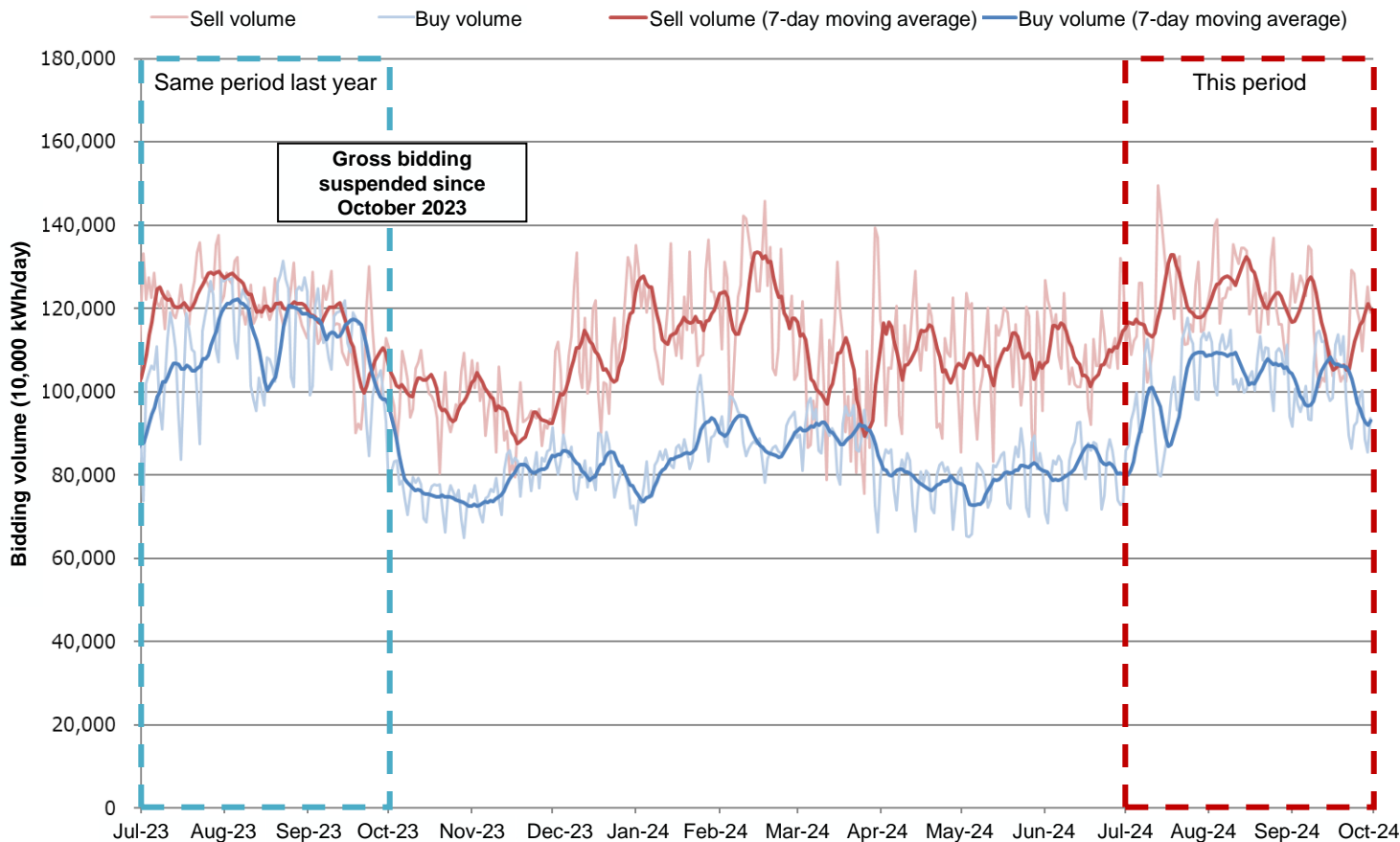
※5 The comparison is based on the volume obtained by deducting the gross bidding volume for internal demand from the bidding volume of general electric utilities in the same period last year. Gross bidding volumes are calculated from the questionnaire results on higher buy-back prices in gross bidding 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.)

Bidding volume in the day-ahead market

- For this period, the bidding volume in the day-ahead market was 110.6 billion kWh for selling and 93.7 billion kWh for buying.
- For year-on-year comparison, the sell volume was 1.0 times (1.2 times*¹) that of the same period last year, and the buy volume was 0.9 times (1.1 times*¹).

Day-Ahead market: Trends in bidding volume
(July 1, 2023 to September 30, 2024)



Main data

| |
|--|
| Sell volume (July to September 2024) |
| 110.6 billion kWh |
| Comparison with sell volume for the same period last year (vs. July to September 2023) |
| 1.0 × |
| Buy volume (July to September 2024) |
| 93.7 billion kWh |
| Comparison with buy volume for the same period last year (vs. July to September 2023) |
| 0.9 × |

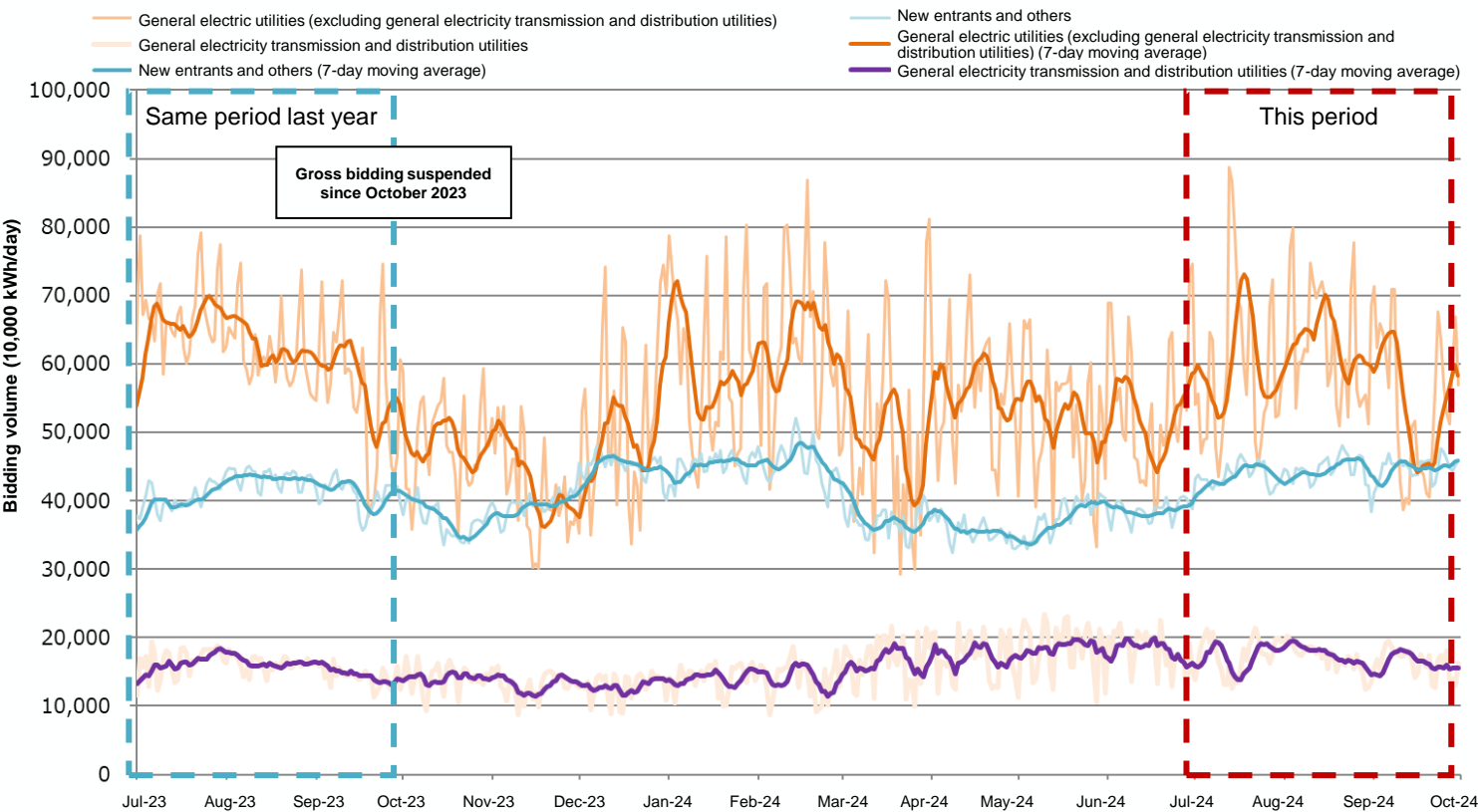
* Gross bidding by general electric utilities has been suspended since October 1, 2023.

*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.)

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

- The sell volume in the day-ahead market for this period was 54.2 billion kWh for general electric utilities (excluding general electricity transmission and distribution utilities), 40.8 billion kWh for new entrants and other business operators, and 15.6 billion kWh for general electricity transmission and distribution utilities.
- For year-on-year comparison, the volume was 1.0 time (1.3 times*¹) that of the same period last year for general electric utilities, 1.1 times for new entrants and other business operators, and 1.1 times for general electricity transmission and distribution utilities.

Day-Ahead market: Trends in sell volume
(July 1, 2023 to September 30, 2024)



Main data

| |
|---|
| Sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) (July to September 2024) |
| 54.2 billion kWh |

| |
|--|
| Comparison with sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) for the same period last year (vs. July to September 2023) |
| 1.0 × |

| |
|--|
| Sell volume by new entrants and other business operators (July to September 2024) |
| 40.8 billion kWh |

| |
|---|
| Comparison with sell volume by new entrants and other business operators for the same period last year (vs. July to September 2023) |
| 1.1 × |

| |
|--|
| Sell volume by general electricity transmission and distribution utilities (July to September 2024) |
| 15.6 billion kWh |

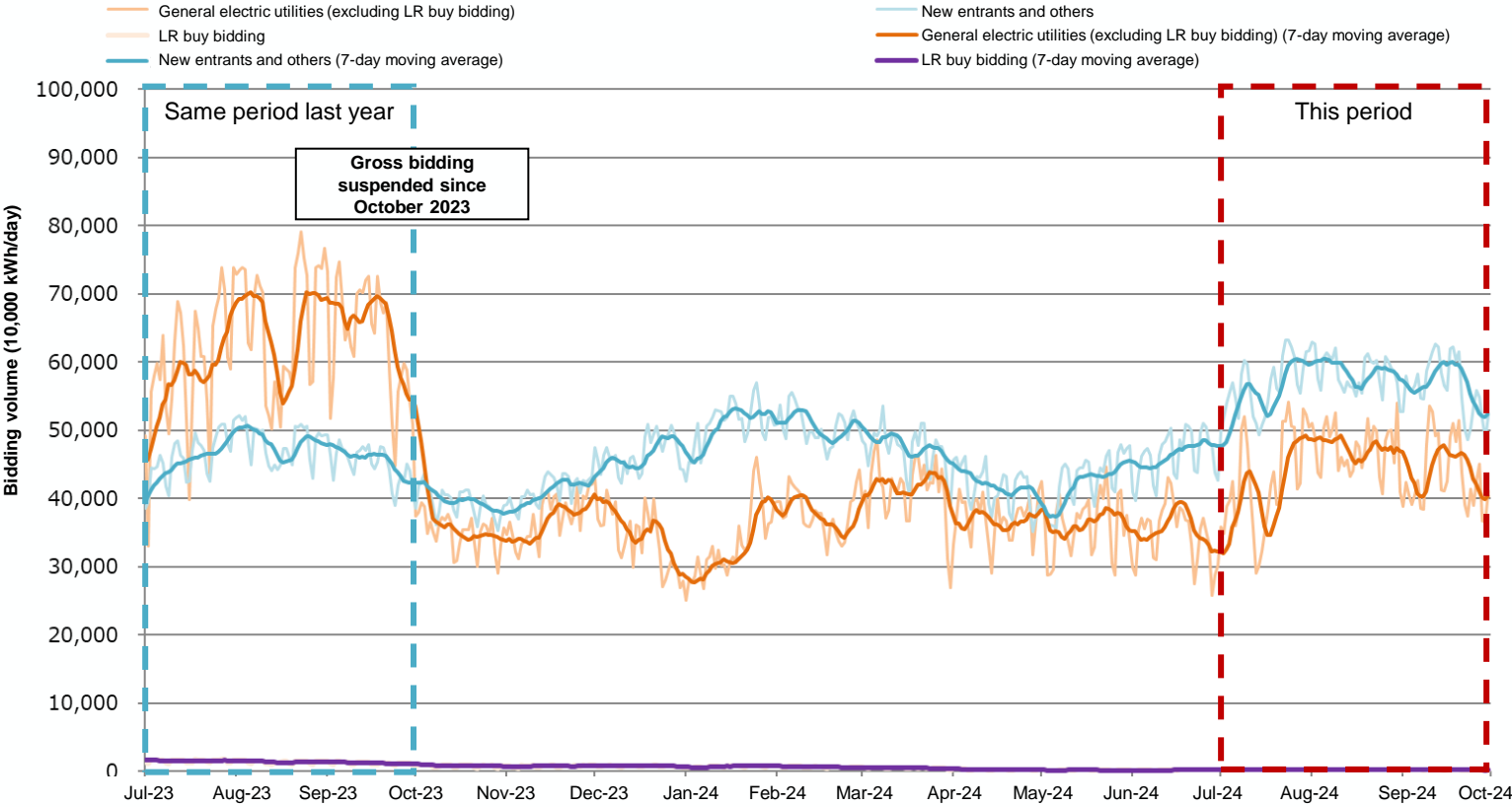
| |
|---|
| Comparison with sell volume by general electricity transmission and distribution utilities for the same period last year (vs. July to September 2023) |
| 1.1 × |

* 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.)

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

- The buy volume in the day-ahead market for this period was 40.9 billion kWh for general electric utilities (excluding LR^{*1} buy bidding) and 52.5 billion kWh for new entrants and other business operators, and LR buy volume by general electricity transmission and distribution utilities was 0.2 billion kWh.
- For year-on-year comparison, the volume was 0.7 times (0.9 times^{*2}) 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
(July 1, 2023 to September 30, 2024)



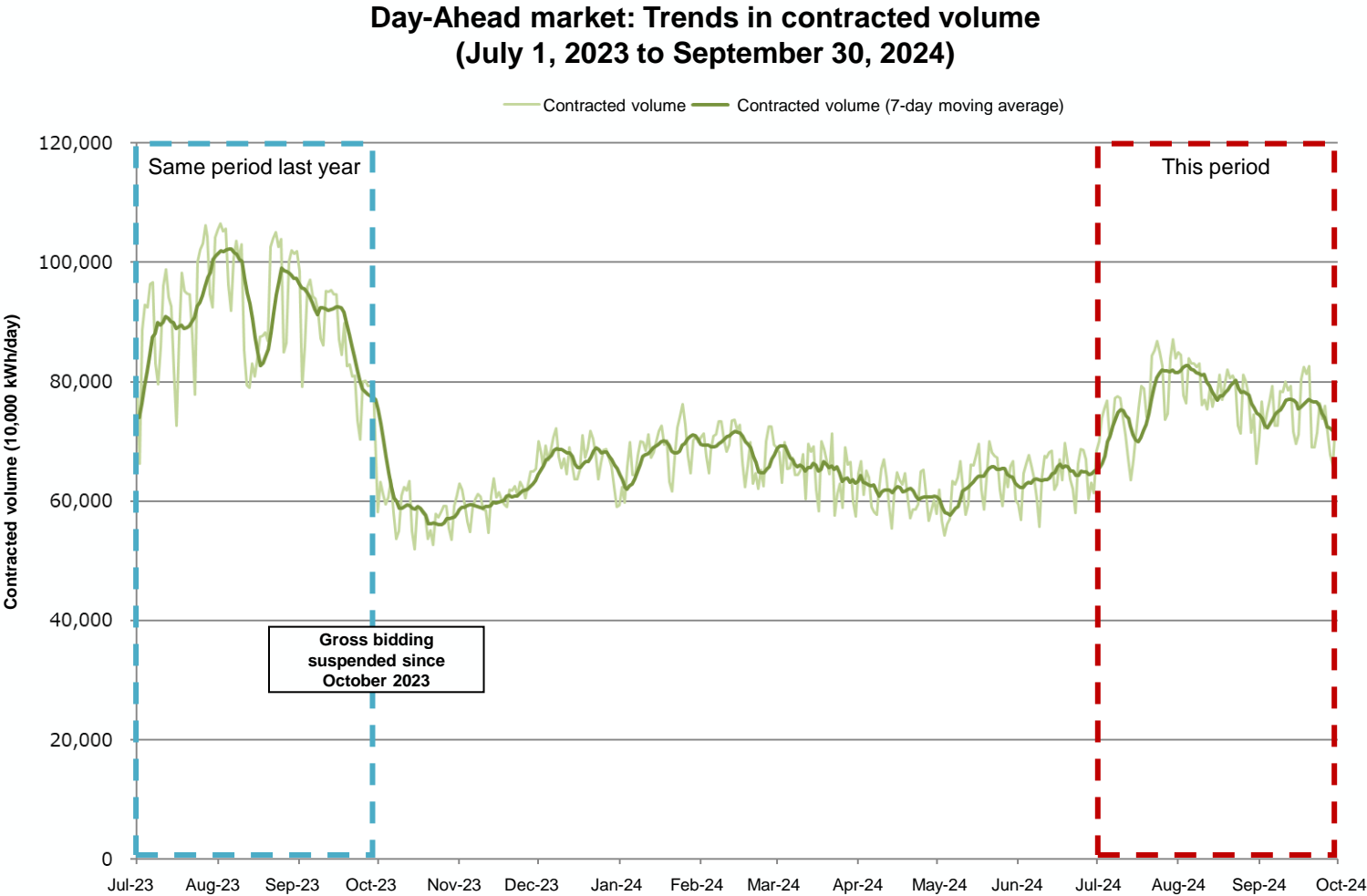
Main data

| |
|---|
| Buy volume by general electric utilities (excluding LR buy bidding) (July to September 2024) |
| 40.9 billion kWh |
| Comparison with buy volume by general electric utilities for the same period last year (excluding LR buy bidding) (vs. July to September 2023) |
| 0.7 × |
| Buy volume by new entrants and other business operators (July to September 2024) |
| 52.5 billion kWh |
| Comparison with buy volume by new entrants and other business operators for the same period last year (vs. July to September 2023) |
| 1.2 × |
| LR buy volume by general electricity transmission and distribution utilities (July to September 2024) |
| 0.2 billion kWh |
| Comparison with LR buy volume by general electricity transmission and distribution utilities for the same period last year (vs. July to September 2023) |
| 0.2 × |

^{*1} 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.
^{*2} 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} This refers to the last resort supply. Local general electricity transmission and distribution utilities are obliged to supply electricity under the last resort supply agreement to ensure electricity consumers the final source of electricity supply in the event that they fail to conclude a supply contract with any of the electricity retailers.
^{*2} 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.)

Contracted volume in the day-ahead market

- The contracted volume in the day-ahead market for this period was 70.4 billion kWh.
- For year-on-year comparison, the volume was 0.8 times (1.0 time^{*1}) that of the same period last year.



Main data

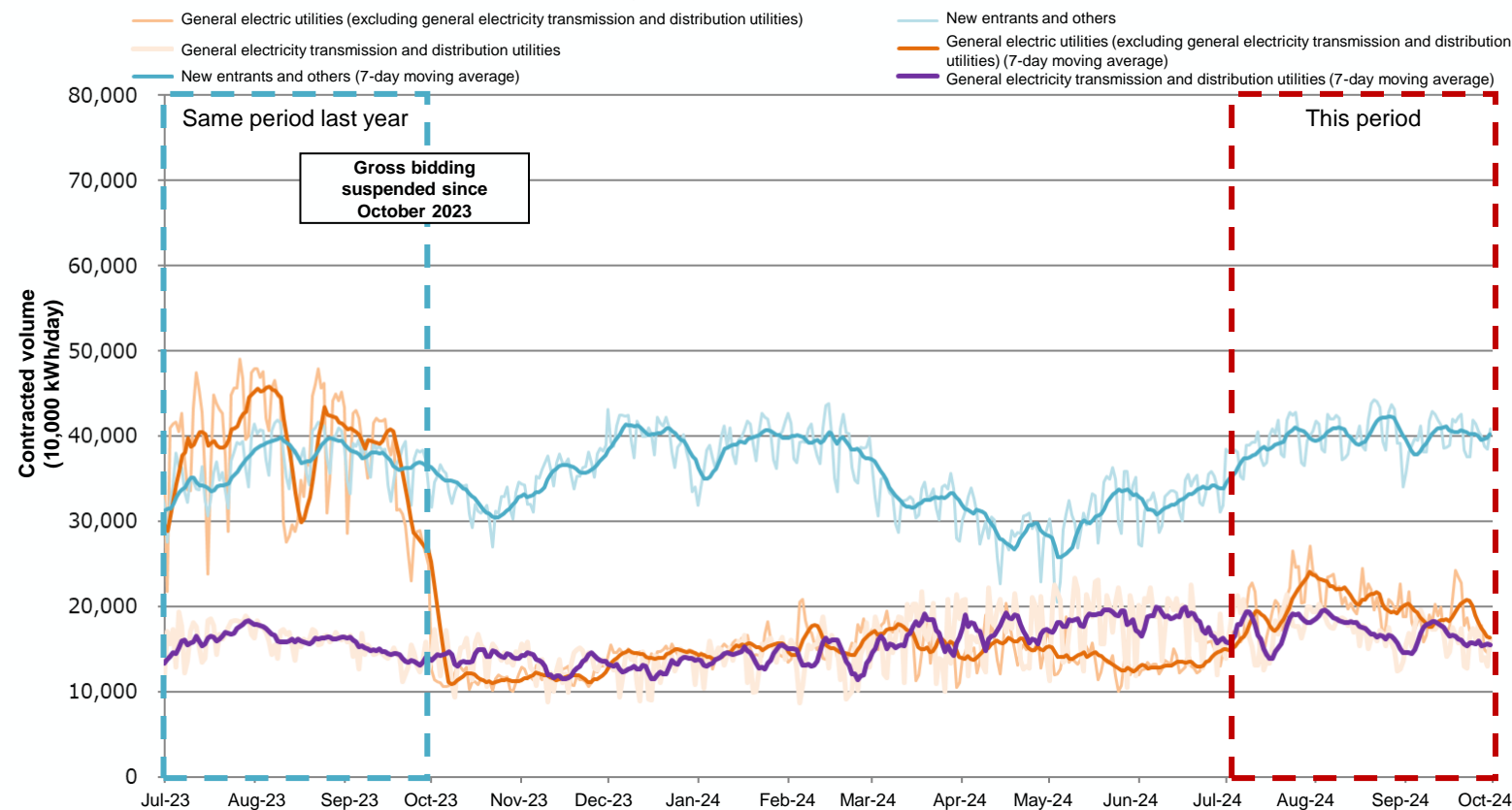
| |
|--|
| Contracted volume (July to September 2024) |
| 70.4 billion kWh |
| Comparison with contracted volume for the same period last year (vs. July to September 2023) |
| 0.8 × |

^{*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.)

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 18.1 billion kWh for general electric utilities (excluding general electricity transmission and distribution utilities), 36.7 billion kWh for new entrants and other business operators, and 15.6 billion kWh for general electricity transmission and distribution utilities.
- For year-on-year comparison, the volume was 0.5 times (0.9 times*¹) that of the same period last year for general electric utilities, 1.1 times for new entrants and other business operators, and 1.1 times for general electricity transmission and distribution utilities.

Day-Ahead market: Trends in contracted sell volume
(July 1, 2023 to September 30, 2024)



Main data

| |
|---|
| Contracted sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) (July to September 2024) |
| 18.1 billion kWh |
| Comparison with contracted sell volume by general electric utilities (excluding general electricity transmission and distribution utilities) for the same period last year (vs. July to September 2023) |
| 0.5 × |
| Contracted sell volume by new entrants and other business operators (July to September 2024) |
| 36.7 billion kWh |
| Comparison with contracted sell volume by new entrants and other business operators for the same period last year (vs. July to September 2023) |
| 1.1 × |
| Contracted sell volume by general electricity transmission and distribution utilities (July to September 2024) |
| 15.6 billion kWh |
| Comparison with contracted sell volume by general electricity transmission and distribution utilities for the same period last year (vs. July to September 2023) |
| 1.1 × |

* 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.

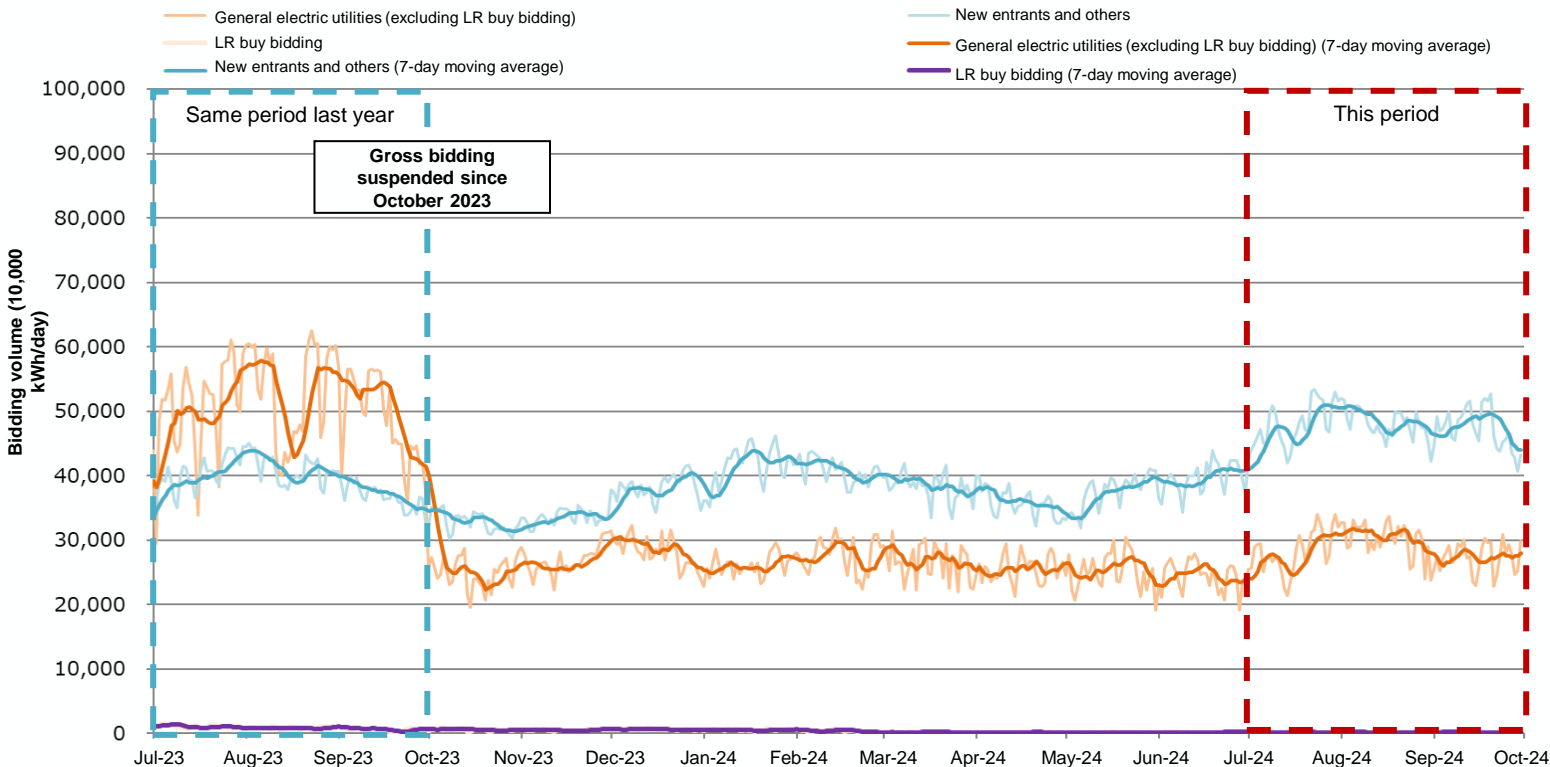
* General electricity transmission and distribution utilities include Hokkaido Electric Power Network, Tohoku Electric Power Network, TEPCO Power Grid, Chubu Electric Power Grid, Hokuriku Electric Power Transmission and Distribution, Kansai Electric Power Transmission and Distribution, Chugoku Electric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

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 26.3 billion kWh for general electric utilities (excluding LR buy bidding) and 43.9 billion kWh for new entrants and other business operators, and the contracted LR buy volume by general electricity transmission and distribution utilities was 0.2 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.
- The market condition continues where the contracted buy volume by general electric utilities exceeds their contracted sell volume. For new entrants and other business operators, too, their contracted buy volume exceeded their contracted sell volume, as in the previous period.

Day-Ahead Market: Trends in contracted buy volume
(July 1, 2023 to September 30, 2024)



Main data

| |
|---|
| Contracted buy volume by general electric utilities (excluding LR buy bidding) (July to September 2024) |
| 26.3 billion kWh |

| |
|---|
| Comparison with contracted buy volume by general electric utilities for the same period last year (excluding LR buy bidding) (vs. July to September 2023) |
| 0.6 × |

| |
|---|
| Contracted buy volume by new entrants and other business operators (July to September 2024) |
| 43.9 billion kWh |

| |
|---|
| Comparison with contracted buy volume by new entrants and other business operators for the same period last year (vs. July to September 2023) |
| 1.2 × |

| |
|--|
| Contracted LR buy volume by general electricity transmission and distribution utilities (July to September 2024) |
| 0.2 billion kWh |

| |
|--|
| Comparison with contracted LR buy volume by general electricity transmission and distribution utilities for the same period last year (vs. July to September 2023) |
| 0.2 × |

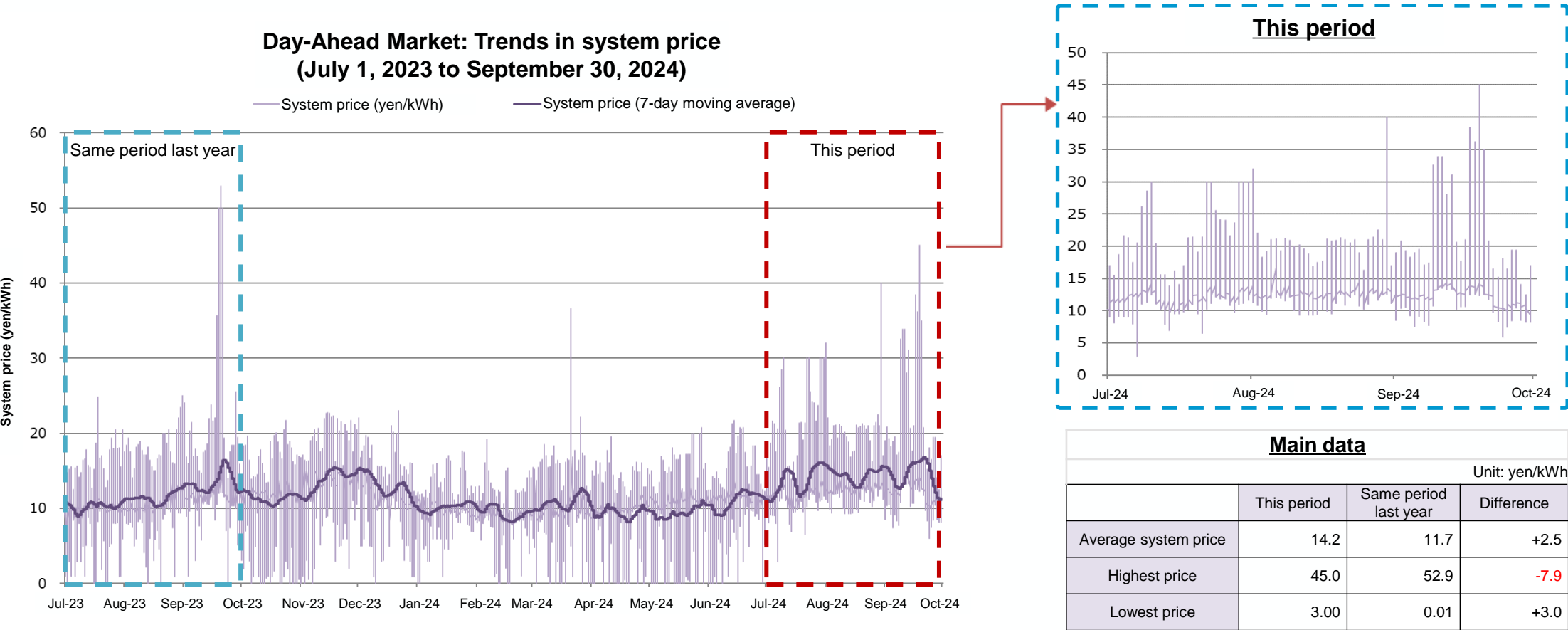
* General electric utilities include Hokkaido Electric Power, Tohoku Electric Power, TEPCO Energy Partner, TEPCO Renewable Power, Chubu Electric Power Miraiz, Hokuriku Electric Power, Kansai Electric Power, Chugoku Electric Power, Shikoku Electric Power, Kyushu Electric Power, JERA, and general electricity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

System price in the day-ahead market

- The average system price in the day-ahead market for this period was 14.2 yen/kWh.
- It increased by 2.5 yen/kWh compared to the average of 11.7 yen/kWh for the same period last year.
(LNG spot price increased from an average of \$12.6/MMBtu for the same period last year to an average of \$13.0/MMBtu for this period. The yen also strengthened, with the exchange rate shifting from an average of 144.6 yen per dollar for the same period last year to an average of 149.6 yen per dollar for this period.)



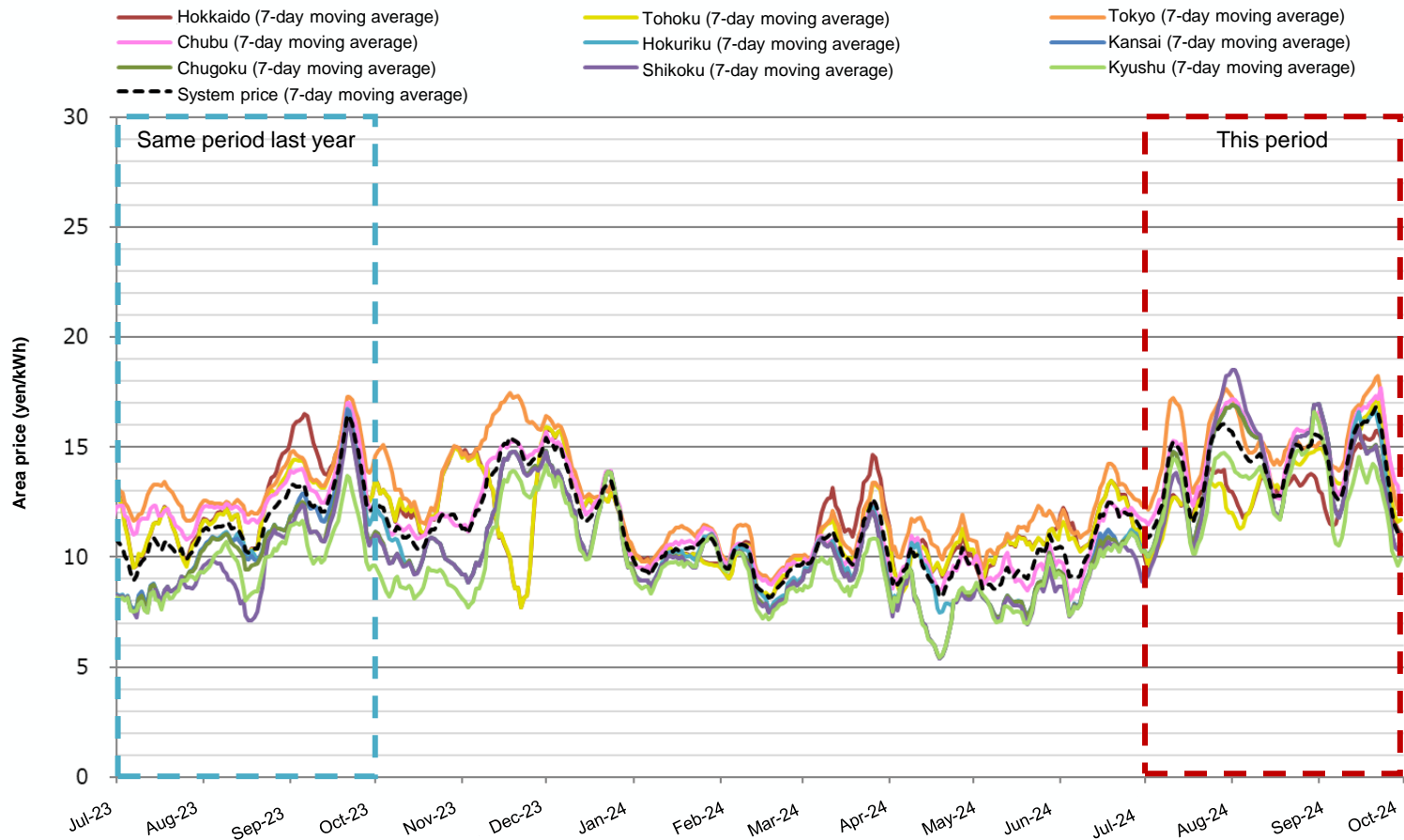
*1 Highest price for this period: 1 day, 1 frame in total

*2 Lowest price for this period: 1 day, 1 frame in total

Area price in the day-ahead market

- Average area prices in the day-ahead market for this period were higher than those for the same period last year in all areas.
- Price differences were particularly wider in the western area than in the same period last year. This is attributable to higher market prices resulting from a combination of increased demand due to higher temperatures and reduced supplies in July and August, when some power sources with low marginal costs underwent periodic inspections, unscheduled outages, and equipment failures.
- There were more days with soaring prices (by 30 yen/kWh or more) than in the same period last year (an increase from 9 days to 29).

Day-Ahead Market: Trends in area price
(July 1, 2023 to September 30, 2024)



Average price during the period

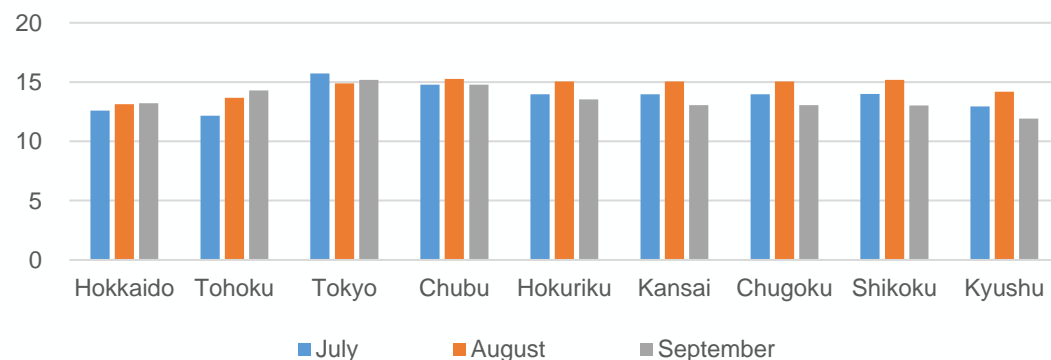
Unit: yen/kWh

| | This period | Same period last year | Difference |
|--------------|-------------|-----------------------|------------|
| System price | 14.2 | 11.7 | 2.5 |
| Hokkaido | 13.0 | 12.6 | 0.3 |
| Tohoku | 13.4 | 12.3 | 1.1 |
| Tokyo | 15.3 | 13.3 | 2.0 |
| Chubu | 14.9 | 12.6 | 2.3 |
| Hokuriku | 14.2 | 10.9 | 3.3 |
| Kansai | 14.0 | 10.8 | 3.2 |
| Chugoku | 14.0 | 10.6 | 3.4 |
| Shikoku | 14.1 | 10.1 | 4.0 |
| Kyushu | 13.0 | 9.7 | 3.3 |

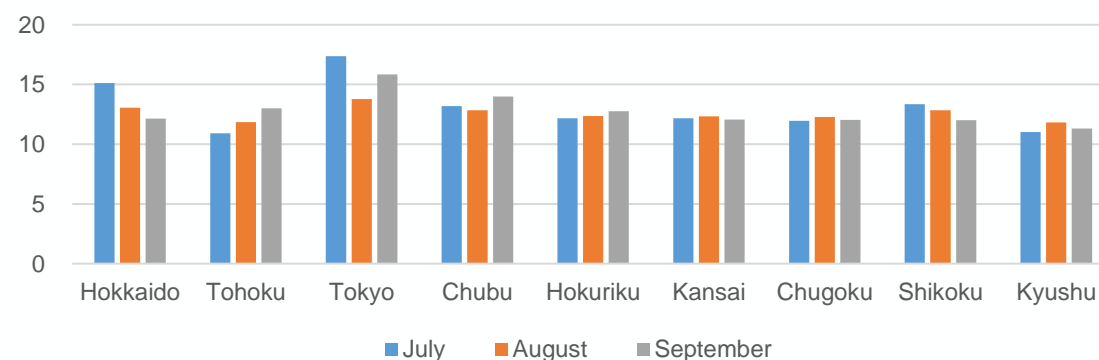
Unit imbalance fee and area price

- A comparison of trends in the unit imbalance fees and area prices in each area (monthly averages) indicates that the Hokkaido, Chubu, Hokuriku, Kansai, Chugoku, Shikoku, and Kyushu areas had a discrepancy of 2 yen or more in some months. In general, the area prices exceeded the unit imbalance fees.
- The differences between the two values were 2.77 yen at the maximum, 0.08 yen at the minimum, and 1.55 yen on average.

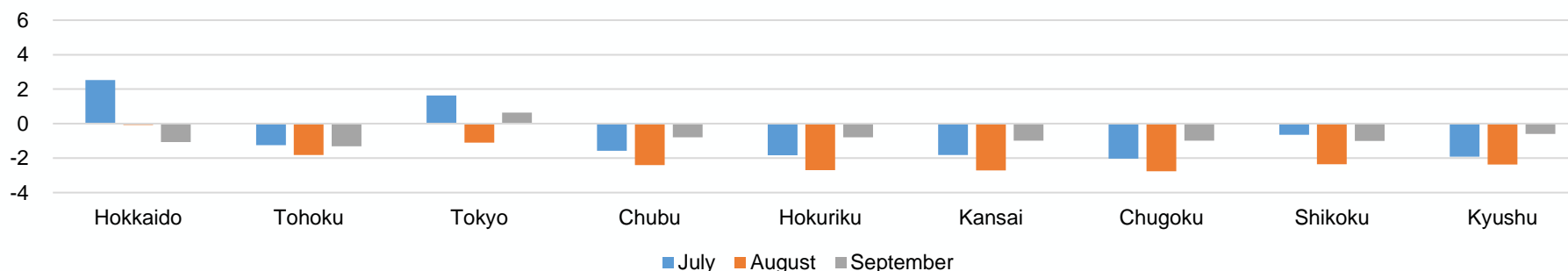
Trends in average area prices



Trends in the average unit imbalance fees



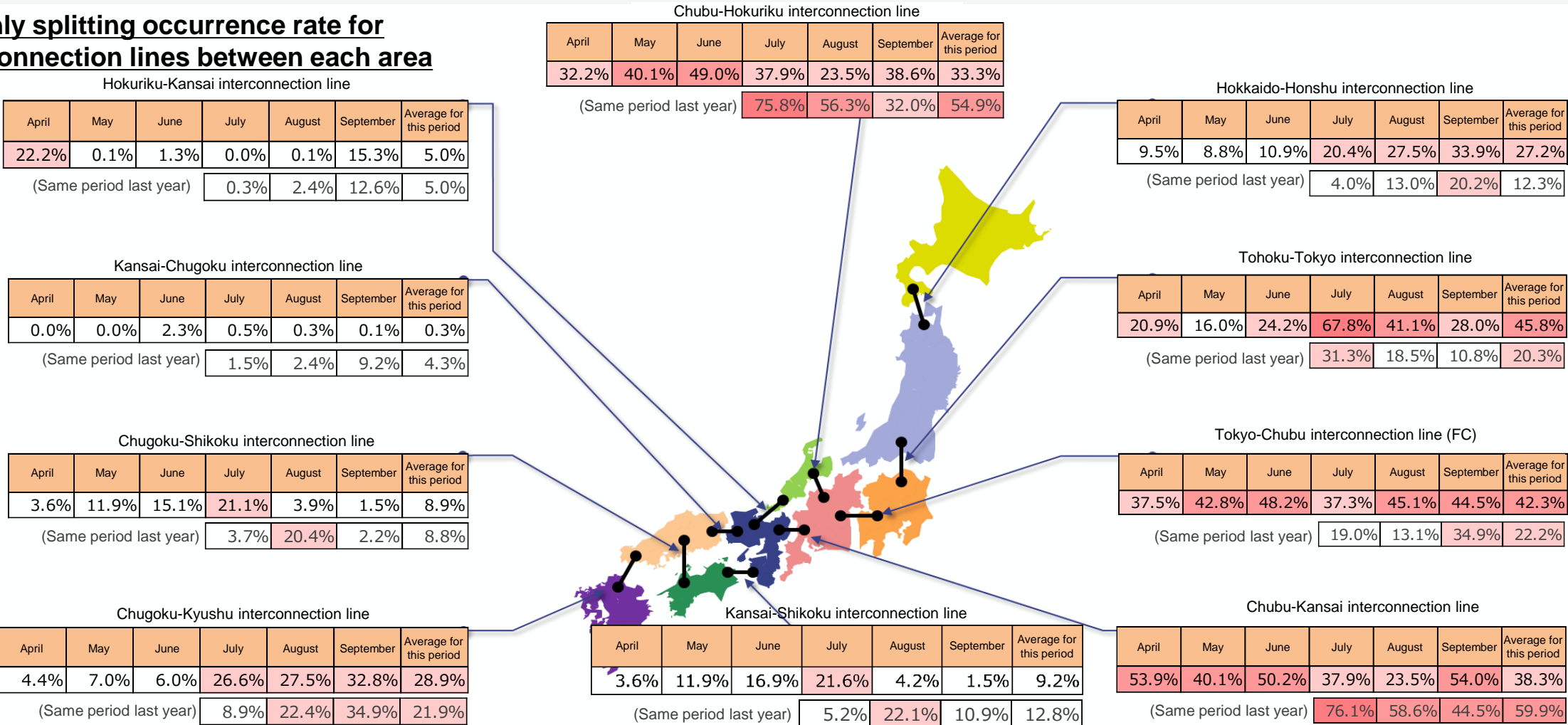
Trends in the difference (= Average unit imbalance fee – Average area prices)
(unit: yen/kWh)



Day-Ahead market splitting status between areas

- The average market splitting occurrence rates were relatively high during this period in general, at the 40% level for Tohoku-Tokyo and Tokyo-Chubu (FC), at the 30% level for Chubu-Kansai and Chubu-Hokuriku, and slightly less than 30% for Chugoku-Kyushu and Hokkaido-Honshu.
- In particular, the rates were roughly twice as high as those in the same period last year for Hokkaido-Honshu, Tohoku-Tokyo, and Tokyo-Chubu (FC). One of the factors of this is assumed to be work-related constraints on service capacity.
- In September, the splitting rate was 54.0% for Chubu-Kansai. This was caused when the interconnection line was switched from DC to AC to conduct a periodic inspection of the AC-DC transfer equipment for Chubu-Hokuriku, and during this period, the Hokuriku-Kansai interconnection line was suspended to avoid an AC loop. As a result, the power flow in Chubu-Kansai increased, presumably pushing up the splitting rate.

Monthly splitting occurrence rate for interconnection lines between each area

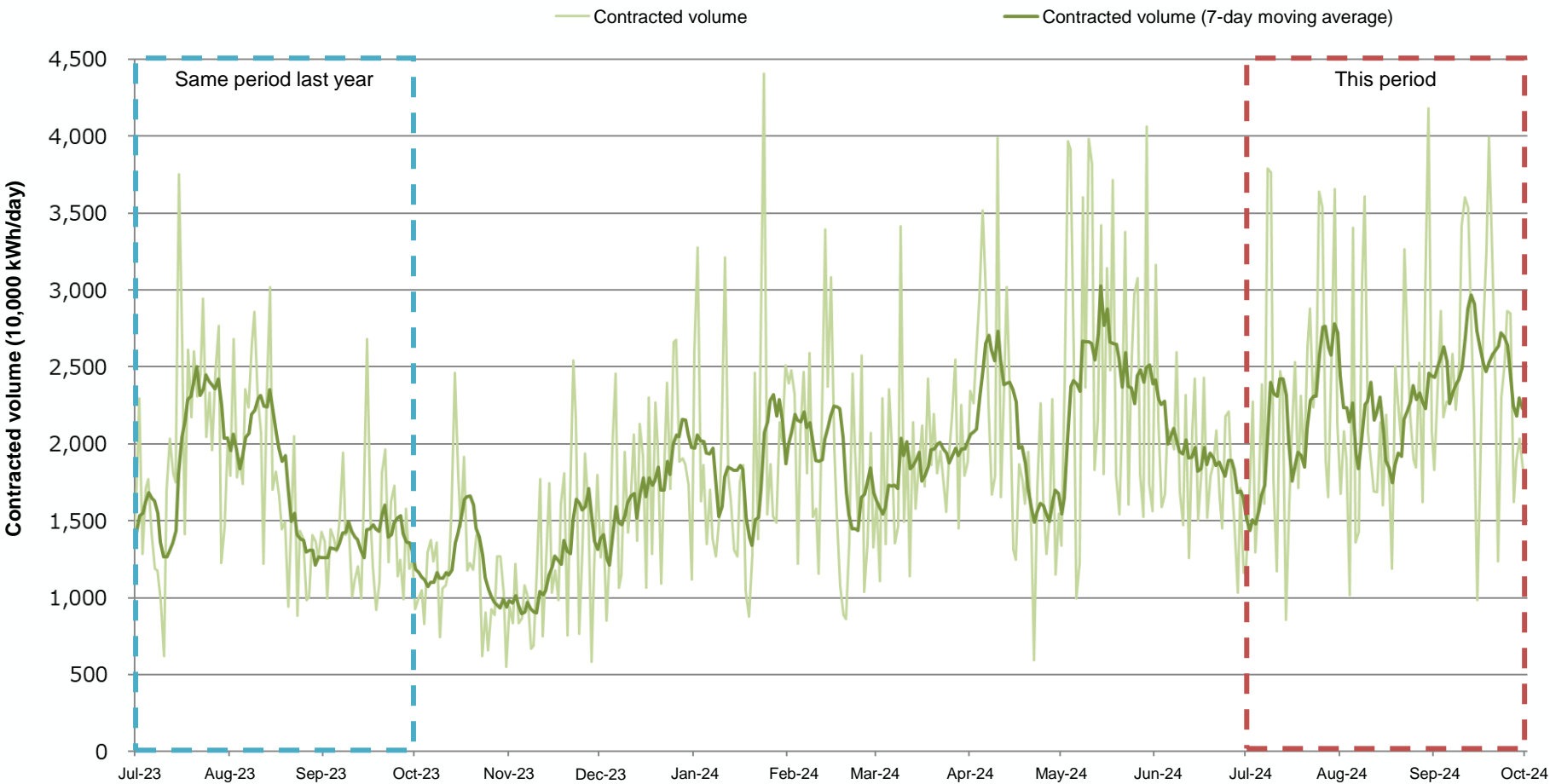


* The numbers (percentages) in the tables show the market splitting occurrence rate in each interconnection line, which is the number of products in which market splitting occurred as a percentage of the number of products handled in each month (48 frames per day every 30-minutes x number of days).
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

Contracted volume in the intraday market

- The contracted volume in the intraday market for this period was 2.11 billion kWh.
- For year-on-year comparison, the volume was 1.3 times that of the same period last year.

Intraday market: Trends in contracted volume
(July 1, 2023 to September 30, 2024)



Main data

| |
|--|
| Contracted volume (July to September 2024) |
| 2.11 billion kWh |
| Comparison with contracted volume for the same period last year (vs. July to September 2023) |
| 1.3 × |

Contracted sell volume in the intraday market by business operator category

- The contracted sell volume in the intraday market for this period was 1.07 billion kWh for general electric utilities and 1.04 billion kWh for new entrants and other business operators.
- For year-on-year comparison, the volume was 1.7 times that of the same period last year for general electric utilities and 1.1 times for new entrants and other business operators.

Intraday market: Trends in contracted sell volume

(July 1, 2023 to September 30, 2024)

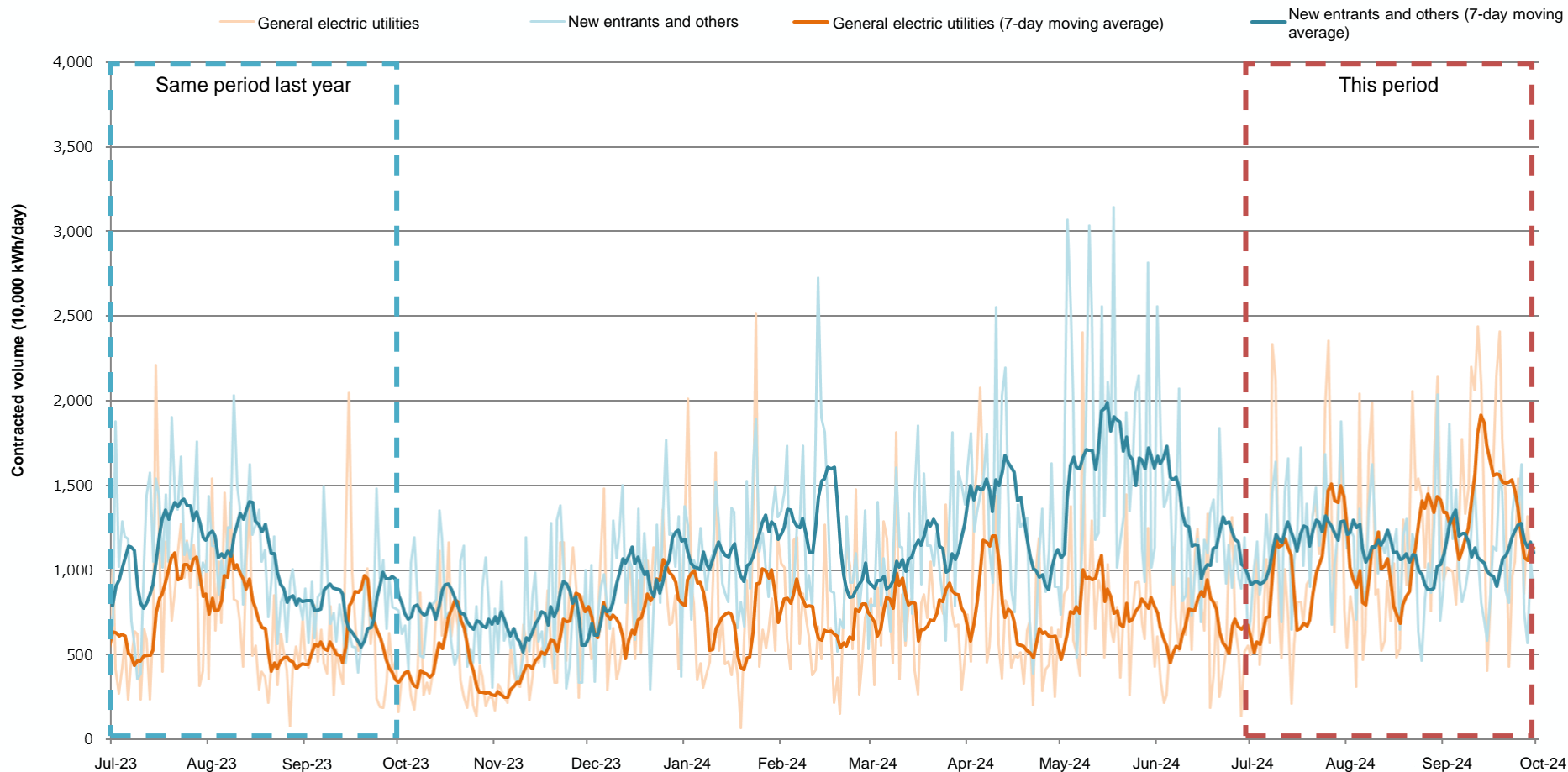
Main data

| |
|--|
| Contracted sell volume by general electric utilities (July to September 2024) |
| 1.07 billion kWh |

| |
|--|
| Comparison with contracted sell volume by general electric utilities for the same period last year (vs. July to September 2023) |
| 1.7 × |

| |
|---|
| Contracted sell volume by new entrants and other business operators (July to September 2024) |
| 1.04 billion kWh |

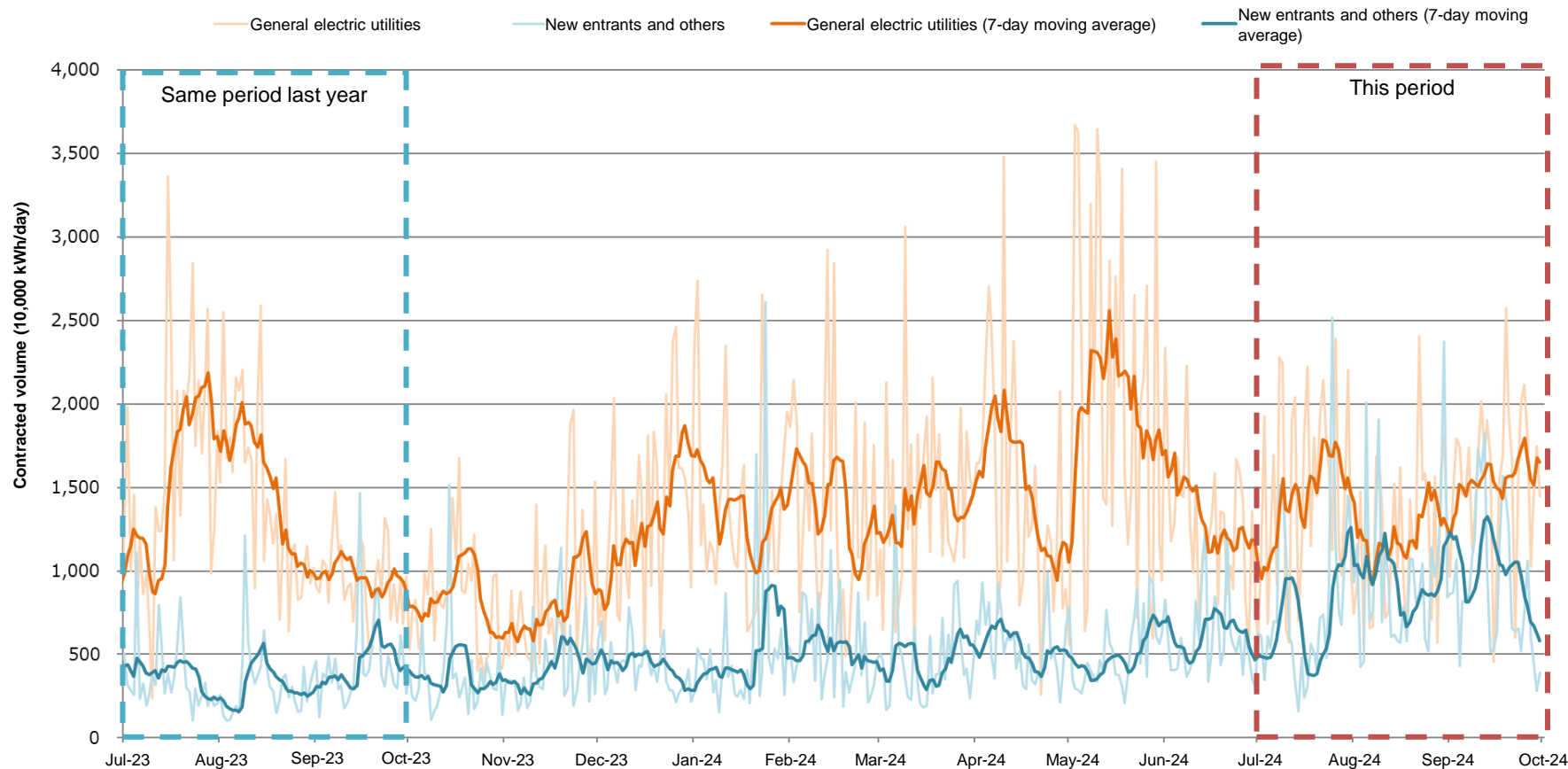
| |
|---|
| Comparison with contracted sell volume by new entrants and other business operators for the same period last year (vs. July to September 2023) |
| 1.1 × |



Contracted buy volume in the intraday market by business operator category

- The contracted buy volume in the intraday market for this period was 1.30 billion kWh for general electric utilities and 0.81 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 2.3 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
(July 1, 2023 to September 30, 2024)



Main data

Contracted buy volume by general electric utilities

(July to September 2024)

1.3 billion kWh

Comparison with contracted buy volume by
general electric utilities for the same period last
year

(vs. July to September 2023)

1.1 ×

Contracted buy volume by new entrants and other
business operators

(July to September 2024)

0.81 billion kWh

Comparison with contracted buy volume by new
entrants and other business operators for the
same period last year

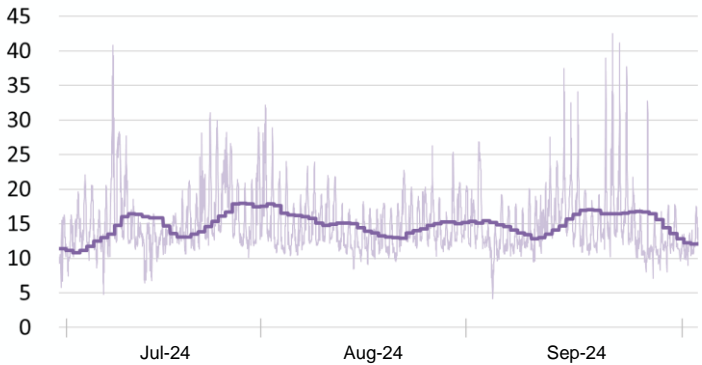
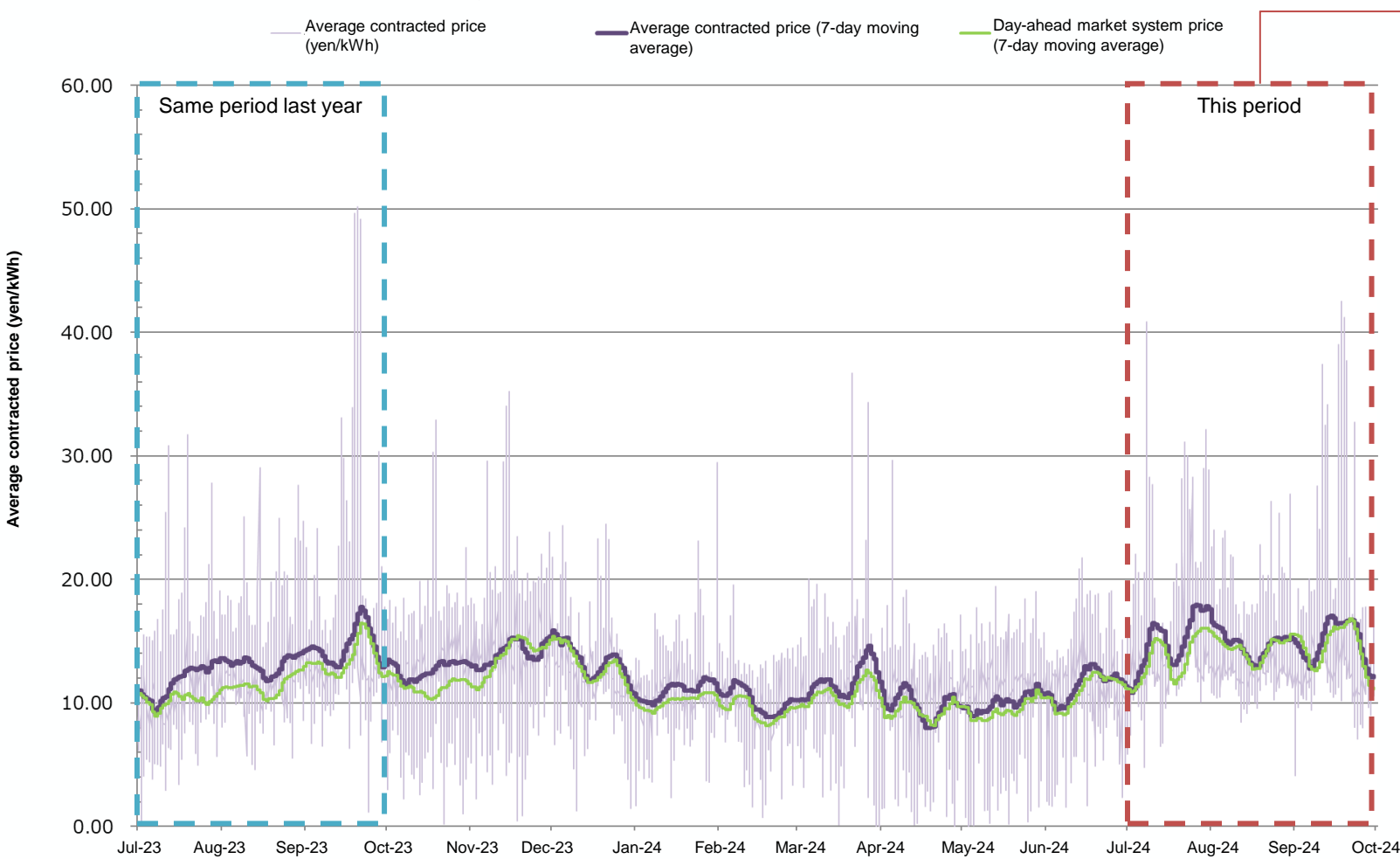
(vs. July to September 2023)

2.3 ×

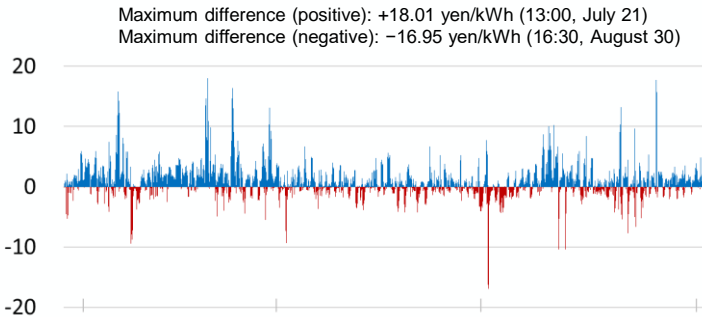
Average contracted price in the intraday market

- The average contracted price in the intraday market for this period was 14.9 yen/kWh. This was a 12.8% increase compared to the average of 13.2 yen/kWh for the same period last year.
- The average contracted price in the intraday market for this period exceeded the average system price (14.2 yen/kWh).

Intraday market: Trends in the average contracted price
(July 1, 2023 to September 30, 2024)



Price difference (Average intraday market price - System price)



Highest price: September 18, 1 frame in total
Lowest price: September 1, 1 frame in total

Main data

| | This period | Same period last year | Difference |
|---|-------------|-----------------------|------------|
| Intraday market average contracted price | 14.9 | 13.2 | +1.7 |
| (Reference) Day-ahead market average system price | 14.2 | 11.7 | +2.5 |
| Highest price | 42.5 | 50.2 | -7.7 |
| Lowest price | 4.13 | 0.44 | +3.69 |

Unit: yen/kWh

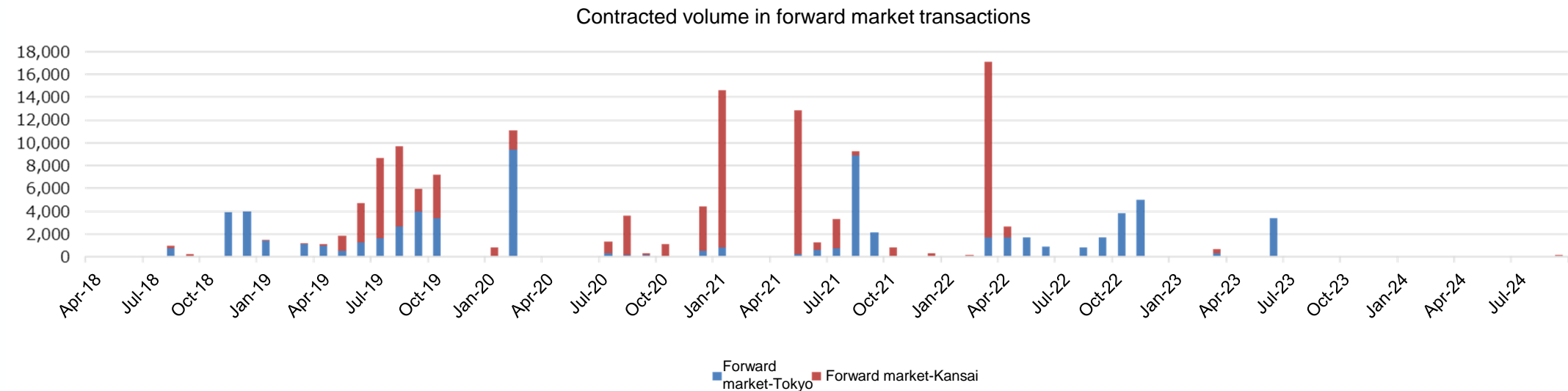
Overview of contracted volume and bidding volume in the forward market transactions

- The contracted volume in the forward market for this period was 200 MWh. This was the first time any contracted volume had been recorded since June last year.

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 (Previous year quarter) |
|----------------------|--------|-------------------------|--------------------|---------------------|--------------------|---------------------|--------------------|---|
| Contracted volume | Total | 200 | 0 | 0 | 200 | 0 | 0 | 0 |
| | Tokyo | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Kansai | 200 | 0 | 0 | 200 | 0 | 0 | 0 |
| Sell volume | Total | 450,104 | 62,328 | 374,136 | 13,640 | 0 | 0 | 1,492,382 |
| | Tokyo | 424,344 | 42,168 | 374,136 | 8,040 | 0 | 0 | 423,202 |
| | Kansai | 25,760 | 20,160 | 0 | 5,600 | 0 | 0 | 1,069,180 |
| Buy volume | Total | 129,742 | 101,472 | 0 | 28,270 | 0 | 0 | 5,538,148 |
| | Tokyo | 129,542 | 101,472 | 0 | 28,070 | 0 | 0 | 163,036 |
| | Kansai | 200 | 0 | 0 | 200 | 0 | 0 | 5,375,112 |



*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.

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

- Electricity futures trading contracted for this period was approximately 0.16 billion kWh (1.6 times that of the same period last year) for TOCOM and approximately 20.50 billion kWh (5.4 times that of the same period last year) for EEX.

Contracted volume in the futures market*1 (TOCOM and EEX) during the period

(TOCOM *2)

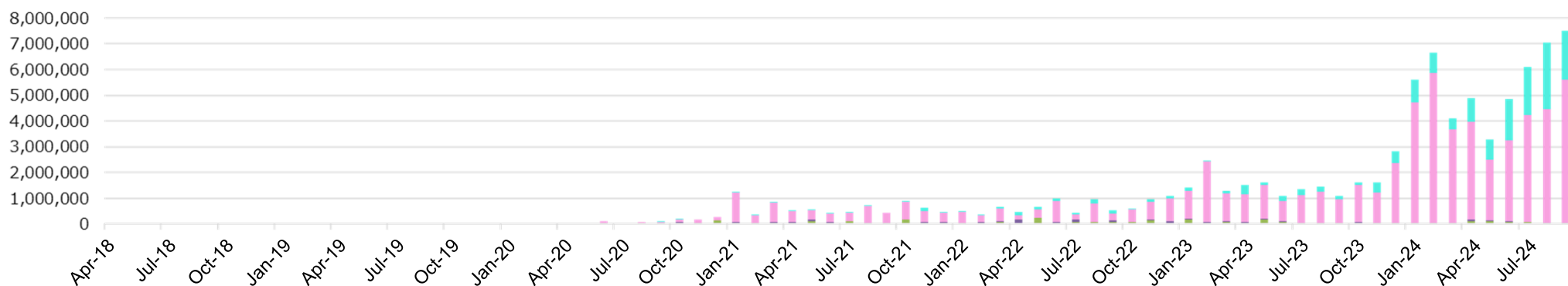
(Unit: MWh)

| Item | Area | Total (This quarter) | | | (Reference) Total (Previous year quarter) |
|-------------------|--------|----------------------|-----------|--------------|---|
| | | | Base load | Daytime load | |
| Contracted volume | Total | 155,381 | 145,320 | 10,061 | 96,602 |
| | Tokyo | 118,286 | 109,711 | 8,575 | 78,553 |
| | Kansai | 37,094 | 35,609 | 1,486 | 18,049 |

(EEX)

| Item | Area | Total (This quarter) | | | (Reference) Total (Previous year quarter) |
|-------------------|--------|----------------------|------------|-----------|---|
| | | | Base load | Peak load | |
| Contracted volume | Total | 20,503,188 | 19,554,384 | 948,804 | 3,789,684 |
| | Tokyo | 14,123,460 | 13,566,792 | 556,668 | 3,209,916 |
| | Kansai | 6,379,728 | 5,987,592 | 392,136 | 579,768 |

Contracted volume in futures market transactions



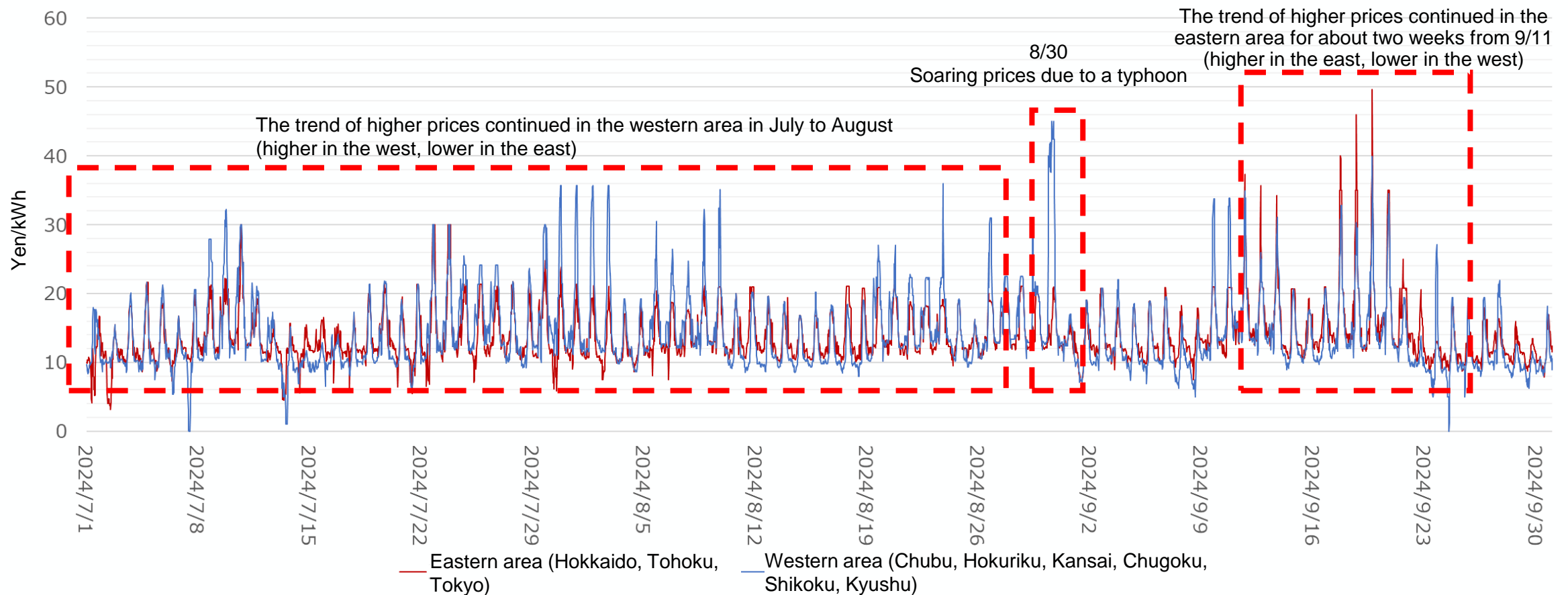
■ TOCOM-Tokyo ■ TOCOM-Kansai ■ EEX-Tokyo ■ EEX-Kansai

*1 Data was obtained through aggregation based on data published on the JPY and EEX websites.

*2 The data aggregation method has been changed, effective from the reporting for the April to June 2024 period.

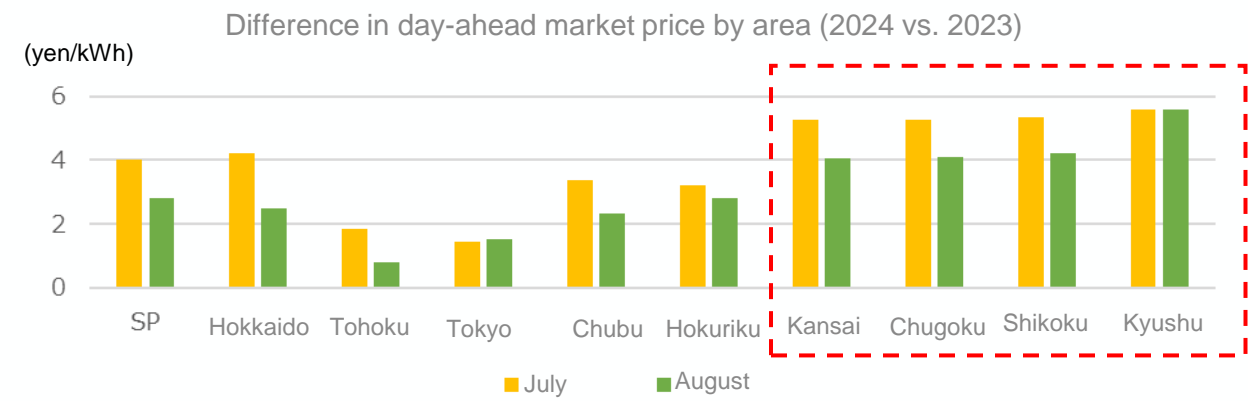
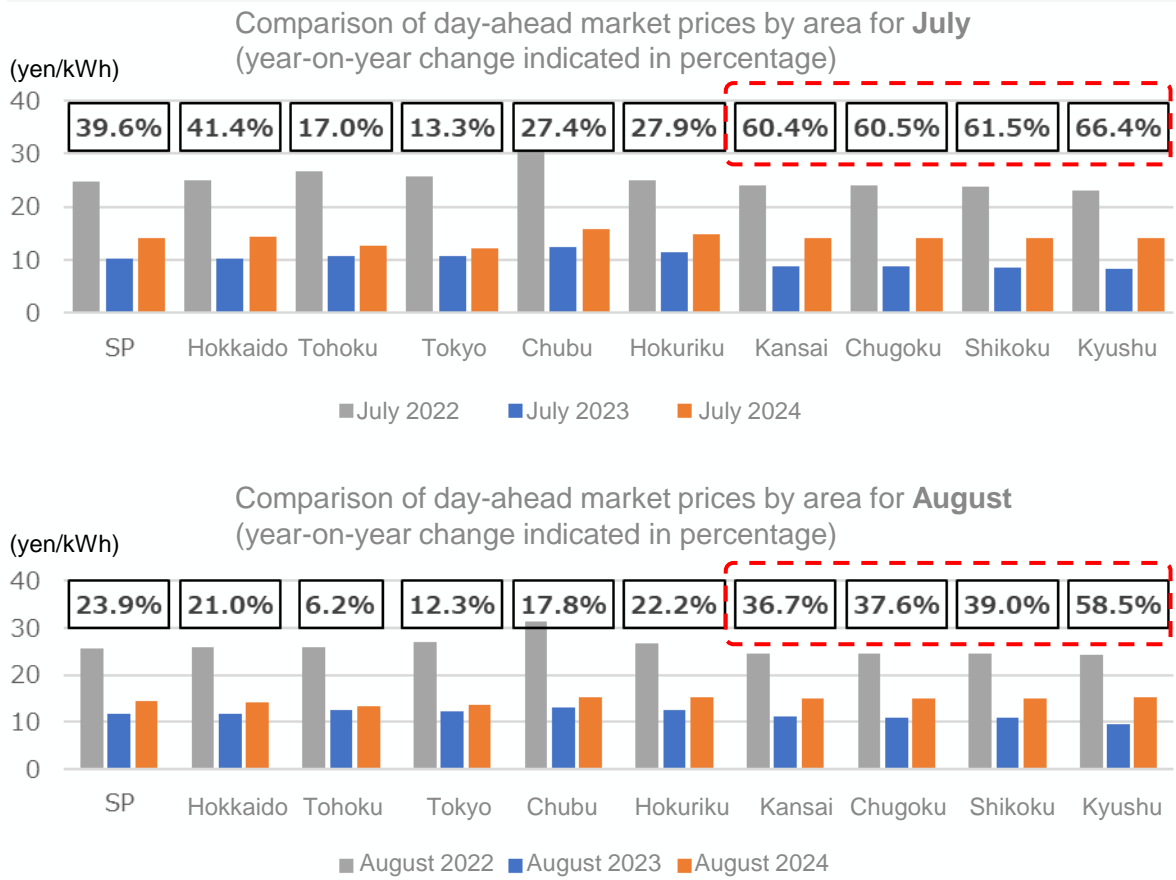
Trends in day-ahead market prices in the period July to September 2024

- In July and August, the western area (Chubu to Kyushu) saw market prices rise due to a combination of increased demand arising from higher temperatures and reduced supplies caused by some power sources with low marginal costs (nuclear, hydroelectric, and coal-fired) undergoing periodic inspections, unscheduled outages, and equipment failures (see pp. 25-30).
- Market prices rose at the end of August due mainly to fuel constraints caused by Typhoon No. 10 (see p. 31).
- In September, when the lingering summer heat continued, demand in the mid-month was higher than the previous year period. In addition, market splitting occurred due the impact of interconnection line work, pushing up market prices especially in Hokkaido, Tohoku, Tokyo, Chubu, and Hokuriku (see pp. 32-34).



Year-on-year comparison of day-ahead market prices by area (July and August)

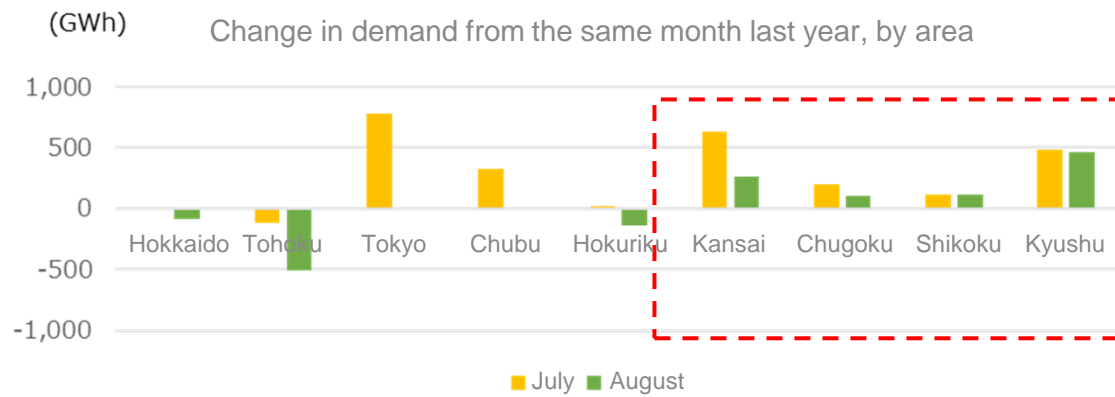
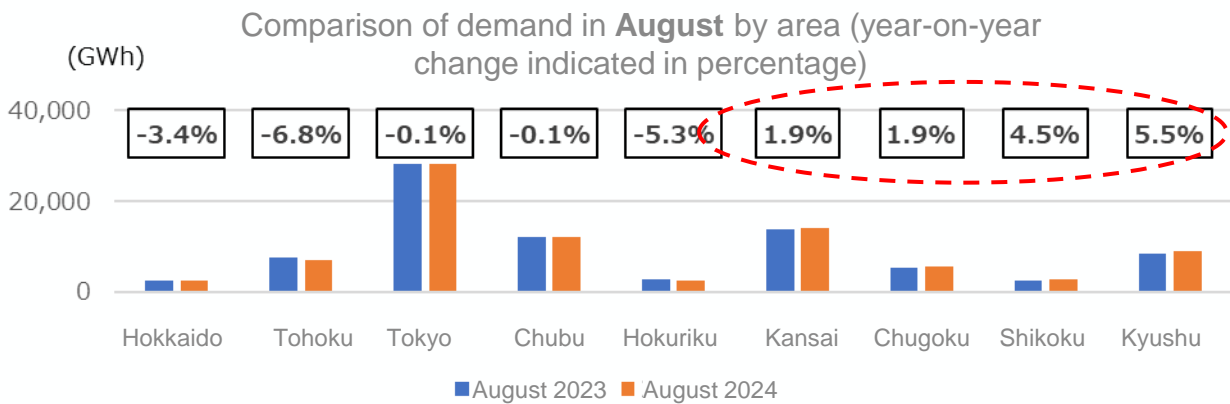
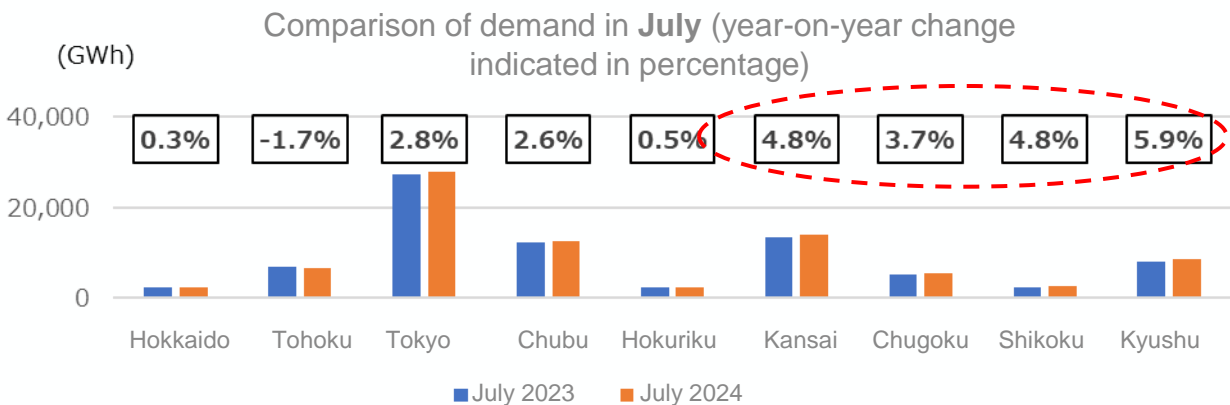
- In July to August 2024, day-ahead market prices were **higher than 2023 levels in all areas, but especially in the west.** (These prices were lower nationwide compared to 2022, when prices soared.)
- As shown on the subsequent pages, the increased prices in western Japan can be attributed to higher bidding prices on the market resulting from a combination of **(1) increased demand due to higher temperatures** and (2) in particular, **reduced supplies caused by some power sources with low marginal costs (nuclear, hydroelectric, and coal-fired) undergoing periodic inspections, unscheduled outages, and equipment failures.**



Higher in the west,
lower in the east
in July to August

Year-on-year comparison of demand by area (July and August)

- Compared to 2023, demand **increased by 54 GWh in the eastern area***, and by as much as **2,539 GWh in the western area***.



Based on data published by the Organization for Cross-regional Coordination of Transmission Operators, JAPAN.

*The eastern area includes the Hokkaido, Tohoku, and Tokyo areas, and the western area includes the Chubu, Hokuriku, Kansai, Chugoku, Shikoku, and Kyushu areas.

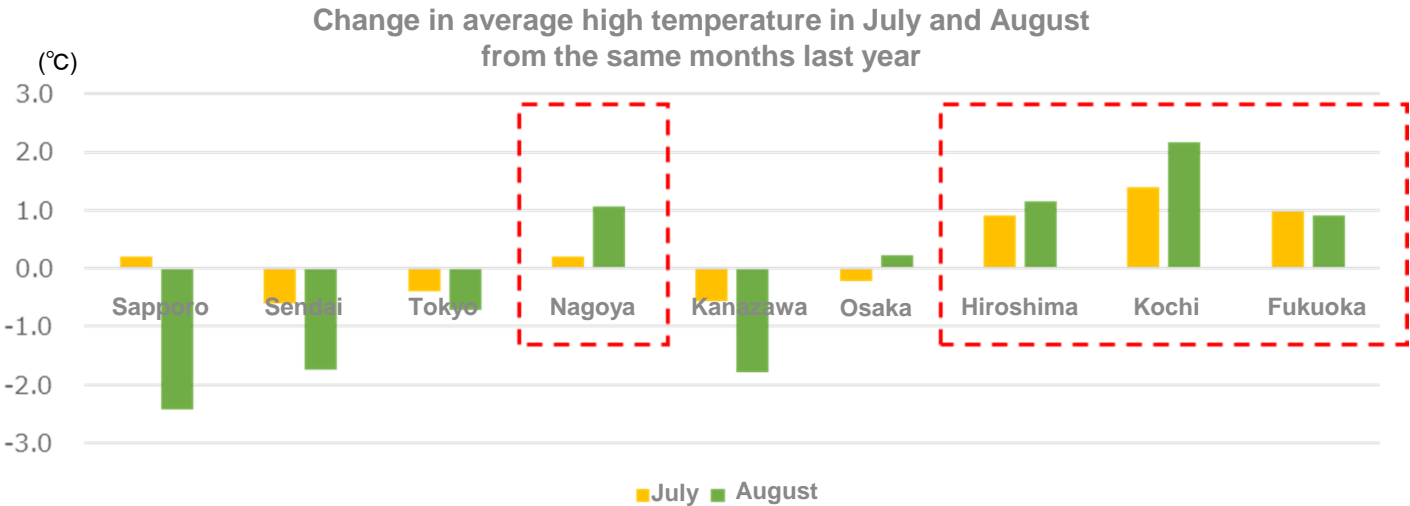
Year-on-year comparison of temperature by area (July and August)

- **Average high temperatures in Nagoya, Hiroshima, Kochi, and Fukuoka in July and August 2024 were higher than those in the same months the previous year.**

Monthly average of high temperatures in different locations (°C)

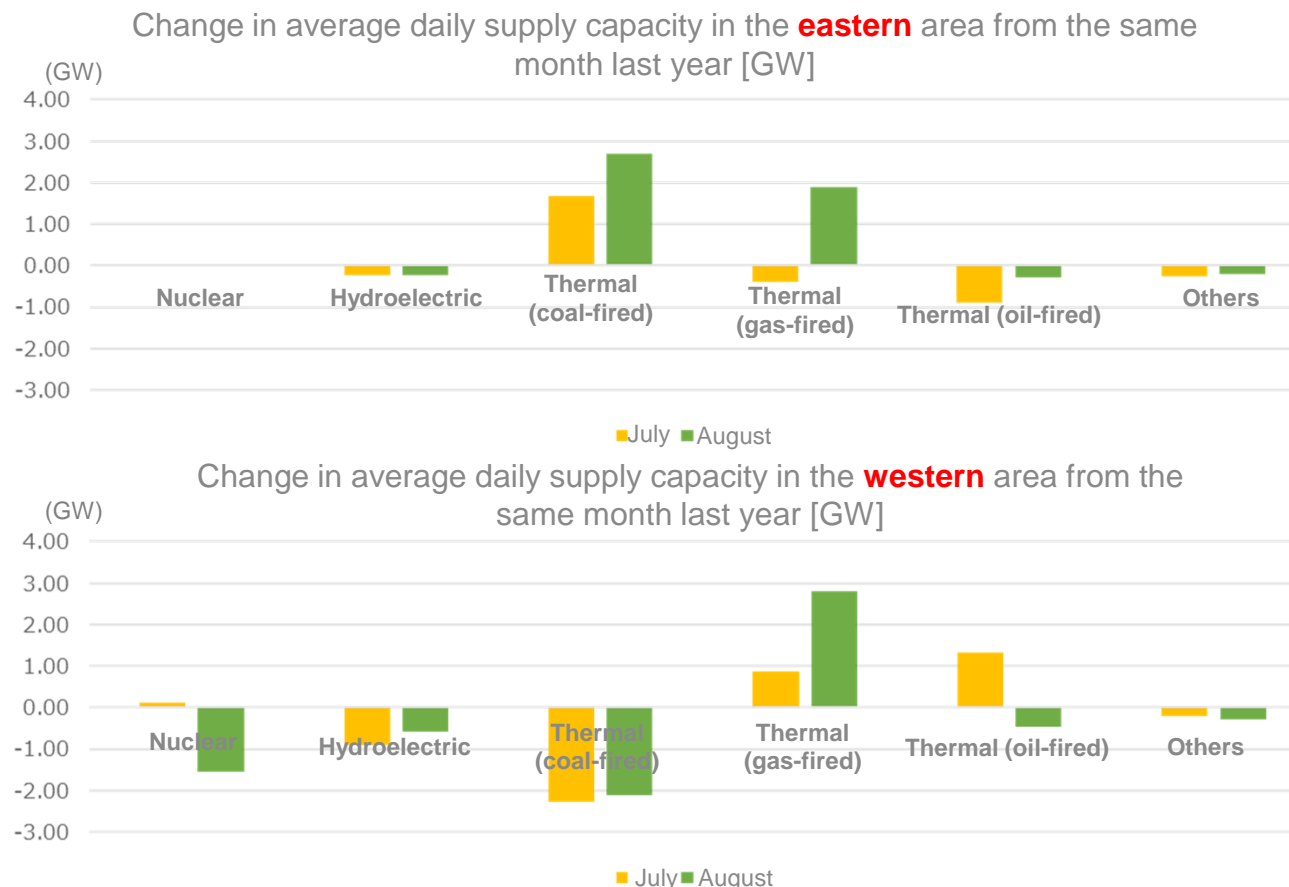
| | Sapporo | Sendai | Tokyo | Nagoya | Kanazawa | Osaka | Hiroshima | Kochi | Fukuoka |
|-------------|---------|--------|-------|--------|----------|-------|-----------|-------|---------|
| July 2023 | 27.8 | 31.0 | 33.9 | 34.1 | 32.3 | 33.7 | 31.5 | 31.4 | 32.9 |
| July 2024 | 28.0 | 30.4 | 33.5 | 34.3 | 31.7 | 33.5 | 32.4 | 32.8 | 33.8 |
| August 2023 | 30.9 | 33.2 | 34.3 | 34.8 | 34.8 | 35.2 | 34.3 | 32.2 | 33.9 |
| August 2024 | 28.4 | 31.5 | 33.6 | 35.8 | 33.0 | 35.4 | 35.5 | 34.3 | 34.8 |

*Columns with the color are locations where temperatures were higher than the previous year levels for both July and August.



Year-on-year comparison of supply capacity by area (overview)

- Supply capacity was higher than the previous year levels in the eastern area and lower in the western area. In particular, in the western area, the supply capacity of power sources with low marginal costs indicated a remarkable decline.



*In the **eastern area**, supply capacity **declined by 0.13 GW per day in July**. By contrast, supply capacity **increased by 3.83 GW per day in August**.

*In the **western area**, supply capacity **declined by 1.07 GW per day in July** and **by 2.25 GW per day in August**.

- The western area’s suspended supply capacities in July and August were 2.61 million to 4.39 million kW higher than the previous year levels due to higher occurrences of periodic inspections, unscheduled outages, and equipment failures. In particular, power sources with relatively low marginal costs experienced marked levels of supply suspension.
- Specifically, suspended supply capacities can be compared to the previous year levels as follows:
 - **Coal-fired: An increase by 2.23 million kW** due to periodic inspection, unscheduled outages, equipment failures (3.320 million kW this year vs. 1.091 million kW las year)
 - **Nuclear: An increase by 1.78 million kW** with a larger number of units under periodic inspection in August (2.606 million kW this year vs. 0.826 million kW last year)
 - **Hydroelectric: An increase by 0.38 million kW** due to periodic inspection and equipment failures (1.67 million kW this year vs. 1.29 million kW last year)

[Coal-fired, July-August 2024]

| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Date/Time of suspension | Planned restoration date | Cause of suspension |
|---------|--------------------------------------|--|-----------------------|------------|------------------------|--------------------|------------------------------------|-------------------------|--------------------------|---|
| Shikoku | Electric Power Development (J-POWER) | J-POWER Tachibana-wan Thermal Power Station | Thermal (coal-fired) | Unit 1 | 1,050,000 | Scheduled outage | Outage - equipment failure | 2024/2/15 17:35 | 2024/11/30 | Repair due to leakage from hot reheat pipe |
| Shikoku | Shikoku Electric Power Co., Inc. | Shikoku Electric Saijo Power Station | Thermal (coal-fired) | Unit 1 | 500,000 | Scheduled outage | Outage - equipment failure | 2024/7/19 5:00 | 2024/9/13 | Work-related suspension |
| Chugoku | Osaki CoolGen Corporation | Oxygen-blown integrated coal gasification combined cycle demonstration plant | Thermal (coal-fired) | Standalone | 166,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/7/30 21:30 | 2024/8/19 | Inspection |
| Kansai | The Kansai Electric Power Co., Inc. | Maizuru Power Station | Thermal (coal-fired) | Unit 2 | 900,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/3/1 0:00 | 2024/8/2 | Periodic inspection, etc. |
| Shikoku | TOSA Power Inc. | Tosa Power Plant | Thermal (coal-fired) | Standalone | 167,000 | Unscheduled outage | Outage - equipment failure | 2024/7/28 13:54 | 2024/8/4 | Failed boiler equipment |
| Kansai | Electric Power Development (J-POWER) | J-POWER Takasago Thermal Power Plant | Thermal (coal-fired) | Unit 1 | 250,000 | Unscheduled outage | Outage - equipment failure | 2024/6/24 9:43 | 2024/8/10 | Startup failure due to unavailability of heavy oil system |
| Kyushu | Miike Power Plant Corporation | Miike Power Plant | Thermal (coal-fired) | Unit 2 | 175,000 | Scheduled outage | Outage - other | 2024/7/19 0:00 | 2024/8/13 | Shutdown for demand-supply balancing |
| | | | | | | | | 2024/8/26 0:00 | 2024/9/5 | |
| Kyushu | Hibikinada Power Station Co., Ltd. | Hibikinada Power Station | Thermal (coal-fired) | Unit 1 | 112,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/3/20 2:00 | 2024/11/21 | Periodic inspection and plant modification work |
| | | | | Total | 3,320,000 | | | | | |

[Coal-fired, July-August 2023]

| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Date/Time of suspension | Planned restoration date | Cause of suspension |
|---------|--------------------------------------|----------------------------------|-----------------------|-----------|------------------------|------------------|-------------------------------------|-------------------------|--------------------------|----------------------------------|
| Kyushu | Kyushu Electric Power Co., Inc. | Reihoku Power Station | Thermal (coal-fired) | Unit 1 | 700,000 | Scheduled outage | Outage - equipment failure | 2023/5/29 19:00 | 2023/8/1 | Inspection of boiler attachments |
| Chugoku | The Chugoku Electric Power Co., Inc. | Shimonoseki Power Station Unit 1 | Thermal (coal-fired) | Unit 1 | 175,000 | Scheduled outage | Outage - scheduled long-term outage | 2022/5/23 15:30 | 2024/1/31 | Work-related suspension |
| Chugoku | Mitsubishi UBE Cement Corporation | Ube Power Plant | Thermal (coal-fired) | Unit 6 | 216,000 | Scheduled outage | Outage - equipment failure | 2022/5/15 13:00 | | Equipment repair |
| | | | | Total | 1,091,000 | | | | | |

Year-on-year comparison of supply capacity in the western area (details 2)

[Nuclear, July-August 2024]

| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Date/Time of suspension | Planned restoration date | Cause of suspension |
|---------|-------------------------------------|------------------------------------|-----------------------|----------------------|------------------------|------------------|------------------------------------|-------------------------|--------------------------|---------------------|
| Shikoku | Shikoku Electric Power Co., Inc. | Shikoku Electric Ikata Power Plant | Nuclear | Unit 3 | 890,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/7/19 0:20 | 2024/9/30 | Periodic inspection |
| Kyushu | Kyushu Electric Power Co., Inc. | Sendai Nuclear Power Station | Nuclear | Unit 1 | 890,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/6/14 9:00 | 2024/8/29 | Periodic inspection |
| Kansai | The Kansai Electric Power Co., Inc. | Takahama Nuclear Power Station | Nuclear | Unit 1 | 826,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/6/2 10:00 | 2024/8/28 | Periodic inspection |
| | | | | Suspension in August | 2,606,000 | | | | | |

[Nuclear, July-August 2023]

| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Date/Time of suspension | Planned restoration date | Cause of suspension |
|--------|-------------------------------------|--------------------------------|-----------------------|----------------------|------------------------|------------------|------------------------------------|-------------------------|--------------------------|---|
| Kyushu | Kyushu Electric Power Co., Inc. | Sendai Nuclear Power Station | Nuclear | Unit 2 | 890,000 | Scheduled outage | Outage - periodic inspection, etc. | 2023/5/13 9:00 | 2023/7/18 | Periodic inspection |
| Kansai | The Kansai Electric Power Co., Inc. | Takahama Nuclear Power Station | Nuclear | Unit 2 | 826,000 | Scheduled outage | Outage - periodic inspection, etc. | 2011/11/25 23:02 | 2023/9/20 | Outage due to work to construct specified severe accident response facilities |
| Kansai | The Kansai Electric Power Co., Inc. | Takahama Nuclear Power Station | Nuclear | Unit 1 | 826,000 | Scheduled outage | Outage - periodic inspection, etc. | 2011/1/10 10:03 | 2023/8/2 | Outage due to work to construct specified severe accident response facilities |
| | | | | Suspension in August | 826,000 | | | | | |

[Hydroelectric, July-August 2024]

| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Date/Time of suspension | Planned restoration date | Cause of suspension |
|---------|--------------------------------------|--|-----------------------|-----------|------------------------|------------------|------------------------------------|-------------------------|--------------------------|--|
| Chugoku | The Chugoku Electric Power Co., Inc. | Nabara Power Station | Hydroelectric | Unit 2 | 310,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/7/6 7:30 | 2024/12/4 | Oil-filled cable replacement work, etc. |
| Chugoku | The Chugoku Electric Power Co., Inc. | Nabara Power Station | Hydroelectric | Unit 1 | 310,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/7/6 7:30 | 2024/12/4 | Oil-filled cable replacement work, etc. |
| Kyushu | Kyushu Electric Power Co., Inc. | Omarugawa Power Station | Hydroelectric | Unit 2 | 300,000 | Scheduled outage | Outage - periodic inspection, etc. | 2024/3/2 8:00 | 2024/11/1 | Overhaul work on the power generation motor for reversible pump-turbine in Unit 2 of Omarugawa Power Station |
| Chubu | Chubu Electric Power Co., Inc. | Mazegawa Daiichi Power Station | Hydroelectric | Unit 2 | 144,000 | Scheduled outage | Outage - periodic inspection, etc. | 2023/5/8 9:00 | 2025/11/30 | Work |
| Kansai | The Kansai Electric Power Co., Inc. | Okutataragi Pumped Storage Power Station | Hydroelectric | Unit 2 | 303,000 | Scheduled outage | Outage - equipment failure | 2023/9/5 15:00 | 2025/3/25 | Generator-related work |
| Kansai | The Kansai Electric Power Co., Inc. | Okutataragi Pumped Storage Power Station | Hydroelectric | Unit 1 | 303,000 | Scheduled outage | Outage - equipment failure | 2023/9/5 15:00 | 2025/3/25 | Generator-related work |
| | | | | Total | 1,670,000 | | | | | |

[Hydroelectric, July-August 2023]

| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Date/Time of suspension | Planned restoration date | Cause of suspension |
|----------|--------------------------------------|---|-----------------------|------------|------------------------|--------------------|-------------------------------------|-------------------------|--------------------------|--|
| Chubu | Electric Power Development (J-POWER) | J-POWER Miboro Power Station | Hydroelectric | Unit 1 | 107,500 | Scheduled outage | Outage - other | 2023/5/17 16:00 | 2024/5/18 | Due to river control (fall of heavy equipment) |
| Hokuriku | Electric Power Development (J-POWER) | J-POWER Tedorigawa No. 1 Power Station | Hydroelectric | Unit 2 | 125,000 | Scheduled outage | Outage - equipment failure | 2023/5/17 15:30 | 2024/5/19 | Repair due to failure |
| Chubu | Electric Power Development (J-POWER) | J-POWER Shintoyone Pumped Storage Power Station (Chubu) | Hydroelectric | Unit 4 | 225,000 | Unscheduled outage | Outage - equipment failure | 2023/5/4 17:05 | 2024/4/23 | Equipment failure |
| Chubu | Chubu Electric Power Co., Inc. | Mazegawa Daiichi Power Station | Hydroelectric | Unit 2 | 144,000 | Scheduled outage | Outage - periodic inspection, etc. | 2023/5/8 9:00 | 2025/11/30 | Work |
| Hokuriku | Hokuriku Electric Power Co. | Hokuriku Electric Arimine No.2 Power Station | Hydroelectric | Standalone | 123,000 | Scheduled outage | Outage - periodic inspection, etc. | 2023/4/8 9:00 | 2023/9/7 | VCT installation, etc. |
| Hokuriku | Hokuriku Electric Power Co. | Hokuriku Electric Arimine No.1 Power Station | Hydroelectric | Standalone | 265,000 | Scheduled outage | Outage - periodic inspection, etc. | 2023/4/8 9:00 | 2023/9/7 | VCT installation, etc. |
| Kyushu | Kyushu Electric Power Co., Inc. | Omarugawa Power Station | Hydroelectric | Unit 1 | 300,000 | Scheduled outage | Outage - scheduled long-term outage | 2023/3/1 8:00 | 2023/10/5 | Overhaul work on the power generation motor for reversible pump-turbine in Unit 1 of Omarugawa Power Station |
| | | | | Total | 1,289,500 | | | | | |

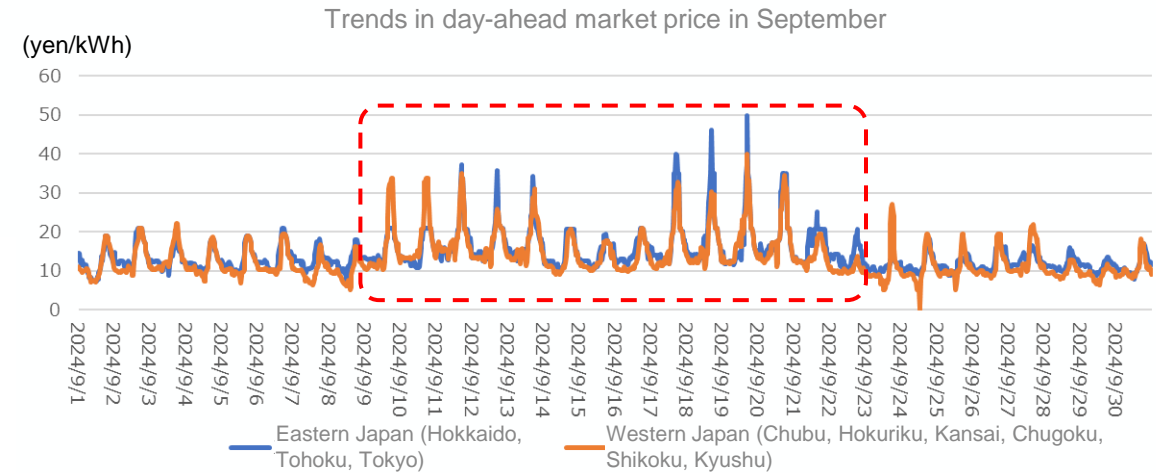
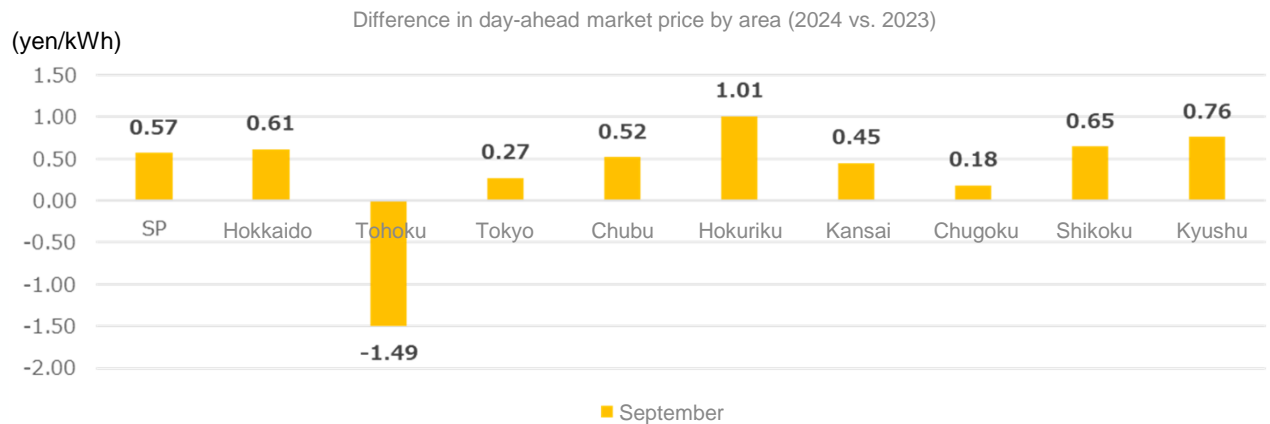
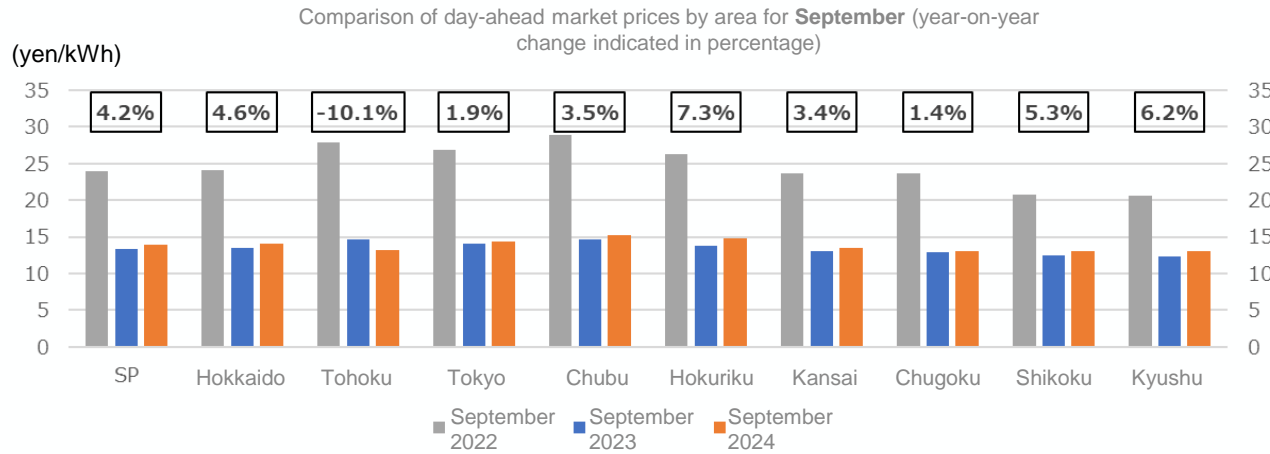
Reduced supply capacity due to impact of Typhoon No. 10

- The Kansai, Shikoku, and Kyushu areas experienced fuel and output constraints due the impact of Typhoon No. 10.
 - Scheduled outage: 1.94 million kW thermal power + 1.40 million kW hydroelectric power, output reduction: 6.80 million kW thermal power
- Day-ahead market prices soared to 45.00 yen/kWh maximum in the western area (Chubu to Kyushu) on August 29 and 30.

| [HJKS-registered thermal power] | | | | | | | | | | | | |
|---------------------------------------|--------------------------------------|---|-----------------------|------------|------------------------|------------------|------------------------------|-----------|-------------------------|--------------------------|--|-----------------|
| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Reduction | Date/Time of suspension | Planned restoration date | Cause of suspension | Last updated |
| Kansai | The Kansai Electric Power Co., Inc. | Himeji No. 1 Power Station | Thermal (gas-fired) | Unit 6 | 713,000 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 21:00 |
| | | | Thermal (gas-fired) | Unit 5 | 729,000 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:59 |
| | | Himeji No. 2 Power Station | Thermal (gas-fired) | Unit 6 | 486,500 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:56 |
| | | | Thermal (gas-fired) | Unit 5 | 486,500 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:55 |
| | | | Thermal (gas-fired) | Unit 4 | 486,500 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:35 |
| | | | Thermal (gas-fired) | Unit 3 | 486,500 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:35 |
| | | | Thermal (gas-fired) | Unit 2 | 486,500 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:35 |
| | | | Thermal (gas-fired) | Unit 1 | 486,500 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 20:34 |
| | Electric Power Development (J-POWER) | Takasago Thermal Power Station | Thermal (coal-fired) | Unit 2 | 250,000 | Reduced output | Reduction - other | 125,000 | 2024/8/29 1:00 | 2024/9/4 | Ash treatment constraints due to approaching typhoon | 2024/8/27 16:44 |
| | | | Thermal (coal-fired) | Unit 1 | 250,000 | Reduced output | Reduction - other | 125,000 | 2024/8/29 0:42 | 2024/9/4 | Ash treatment constraints due to approaching typhoon | 2024/8/27 16:42 |
| | Kobelco Power Kobe No. 2 Inc. | Kobe Power Plant | Thermal (coal-fired) | No. 4 | 650,000 | Reduced output | Reduction - other | 301,700 | 2024/8/30 0:00 | 2024/9/2 | Constraints on coal ash shipment | 2024/8/28 22:13 |
| | | | Thermal (coal-fired) | No. 3 | 650,000 | Scheduled outage | Outage - other | | 2024/8/30 0:20 | 2024/9/2 | Constraints on coal ash shipment | 2024/8/28 22:03 |
| | Kobelco Power Kobe Inc. | Kobe Power Plant | Thermal (coal-fired) | No. 2 | 700,000 | Scheduled outage | Outage - other | | 2024/8/30 1:00 | 2024/9/3 | Constraints on coal ash shipment | 2024/8/28 22:00 |
| | | | Thermal (coal-fired) | No. 1 | 700,000 | Reduced output | Reduction - other | 460,000 | 2024/8/29 22:00 | 2024/9/2 | Constraints on coal ash shipment | 2024/8/28 21:54 |
| | Mitsubishi Heavy Industries, Ltd. | Takasago Machinery Works Combined cycle power plant validation facility (power generation facility No. 2) | Thermal (gas-fired) | Standalone | 566,000 | Reduced output | Reduction - fuel constraints | 332,000 | 2024/8/30 0:00 | 2024/9/4 | Fuel constraints due to approaching typhoon | 2024/8/28 21:02 |
| Shikoku | Shikoku Electric Power Co., Inc. | Sakaide Power Station | Thermal (gas-fired) | Unit 2 | 289,000 | Scheduled outage | Outage - fuel constraints | | 2024/8/27 0:00 | 2024/9/4 | Startup constraints | 2024/8/26 14:21 |
| | | | Thermal (gas-fired) | Unit 1 | 296,000 | Scheduled outage | Outage - fuel constraints | | 2024/8/27 0:00 | 2024/9/4 | Startup constraints | 2024/8/26 14:20 |
| Kyushu | Kyushu Electric Power Co., Inc. | Matsuura Power Station | Thermal (coal-fired) | Unit 2 | 1,000,000 | Reduced output | Reduction - other | 425,000 | 2024/8/30 0:00 | | Coal loading constraints due to approaching typhoon | 2024/8/29 7:50 |
| | | | Thermal (coal-fired) | Unit 1 | 700,000 | Reduced output | Reduction - other | 262,500 | 2024/8/30 0:00 | | Coal loading constraints due to approaching typhoon | 2024/8/29 7:47 |
| | | Reihoku Power Station | Thermal (coal-fired) | Unit 1 | 700,000 | Reduced output | Reduction - other | 297,500 | 2024/8/29 6:45 | | | 2024/8/29 6:52 |
| | Electric Power Development (J-POWER) | Matsuura Thermal Power Station | Thermal (coal-fired) | Unit 2 | 1,000,000 | Reduced output | Reduction - other | 700,000 | 2024/8/30 0:14 | 2024/8/31 | Preparation for approaching typhoon | 2024/8/28 18:26 |
| | | | Thermal (coal-fired) | Unit 1 | 1,000,000 | Reduced output | Reduction - other | 600,000 | 2024/8/30 0:05 | 2024/8/31 | Preparation for approaching typhoon | 2024/8/28 18:24 |
| | | Matsushima Thermal Power Station | Thermal (coal-fired) | Unit 2 | 500,000 | Reduced output | Reduction - other | 260,000 | 2024/8/29 0:52 | 2024/8/31 | Preparation for approaching typhoon | 2024/8/28 18:19 |
| | | | Thermal (coal-fired) | Unit 1 | 500,000 | Reduced output | Reduction - other | 260,000 | 2024/8/29 0:52 | 2024/8/31 | Preparation for approaching typhoon | 2024/8/28 18:18 |
| | | | | | | | | | | | | |
| [HJKS-registered hydroelectric power] | | | | | | | | | | | | |
| Area | Power plant operator | Power plant name | Power generation type | Unit name | Authorized output (kW) | Suspension type | Category | Reduction | Date/Time of suspension | Planned restoration date | Cause of suspension | Last updated |
| Kyushu | Kyushu Electric Power Co., Inc. | Omarugawa Power Station | Hydroelectric | Unit 4 | 300,000 | Scheduled outage | Outage - other | | 2024/8/28 16:00 | | Dam operational constraints due to approaching typhoon | 2024/8/28 14:50 |
| | | | | Unit 3 | 300,000 | Scheduled outage | Outage - other | | 2024/8/28 16:00 | | Dam operational constraints due to approaching typhoon | 2024/8/28 14:48 |
| | | | | Unit 1 | 300,000 | Scheduled outage | Outage - other | | 2024/8/28 16:00 | | Dam operational constraints due to approaching typhoon | 2024/8/28 14:46 |
| | | Ohira Power Station | Hydroelectric | Unit 2 | 250,000 | Scheduled outage | Outage - other | | 2024/8/29 0:00 | | Dam operational constraints due to approaching typhoon | 2024/8/27 21:15 |
| | | | | Unit 1 | 250,000 | Scheduled outage | Outage - other | | 2024/8/29 0:00 | | Dam operational constraints due to approaching typhoon | 2024/8/27 21:14 |

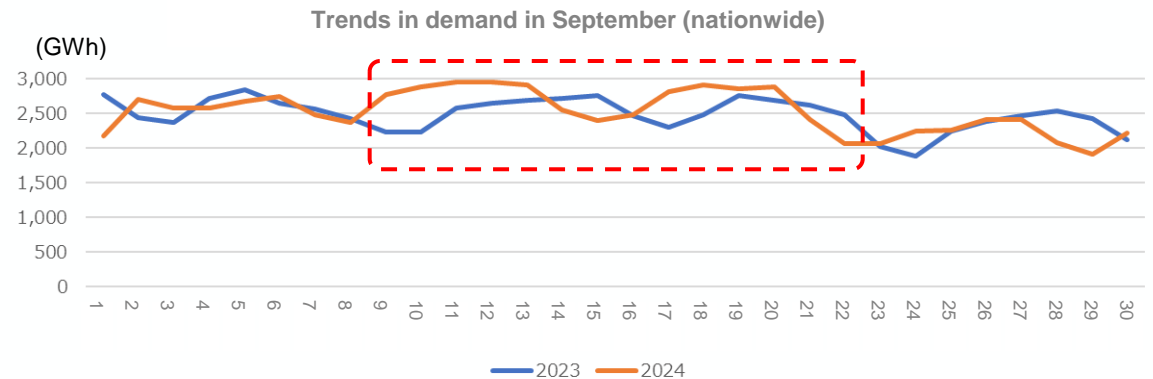
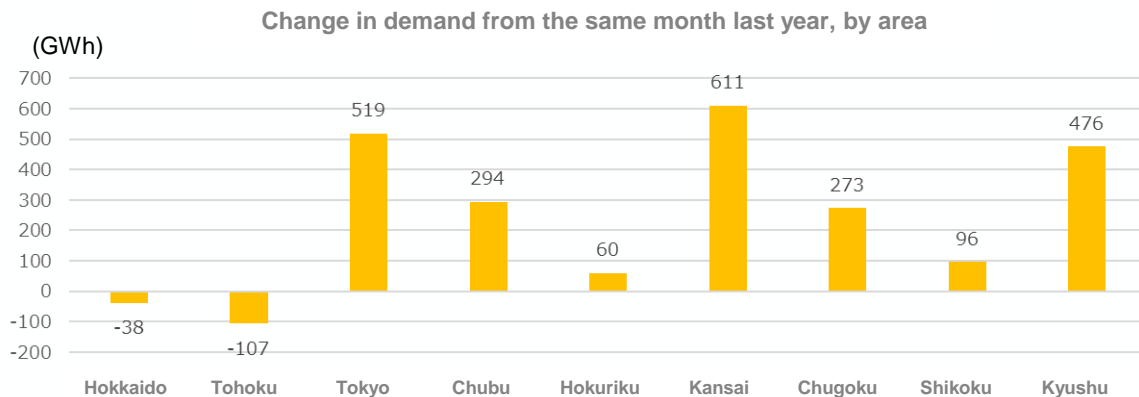
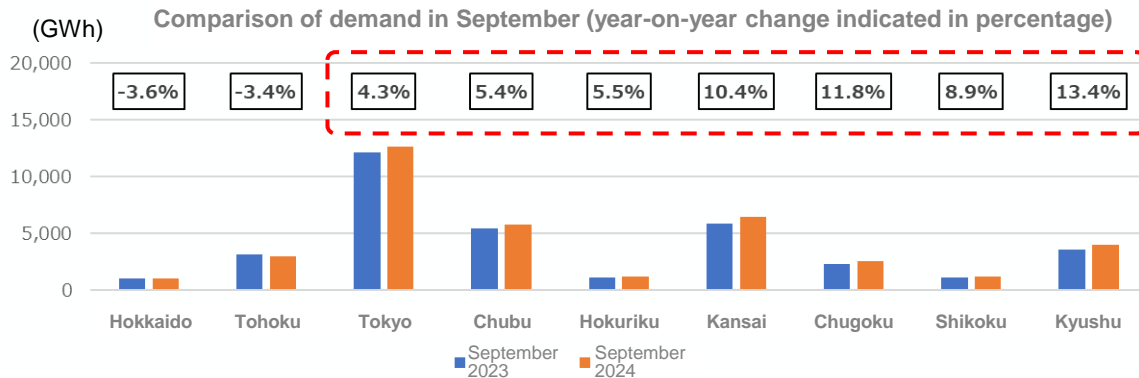
Year-on-year comparison of day-ahead market prices by area (September)

- Average prices were higher than last year except in Tohoku.
- Prices soared during the weeks beginning on September 9 and 16. Unlike the trend through August, prices were higher in the Hokkaido to Hokuriku areas during the period after September 11.



Year-on-year comparison of demand by area (September 9 to 22)

- A comparison of demand during the period of soaring prices with that in the previous year period, indicates that **demand increased in all areas except Hokkaido and Tohoku**.
- During the two weeks with soaring prices, **an average daily increase over the previous year period was approximately 7% nationwide**.



Price hikes during the weeks beginning on September 9 and 16

- While **more generators were shut down for periodic inspection or other reasons** as the off-peak season approached, the severe heat of late summer continued. **Demand was particularly higher than the previous year levels during the weeks beginning on September 9 and 16.**
 - According to Japan's power generation information disclosure system, known as HJKS, **outages increased from 53.21 million to 71.65 million kW during the period from September 1 to 30.**
- During the two weeks in question, a tight supply and demand balance forced **power companies to increase their buy bids. This created a situation where buy volumes continuously exceeded sell volumes, resulting in more buy bids at higher prices** than in the previous and following weeks.
 - Compared to the previous and following weeks, buy bids at 0-20 yen decreased, while buy bids at 20-40 yen and 100-110 yen increased.
- According to the Organization for Cross-regional Coordination of Transmission Operators, JAPAN, the Chubu-Hokuriku interconnection line was switched to AC interconnection and the **Hokuriku-Kansai interconnection line was suspended**, due to inspection of the AC-DC transfer equipment (from 4:00 on 9/11 to 20:00 on 9/14 and from 4:00 on 9/17 to 20:00 on 9/21).
This weakened the **Hokuriku-Kansai and Chubu-Kansai interconnections, creating a situation prone to splitting** and presumably contributing in part to the increase in buy bidding. An additional factor was a change in the price soaring trend from that of **higher in the west and lower in the east to that focused on the Hokkaido, Tohoku, Tokyo, Chubu, and Hokuriku areas since September 11.**
- It is assumed that such bidding behavior caused the spot price demand curve to shift to the right, resulting in **contracting at relatively high buy bid prices (30 to 40 yen range).**

【 Quarterly report 】

- **Wholesale electricity market**
 - JPEX 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 selling bidding
 - Supply of power source to the market for wholesale electricity utilities
 - Status of bidding, etc. for public hydroelectricity business
 - Status of OTC transactions

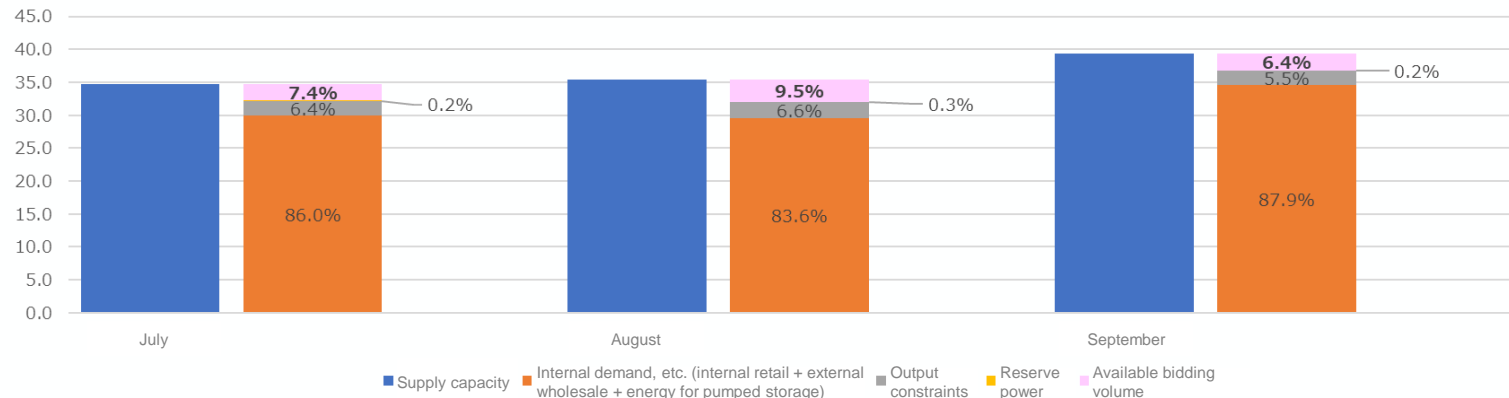
【Medium- to long-term trend report】

- **Wholesale electricity market**
 - JPEX 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
 - Average unit price of low-voltage rates
- **Gas market**
 - Status of OTC transactions of general gas utilities
 - Usage status of Start-up wholesale measure

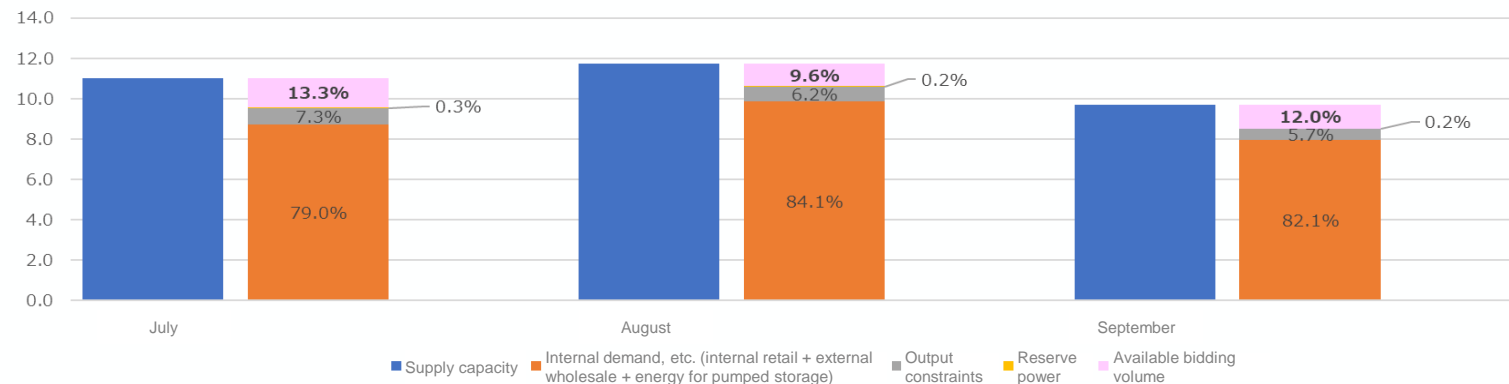
Supply of surplus electricity to JEPX market: Status of available bidding volume for supply capacity

- The total available bidding volume (data aggregated over applicable days each month) on the days with soaring spot and other prices in these months (9 days in July, 9 days in August, 11 days in September, and 29 days in total) and the days of lower spot prices (9 days in total) was approximately 6% to 9% levels (7.4% in July, 9.5% in August, 6.4% in September) of the internal supply capacity on days with higher prices. On days with lower prices, the figure was approximately 9% to 13% (13.3% in July, 9.6% in August, 12.0% in September).

On 29 days with soaring spot and other prices in July to September 2024



On 9 days with lower spot prices in July to September 2024



[Date for aggregation of available bidding volume]

◆ For the three months, the secretariat designated sampling dates, which consisted of 29 days with soaring spot and other prices and nine days when spot and other prices were among the lowest. Evaluations were performed on data provided by general electric utilities and JERA.

Sampling dates for July consist of days with soaring spot and other prices (July 8, 9, 10, 22, 23, 24, 29, 30, and 31) and three weekdays when the daily average system price was among the lowest (July 2, 16, and 17).

Sampling dates for August consist of days with soaring spot and other prices (August 1, 2, 5, 8, 9, 23, 26, 29, and 30) and three weekdays (excluding the Bon holidays) when the daily maximum system price was among the lowest (August 7, 19, and 22).

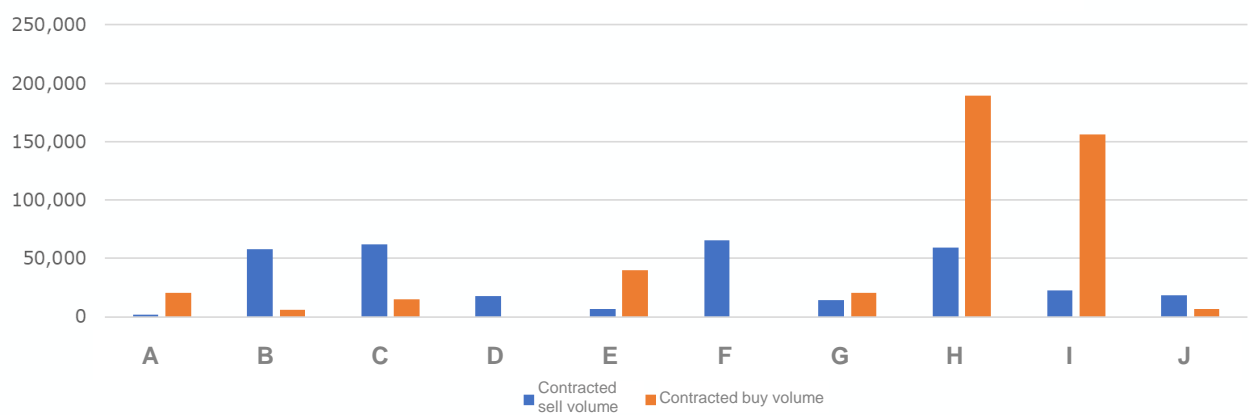
Sampling dates for September consist of days with soaring spot and other prices (September 9, 10, 11, 12, 13, 17, 18, 19, 20, 23, and 27) and three weekdays when the daily average system price was among the lowest (September 24, 25, and 30).

◆ 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.

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

- Contracted sell volume and contracted buy volume in the intraday market for general electric utilities and JERA are shown below.
- Electric companies B, C, and F were net sellers, while electric companies H and I were net buyers.

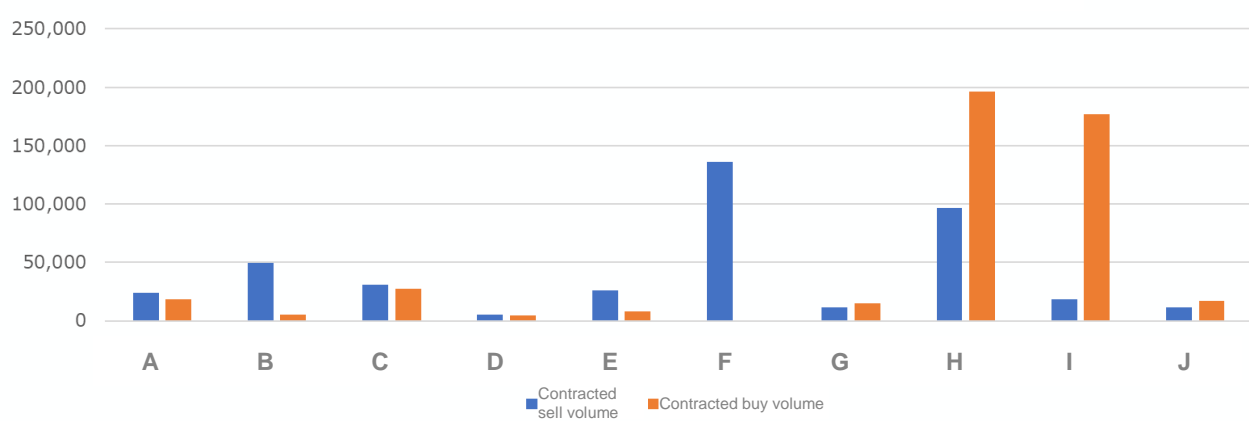
Contracted volume in the intraday market, July 2024 (Unit: MWh)



Contracted volume in the intraday market, August 2024 (Unit: MWh)



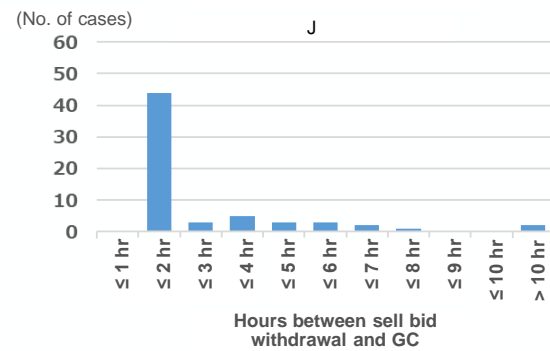
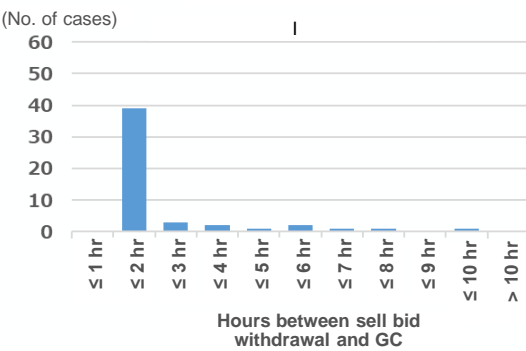
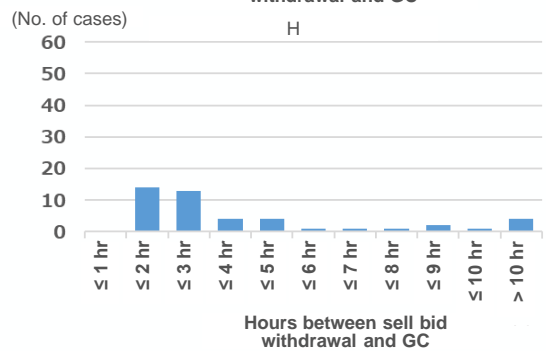
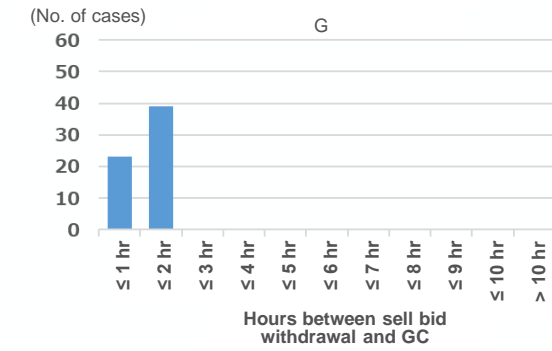
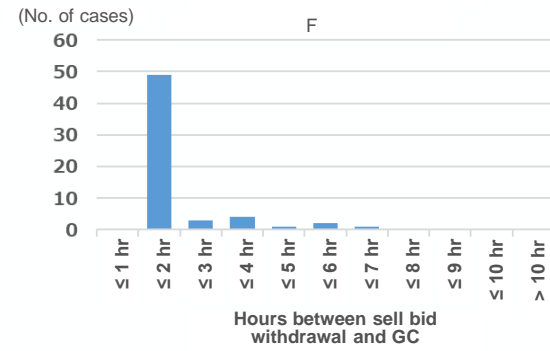
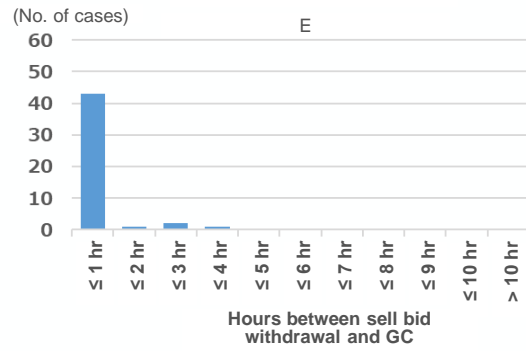
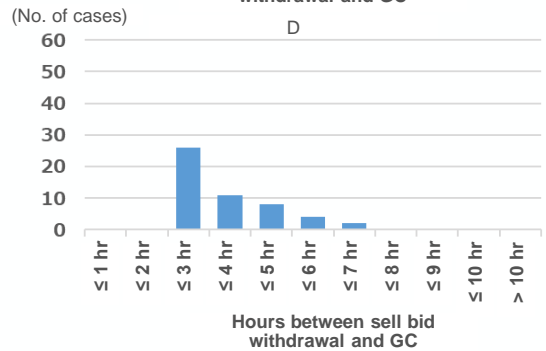
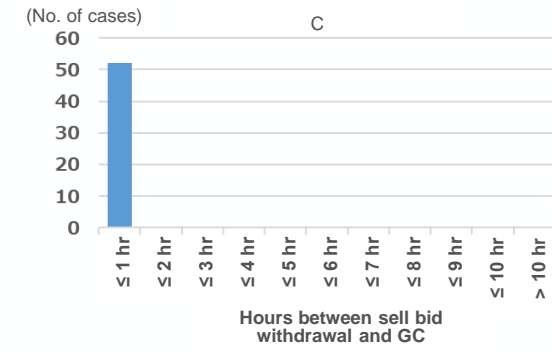
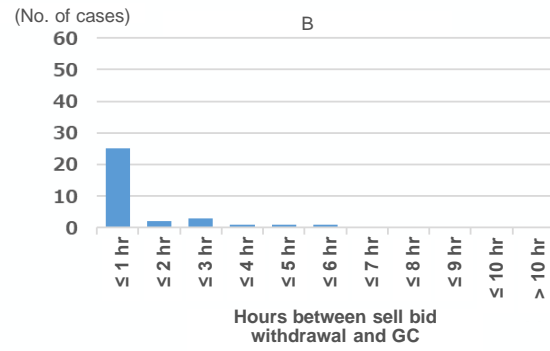
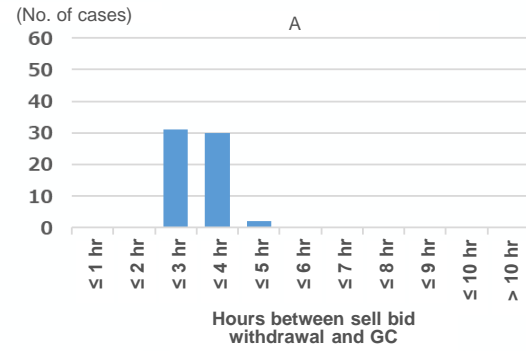
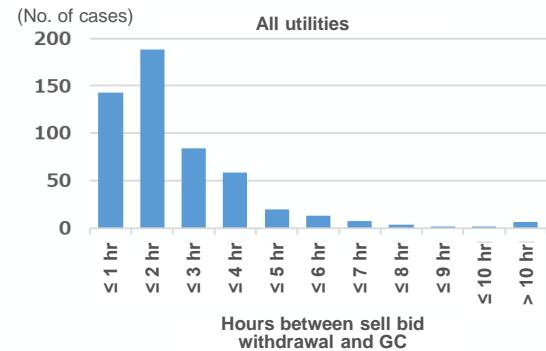
Contracted volume in the intraday market, September 2024 (Unit: MWh)



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

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

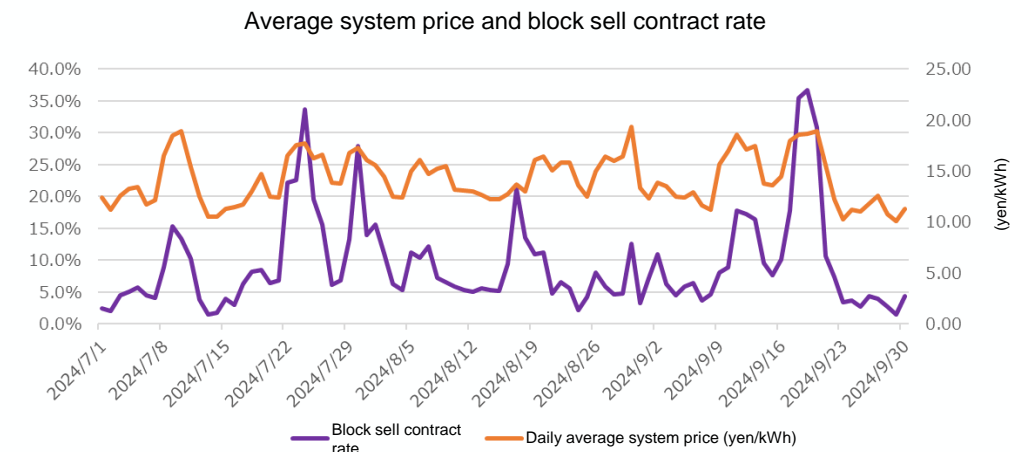
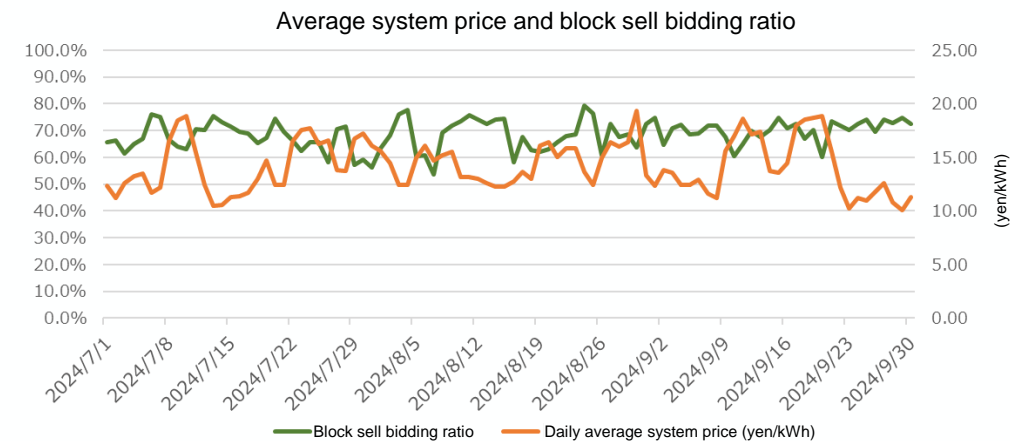
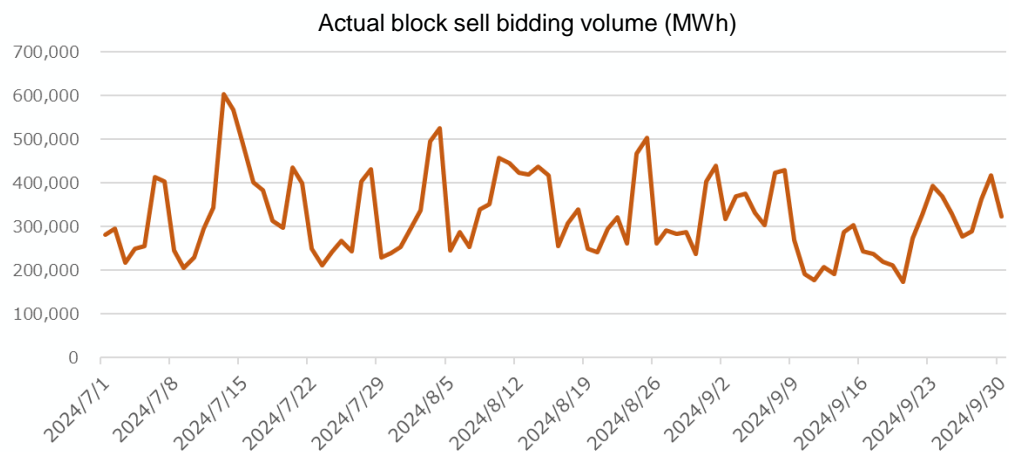
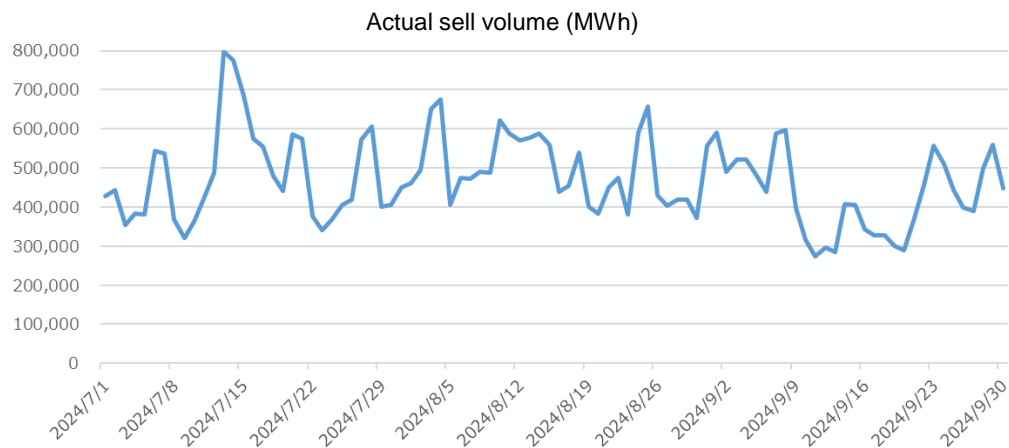
- For the three sampling days (July 2, August 20, and September 19), the distribution of the number of utilities was checked to see how many hours before GC they withdrew their sell bids. It was found that the trend for which the distribution concentrates in the period between “one hour before GC” and “two hours before GC” has continued. The number of cases corresponding to “one hour before” was 188 out of the total of 526, up about 5% from the previous quarter (139/469).



* 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, was 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 July, a weekday when the daily average system price was the lowest in July; for August, a weekday when the daily average system price was the highest in August; for September, a weekday when the maximum system price was the highest in the three months.

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.
- As soaring prices on the day-ahead market created a market situation where block sell bids were more likely to be matched, the contract rate occasionally exceeded 30% in July and September.



*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.

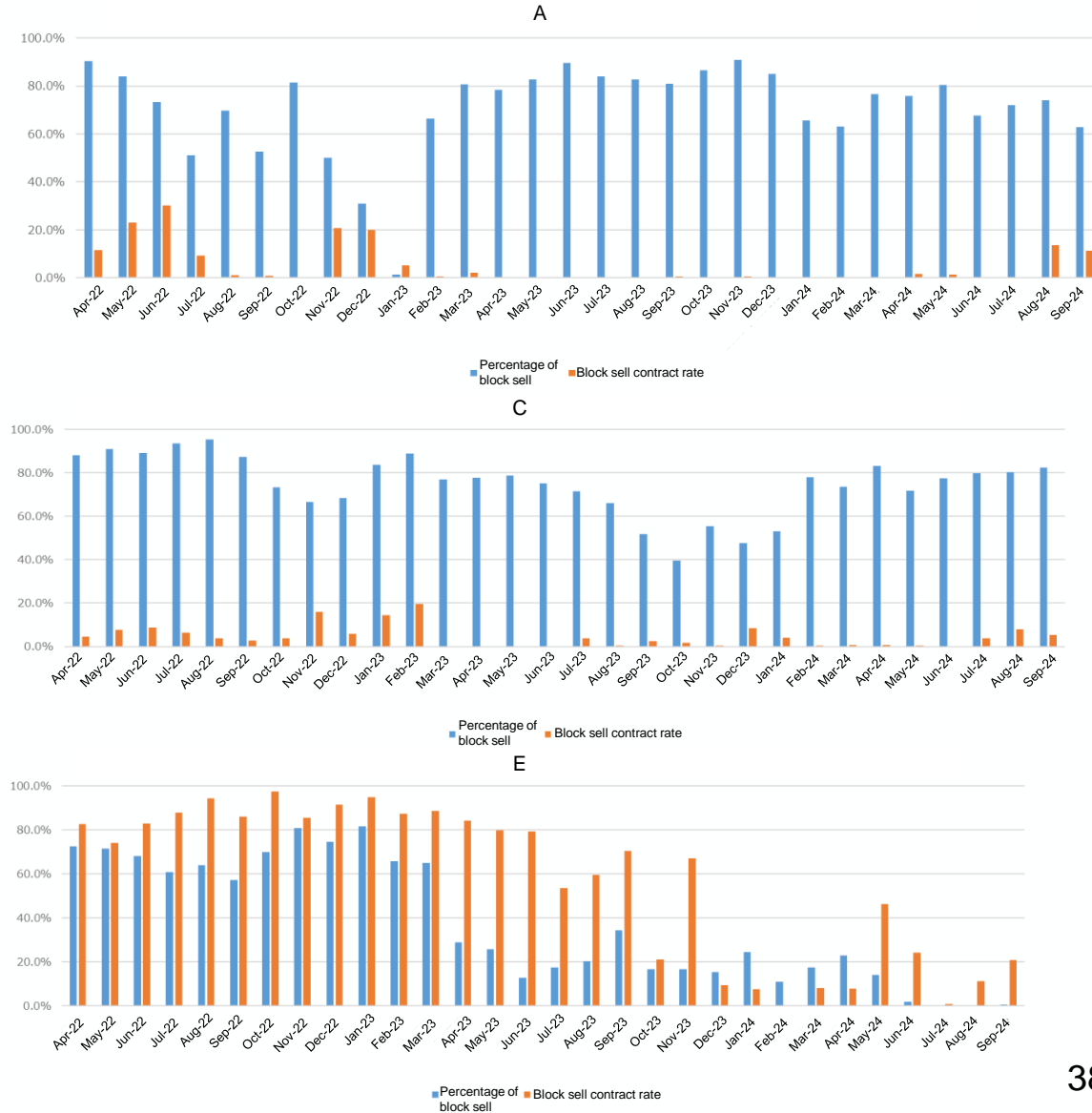
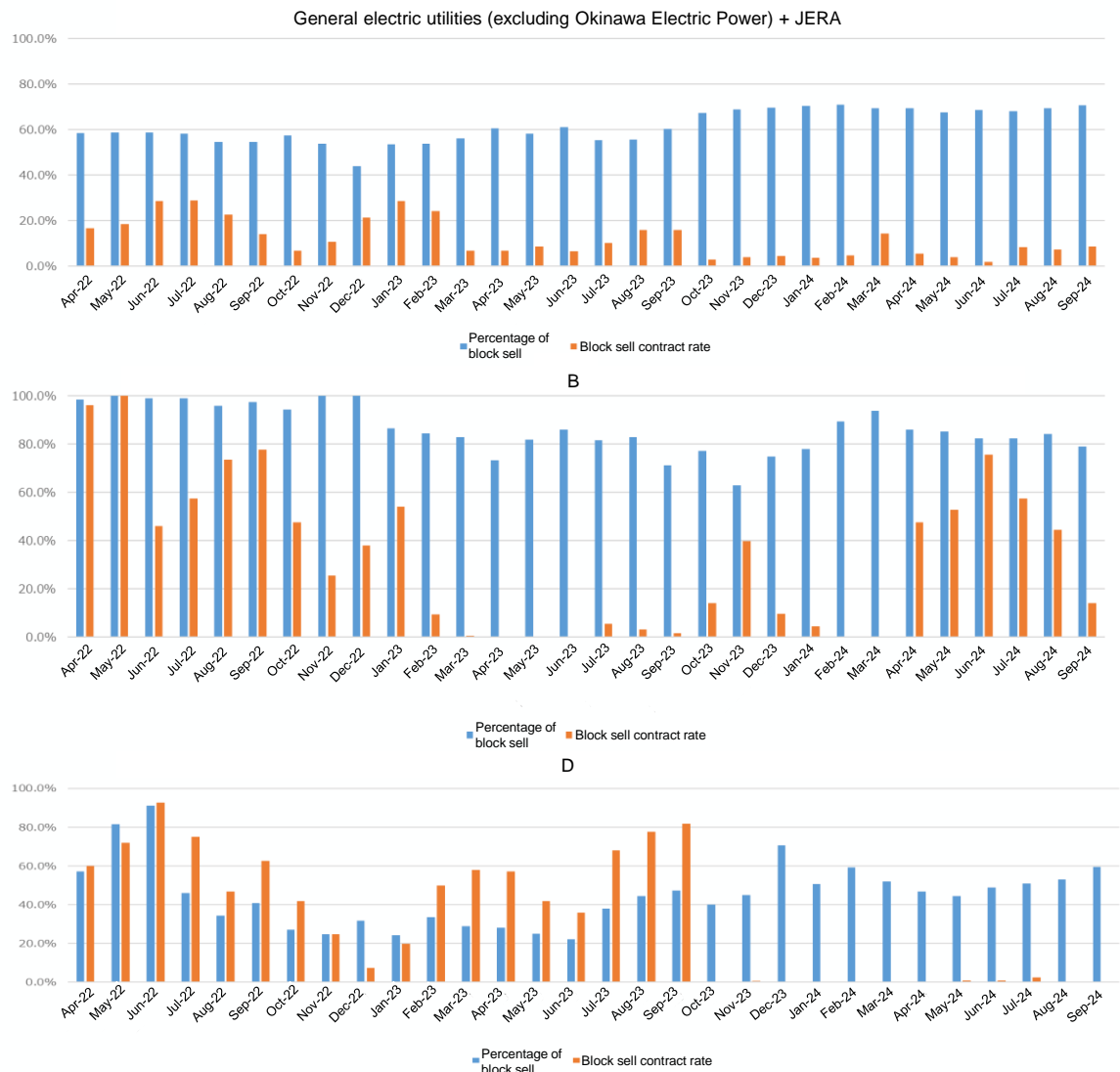
*The block sell contract rate is calculated as the ratio of actual contracted block volume, (c), to actual block bidding volume, (b).

(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.

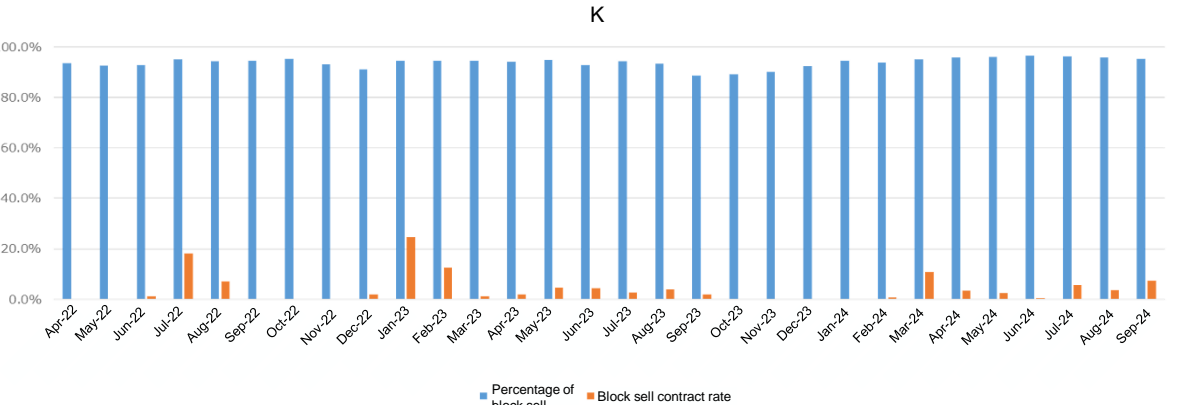
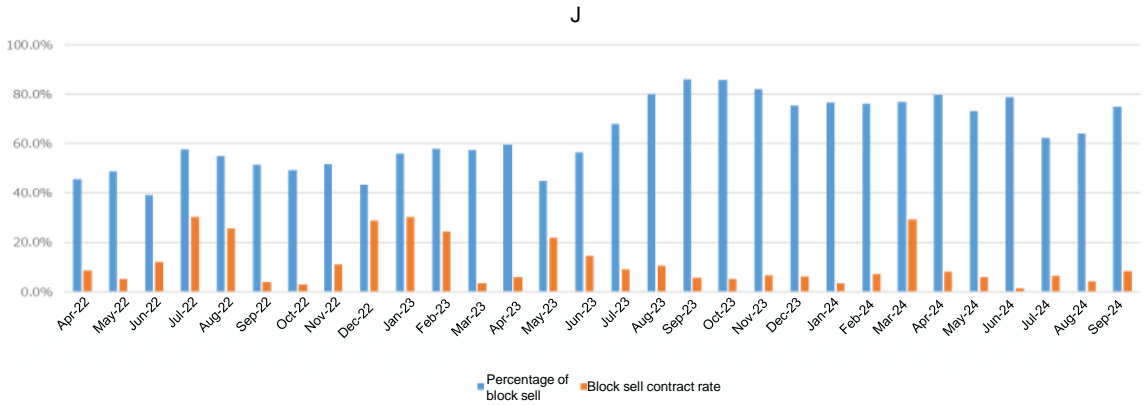
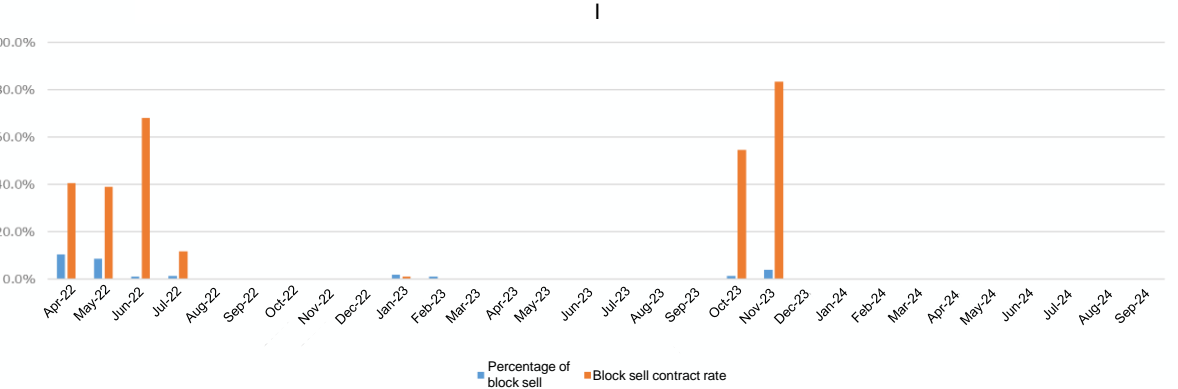
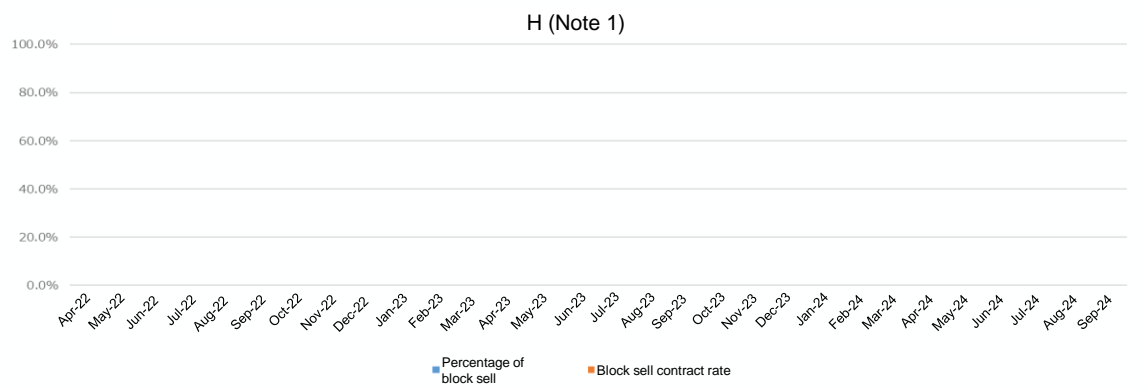
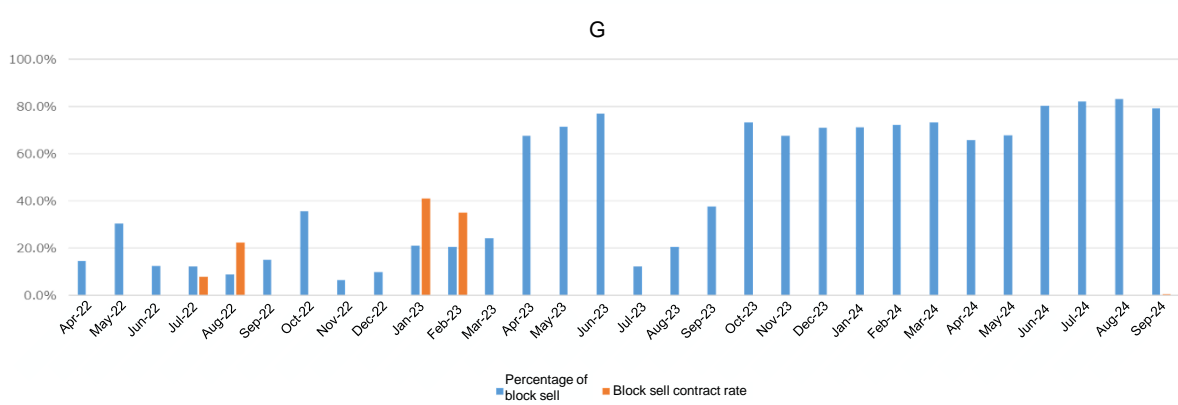
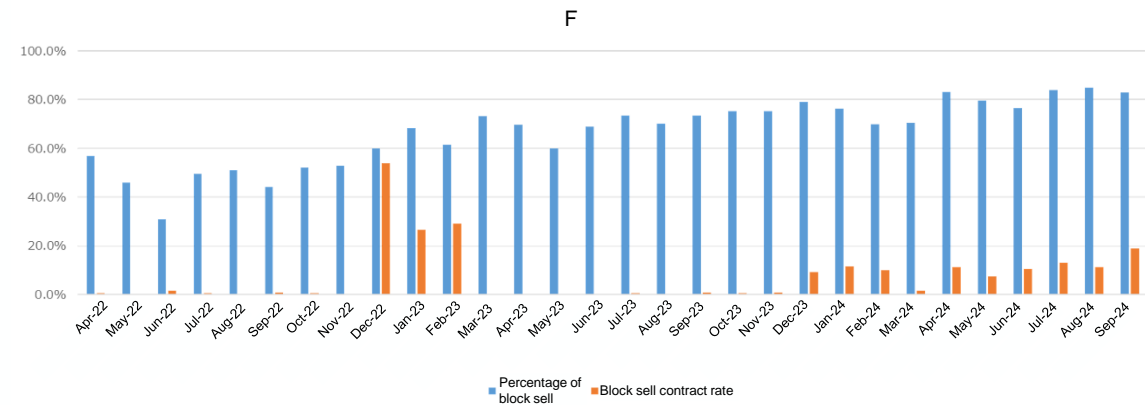
Monthly trends in block sell bidding ratio and contract rate by business operator (1/2)

- Contract rates indicated an upward trend during this period, after they had declined (especially for the 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.
- The rates were higher compared to the previous period for electric companies A, C, F, J, and K.



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

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



*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.

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

- To date, approximately 619,000 kW^{*5} (approximately 5%) of the total of 12 million kW^{*4} 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 yet to be decided. |
| Tohoku Electric Power | 50,000 kW ^{*2} already supplied | Further supply of power is yet to be decided. |
| TEPCO EP | 30,000 kW ^{*1} already supplied | Further supply of power is yet to be decided. |
| 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 yet to be decided. |
| 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 yet to be decided. |
| Kansai Electric Power | 350,000 kW ^{*2} already supplied | Further supply of power is yet to be decided. |
| Chugoku Electric Power | 18,000 kW ^{*1} already supplied | Further supply of power is yet to be decided. |
| Shikoku Electric Power | 30,000 kW ^{*1} already supplied | Further supply of power is yet to be decided. |
| Kyushu Electric Power | 80,000 kW ^{*1} already supplied | Further supply of power is yet to be decided. |
| Okinawa Electric Power | 10,000 kW ^{*1} already supplied | Further supply of power is yet to be decided. |

Source: Information provided by general electric utilities

*1: Sending end output, *2: Starting output, *3: Annual total power generation amount, *4: Total power output excluding approximately 5 million kW of pumped storage power plant output, *5: For Hokkaido Electric Power, an estimation from the volume already supplied is indicated for convenience sake.
The data does not include volumes newly supplied to deliver to the base load market.

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, 1.40 million kW (61%) have been contracted through general competitive bidding. This represents an increase of 0.74 million kW compared to the January to March 2024 period, which is because municipalities with long-term basic contracts terminated in FY2023 shifted to general competitive bidding or other options during the previous period.
- Of the remaining 0.91 million kW installations, 50% continue to be under discretionary contracts with general electric utilities, and 50% consist of FIT power sources for sale and installations under modification to become eligible for FIT.

Public hydroelectric power generation facilities (as of April 1, 2024)

- Number of power plants: 309
- Total output: Approx. 2.31 million kW

The table to the right shows 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, 2024)

| Business entity | Number of hydroelectric power plants | Total maximum output (kW) | Contract type | Successful bidder |
|----------------------|--------------------------------------|---------------------------|-----------------------------|---|
| Hokkaido | 5 | 50,500 | General competitive bidding | SB Power |
| Iwate Prefecture | 10 | 133,170 | Public proposal | Tohoku Electric Power, Tohoku Electric Power Frontier |
| | 1 | 1,400 | Public proposal | Tohoku Automotive Industry Green Energy Promotion Association |
| | 1 | 450 | Public proposal | Kuji Regional Energy |
| Akita Prefecture | 12 | 92,900 | Public proposal | Tohoku Electric Power, Tohoku Electric Power Frontier |
| | 3*1 | 9,250 | | Local Denki |
| Yamagata Prefecture | 6 | 50,700 | Public proposal | Tohoku Electric Power, Tohoku Electric Power Frontier |
| | 2 | 8,700 | | Yamagata Power Supply |
| | 4*1 | 26,600 | | The Earth Club |
| | 1*1 | 420 | | Yamagata Power Supply |
| Tochigi Prefecture | 6*4 | 48,200 | Public proposal | TEPCO Energy Partner |
| Gunma Prefecture | 6*5 | 43,490 | Public proposal | Marubeni Power Retail |
| | 10*5 | 101,300 | General competitive bidding | TEPCO Energy Partner |
| | 9*5 | 42,981 | General competitive bidding | Zero Watt Power |
| Tokyo | 3 | 36,500 | Public proposal | Tokyo Gas |
| Kanagawa Prefecture | 11*5 | 347,589 | Public proposal | SB Power |
| | 10*5 | 74,960 | Public proposal | TEPCO Energy Partner |
| Yamanashi Prefecture | 5*5 | 42,500 | General competitive bidding | Palsystem Power, The Earth Club, UPDATER |
| | 1*5 | 1,100 | Public proposal | Visionary Power |
| | 1*2 | 380 | Public proposal | Ennet |
| Nagano Prefecture | 22*1 | 69,111 | Public proposal | Diamond Power, Marubeni Power Retail, UPDATER |
| Niigata Prefecture | 7*3 | 100,200 | General competitive bidding | Tohoku Electric Power |
| Kyoto Prefecture | 1 | 11,000 | General competitive bidding | Mitsuuroko Green Energy |
| Tottori Prefecture | 1*6 | 1,100 | General competitive bidding | Tottori Citizen's Electric Power |
| Okayama Prefecture | 10*5 | 54,680 | General competitive bidding | Zero Watt Power |
| | 1*2 | 180 | General competitive bidding | |
| Yamaguchi Prefecture | 8*5 | 50,550 | Public proposal | Mitsuuroko Green Energy |
| | 1*2 | 260 | | |
| Total | | 1,400,171 | | |

Total number: 28

Total maximum output: 1,400,171 kW

[60.7% 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, four power plants under replacement to become FIT-eligible have been included in contracts as they were to start supply in FY2024. As a result, the number was changed from 18 to 22 in the April to June 2024 period.)

*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 in the October to December 2023 period because two of them have been replaced to become FIT-eligible or for other purposes.

*4 For Tochigi Prefecture, the number of power plants subject to public proposals was changed to six from eight in the January to March 2024 period because two of them are currently being replaced to become FIT-eligible.

*5 The prefectures of Gunma, Kanagawa, Yamanashi, Okayama, and Yamaguchi shifted to general competitive bidding or public proposals in the April to June 2024 period after the termination of their long-term basic contracts in FY2023.

*6 For Tottori Prefecture, two power plants under prolonged inspection/refurbishment work have been excluded from the targets of contracts, causing the number to change from three to one in the April to June 2024 period.

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

- 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 April 2024 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.
- There were cases in which municipalities with their basic power supply contracts expiring at the end of FY2024 expressed the intention of terminating their contracts as scheduled, with a written confirmation concluded between both parties.

Reference: Compiled from responses to regular simple questionnaires on efforts related to power sales contracts by local governments since April 2024

■ Moves toward premature cancellation of existing contracts with general electric utilities

- All municipalities with contracts having expired in FY2023 have shifted to power sales contracts based on general competitive bidding or public proposals, and started supply.
- Municipalities with contracts continuing in FY2024 and beyond generally maintain their basic contracts until the expiration of the period, without prematurely terminating them. They plan to shift to general competitive bidding or public proposals after the termination of the basic contract (while municipalities with their basic contracts expiring at the end of FY2024 will conduct general competitive bidding or other public calls).

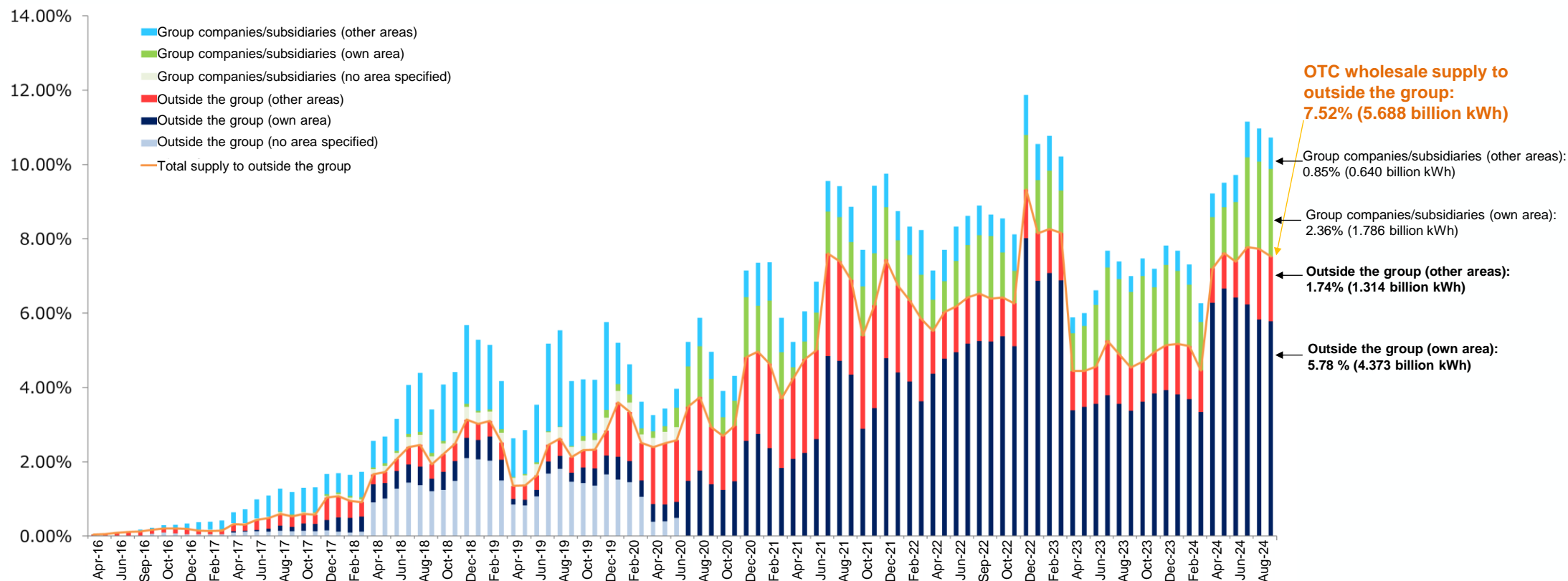
■ Unique efforts by municipalities regarding power sales contracts

- Establishment of original electricity rate plans in power sales contracts 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)
- Implementation of the following unique efforts aimed at local production for local consumption in contracts for which the successful bidder is determined through general competitive bidding, etc.
 - ✓ In calls for public proposals, division of electricity sales into a general quota and a quota of new regional entrants within the prefecture
 - ✓ Introduction of a local production for local consumption-type PPA (Gunma model), which matches electricity consumers with retailers
 - ✓ Supply to public facilities and public transportation systems operated by local governments
 - ✓ Conclusion of contracts on condition that the entire volume of electricity is supplied within the prefecture

Status of OTC transactions by general electric utilities

- As of September 2024, the ratio of supply from general electric utilities through OTC transactions to total demand was 10.7% (8.114 billion kWh, 1.5 times that of the same period last year).
- OTC wholesale supplies to external parties (7.5%, 5.688 billion kWh) accounted for 36.9% of the demand for electricity from new entrants (15.396 billion kWh).

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



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

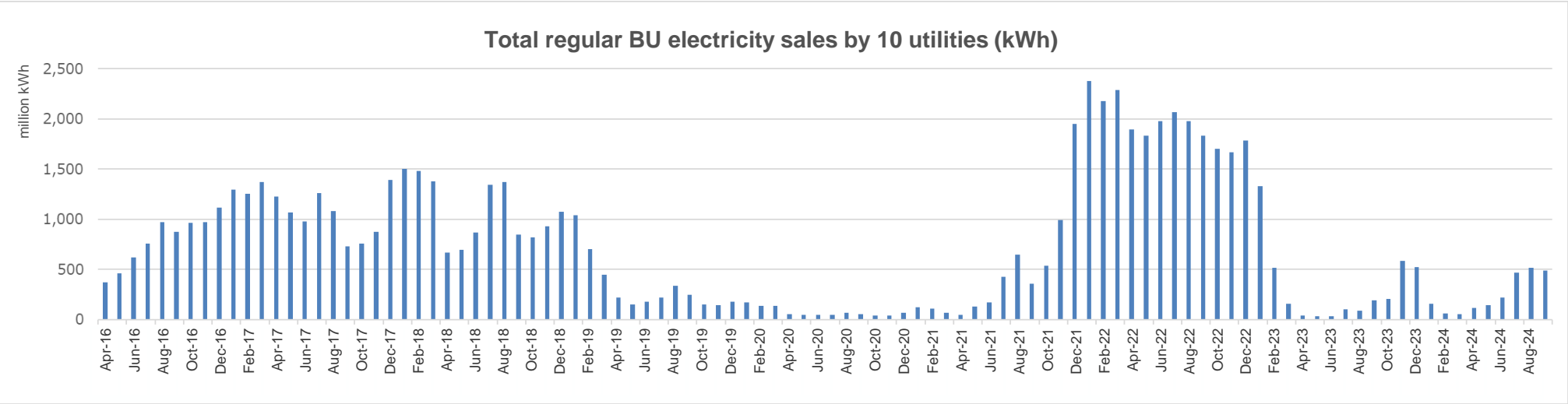
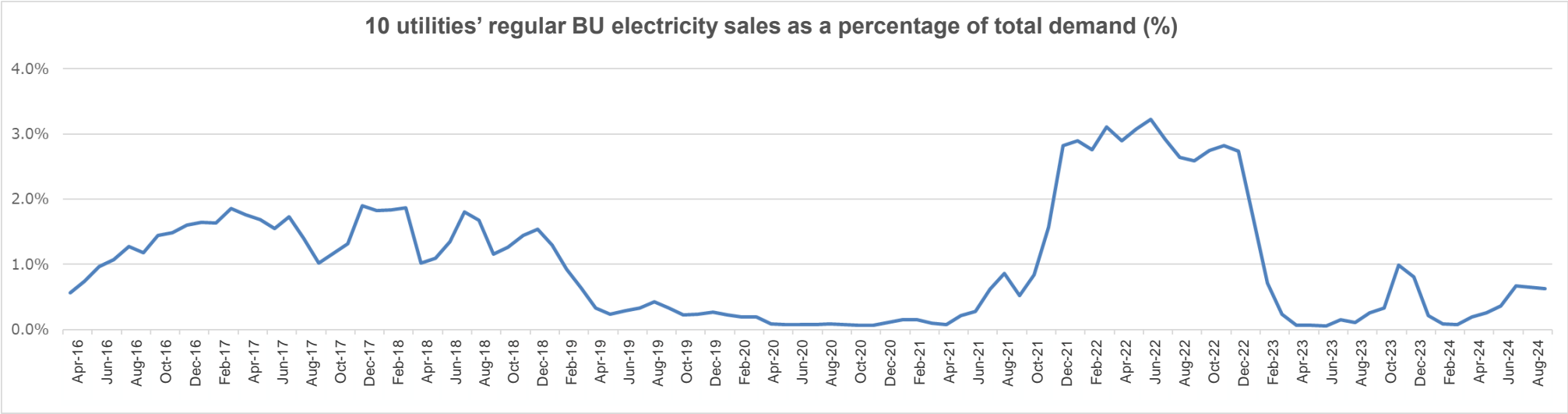
* Group companies are defined as companies with a capital relationship of 20% or more.

* 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.

Trends in regular BU electricity sales

- As of September 2024, the ratio of regular BU electricity sales to total demand was 0.6% (487 million kWh).



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

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

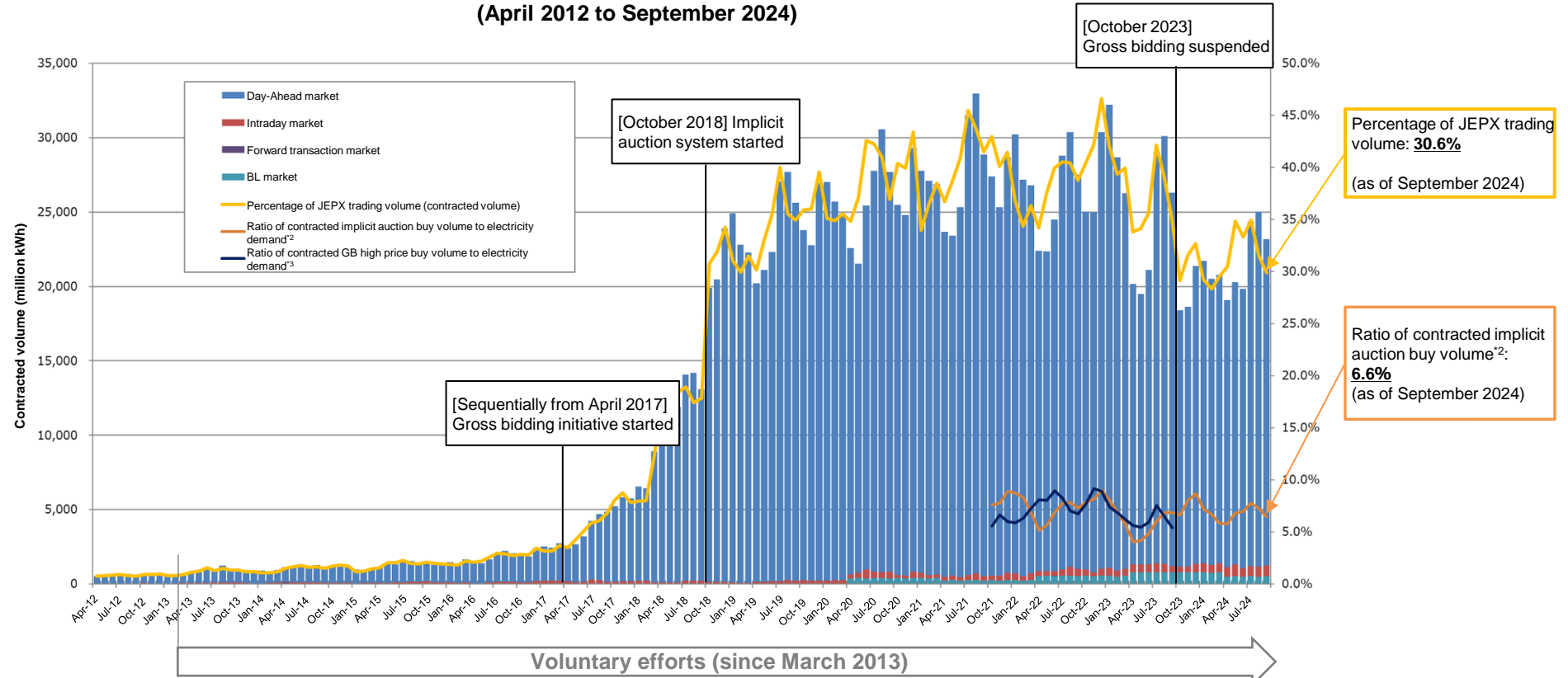
【Medium- to long-term trend report】

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 - Trends in contracted price
 - Trends in the market splitting occurrence rate
 - JEPX spot price and fuel cost
- **Retail market**
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 - Market share by area
 - Trends in electricity unit price
 - Trends in switching
 - Average unit price of low-voltage rates
- **Gas market**
 - Status of OTC transactions of general gas utilities
 - Usage status of Start-up wholesale measure

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

- As of September 2024, the ratio of JEPX trading volume (contracted volume^{*1}) to Japan's electricity demand was 30.6%.
- The ratio of contracted implicit auction buy volume^{*2} to electricity demand was 6.6%.

Ratio of JEPX trading volume (contracted volume) to electricity demand
(April 2012 to September 2024)



| | 2012/04 | 2013/04 | 2014/04 | 2015/04 | 2016/04 | 2017/04 | 2018/04 | 2019/04 | 2020/04 | 2021/04 | 2022/04 | 2023/04 | 2024/04 | 2024/09 |
|-----------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 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% | 30.5% | 30.6% |
| (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% | 28.7% | 29.0% |
| (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% | 1.0% | 1.0% |
| (Percentage of BL market) | — | — | — | — | — | — | — | — | 0.6% | 0.4% | 0.8% | 1.3% | 0.8% | 0.7% |

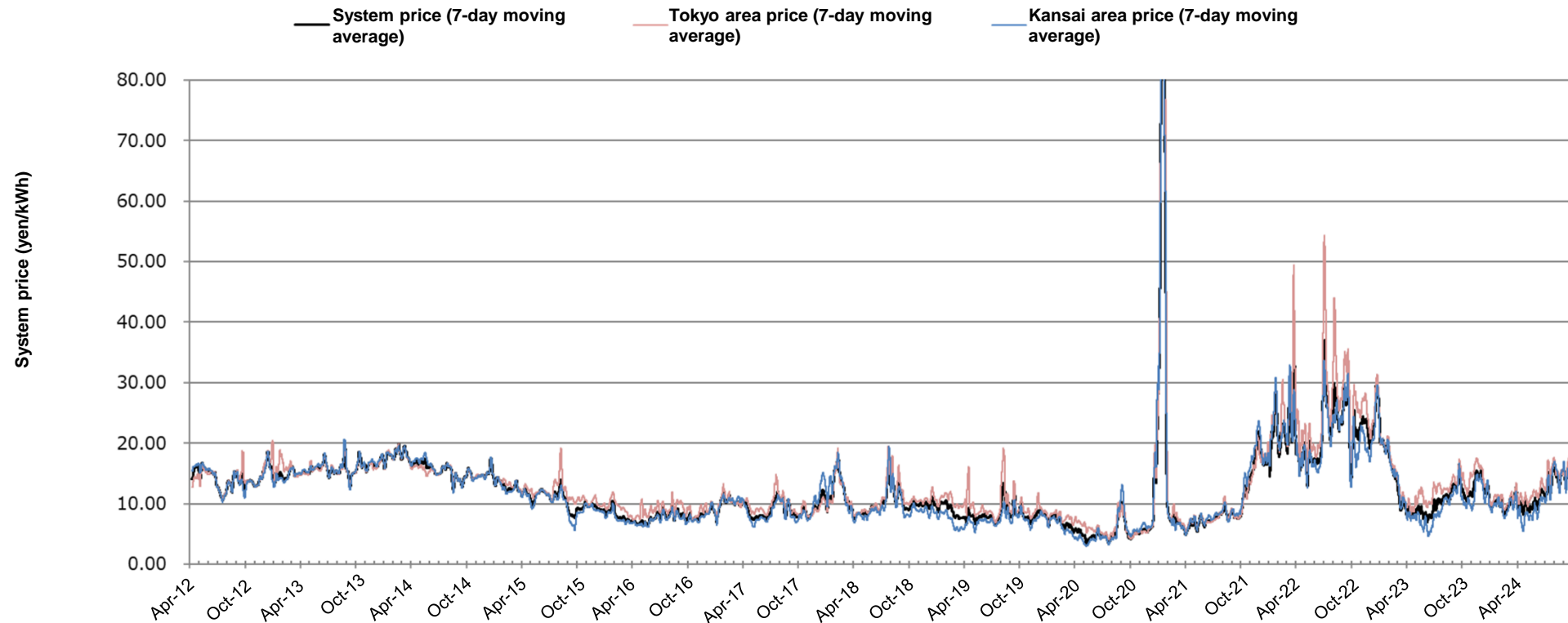
*1 Total of contracted buy volume of each business operator and each frame (including contracted buy volume when the same business operator has contracted for both buying and selling in the same frame, such as through its own implicit auctions).

*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.

Price trends in the day-ahead market

- The system price had increased since the autumn of 2021 and generally hovered above the 20-yen level until it dropped to around 8 yen in June 2023. The price stayed around 14 yen in the recent July to September period, with an average at 14.2 yen/kWh for this quarter.
- Compared to the same period last year, the price difference between the east and west markets reduced by around 1.2 yen, while the average system price increased by around 2.5 yen.

Day-Ahead Market: Trends in system price
(April 1, 2012 to September 30, 2024)

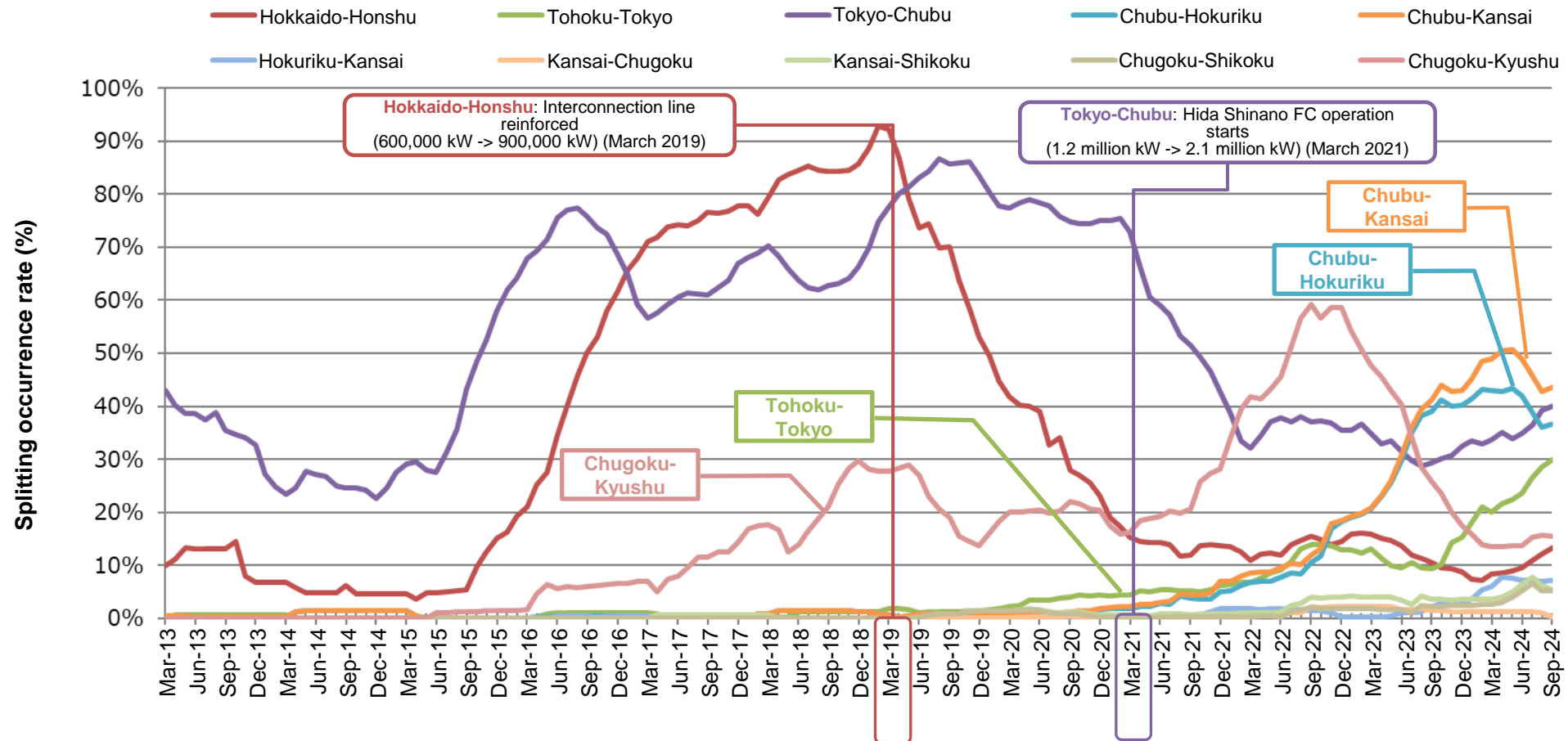


| (yen/kWh) | FY2012 average | FY2013 average | FY2014 average | FY2015 average | FY2016 average | FY2017 average | FY2018 average | FY2019 average | FY2020 average | FY2021 average | FY2022 average | FY2023 average | Current quarter average |
|-------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------------|
| System price | 14.4 | 16.5 | 14.7 | 9.8 | 8.5 | 9.7 | 9.8 | 7.9 | 11.2 | 13.5 | 20.4 | 10.7 | 14.2 |
| 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 | 12.2 | 15.3 |
| 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 | 9.7 | 14.0 |

Trends in the occurrence rate of market splitting between each area

- The market splitting occurrence rate has recently exceeded 30% for Tokyo-Chubu, Chubu-Kansai, and Chubu-Hokuriku. The figure has also increased to 30% for Tohoku-Tokyo.
- For Hokkaido-Honshu and Chugoku-Kyushu, the market splitting occurrence rate has declined, standing around 10% recently.

Day-Ahead market: Trends in monthly splitting occurrence rate (12-month moving average)
(March 2013 to September 2024)



* 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.

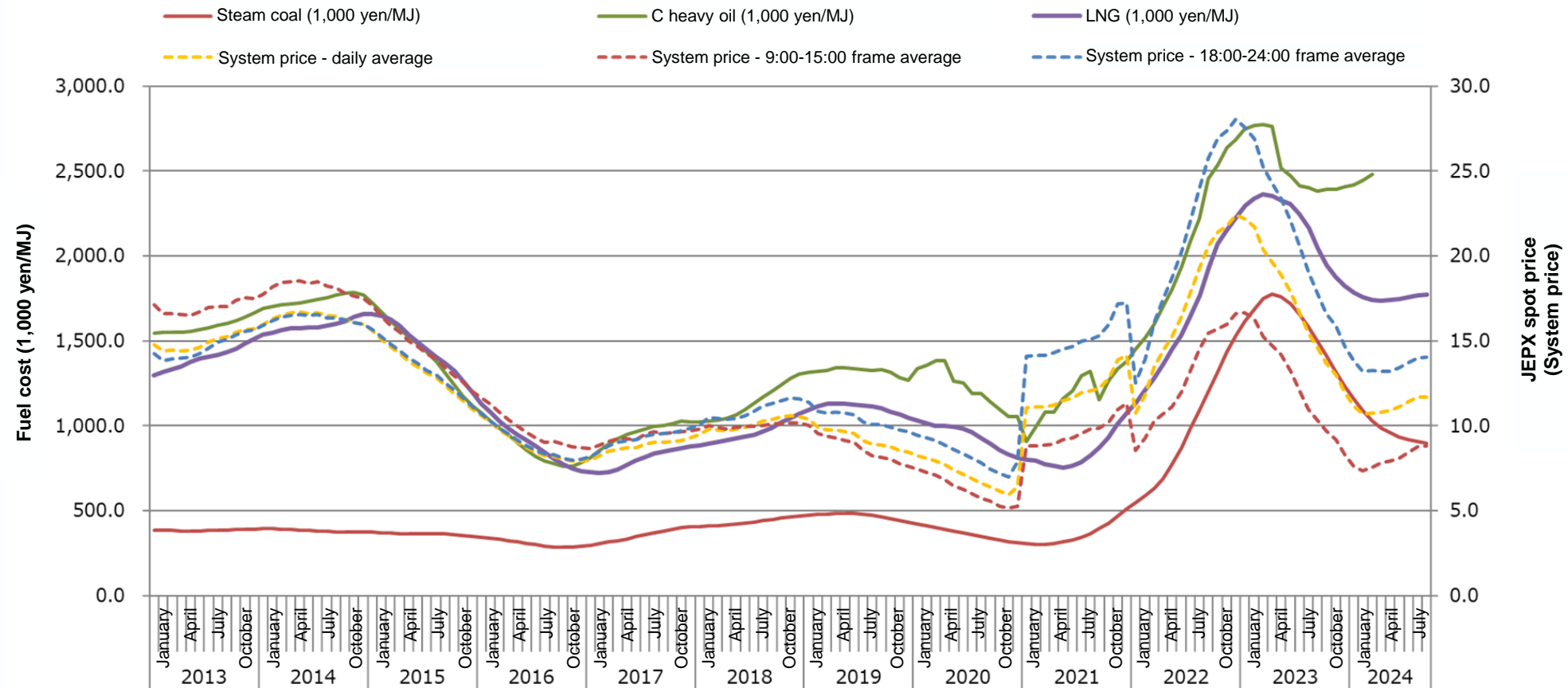
* Spot transaction in the Hokkaido area was suspended from September 7 to 26, 2018, due to the effects of the 2018 Hokkaido Eastern Iwate Earthquake. Calculations excluded the period of suspension.

Trends in the occurrence rate of market splitting between each area

- Over the long term, the trend of JEPX spot prices has been similar to that of LNG and C heavy oil prices.
- Fuel costs maintained a downward trend since the beginning of 2023, but C heavy oil prices have become less aligned with spot prices since September 2023.

Trends in JEPX spot price and fuel cost (12-month moving average)

(January 2013 to September 2024)



Source: Prepared by the Electricity and Gas Market Surveillance Commission based on the Trade Statistics of Japan, Ministry of Finance (as of October 31, 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.

* Imports of C heavy oil were zero for many months since April 2024, and therefore C heavy oil is not plotted in the graph for such period.

【 Quarterly report 】

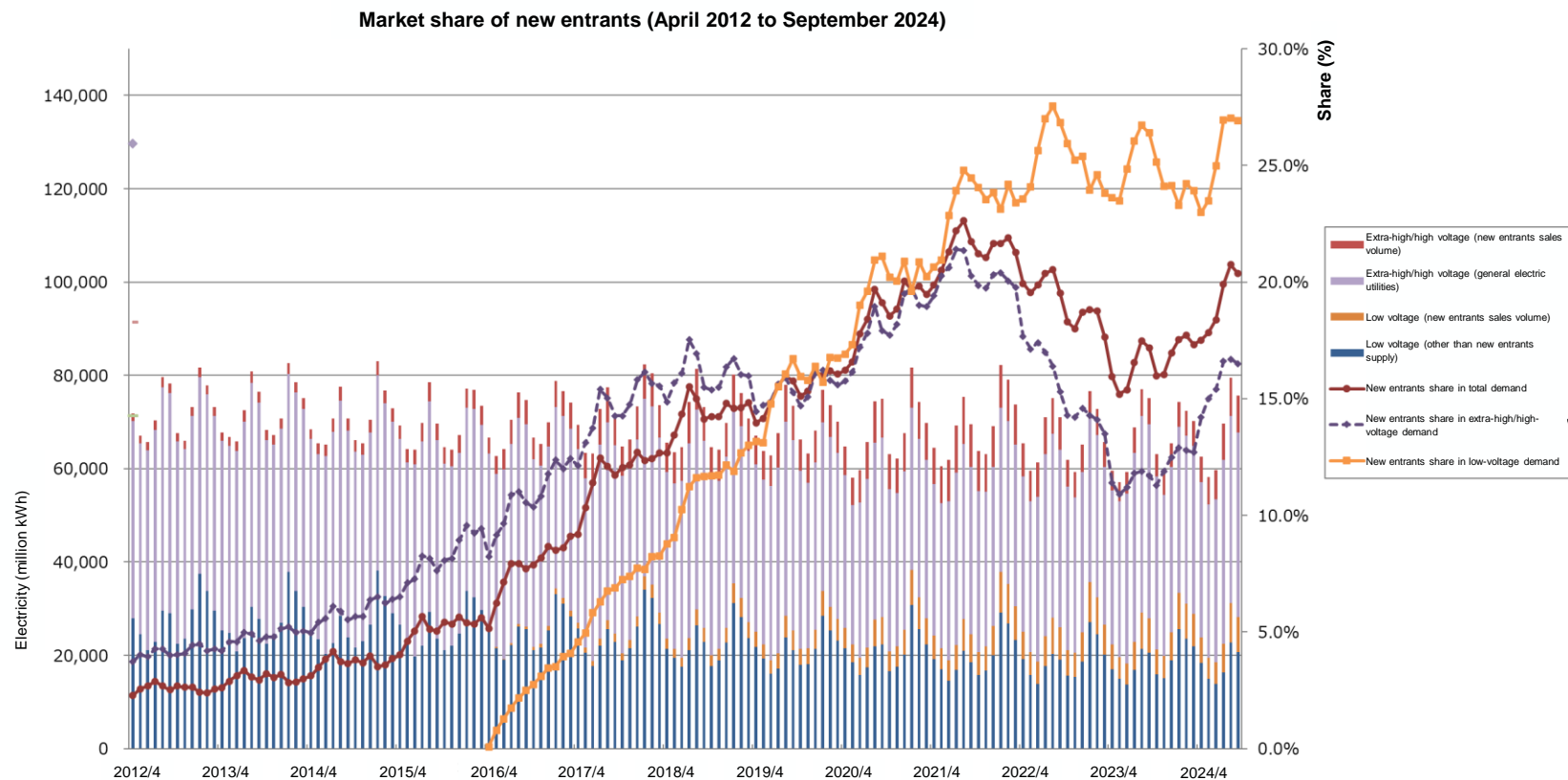
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Trends in new entrants share

- The share of new entrants in total electricity demand based on the electricity sales volume has been on the rise recently.
- As of September 2024, the share of new entrants in total demand was approximately 20.4%, their share in extra-high/high-voltage demand was approximately 16.5%, and their share in low-voltage demand was approximately 26.9%.



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

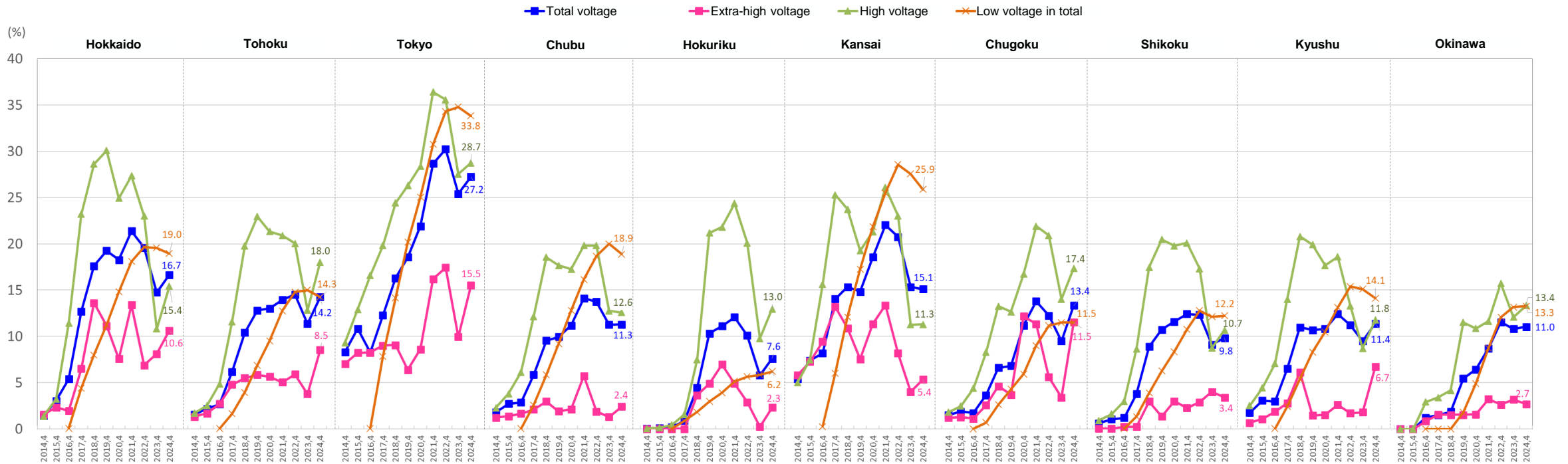
(Source: Monthly electricity generation/reception report, Electricity Trading Report)

| | 2012/4 | 2013/4 | 2014/4 | 2015/4 | 2016/4 | 2017/4 | 2018/4 | 2019/4 | 2020/4 | 2021/4 | 2022/4 | 2023/4 | 2024/4 | 2024/9 |
|--|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 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% | 17.5% | 20.4% |
| 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% | 14.2% | 16.5% |
| New entrants share in low-voltage demand | - | - | - | - | 0.1% | 4.6% | 8.8% | 13.2% | 16.9% | 20.6% | 23.6% | 23.6% | 23.0% | 26.9% |

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, an upward trend has been observed recently in areas other than Chubu and Kansai. The increase is particularly remarkable for high voltage. Tokyo is one of the areas where new entrants hold a high share of electricity sales.

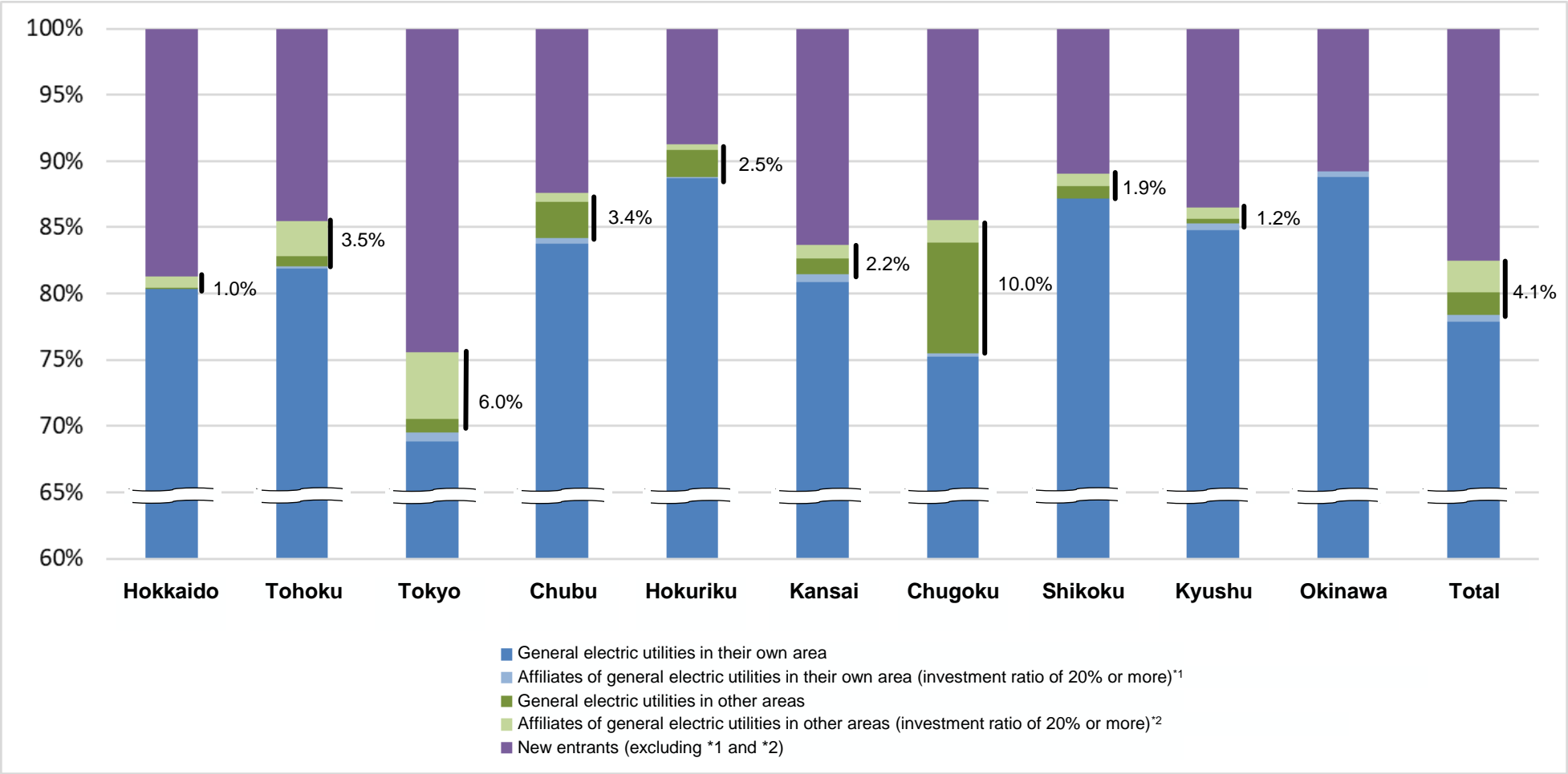
Trends in new entrants share by area



Market share by area

- Supply by general electric utilities and their affiliated companies to areas outside their service areas was approximately 4.1% of the total (3.4% as of September 2023). An analysis by area indicates that supplies to other areas are carried out in all areas except Okinawa.

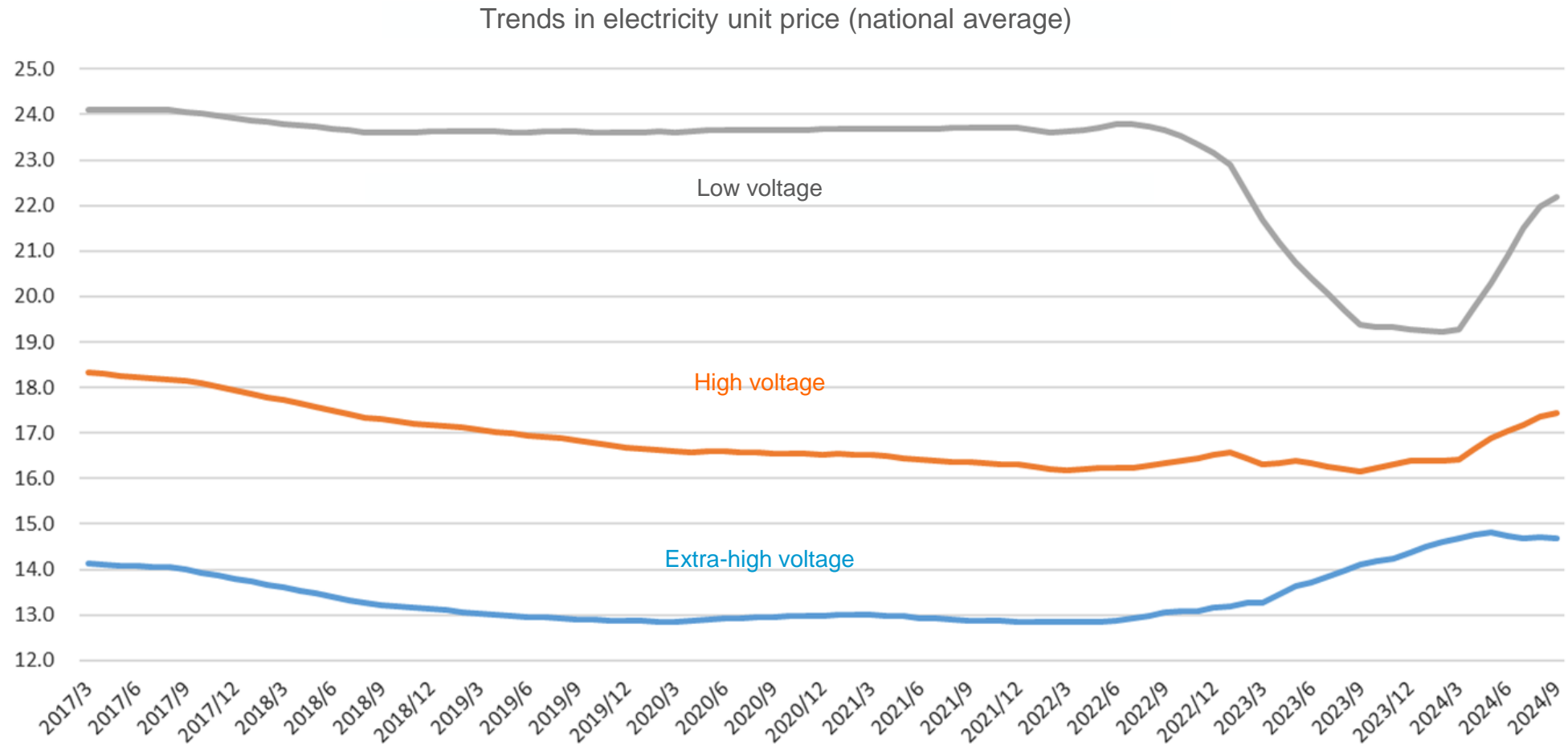
Market share by area (September 2024)



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

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 recently seen a significant increase for low voltage due to the impact of the drastic change mitigation project and other subsidy measures.



(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.)

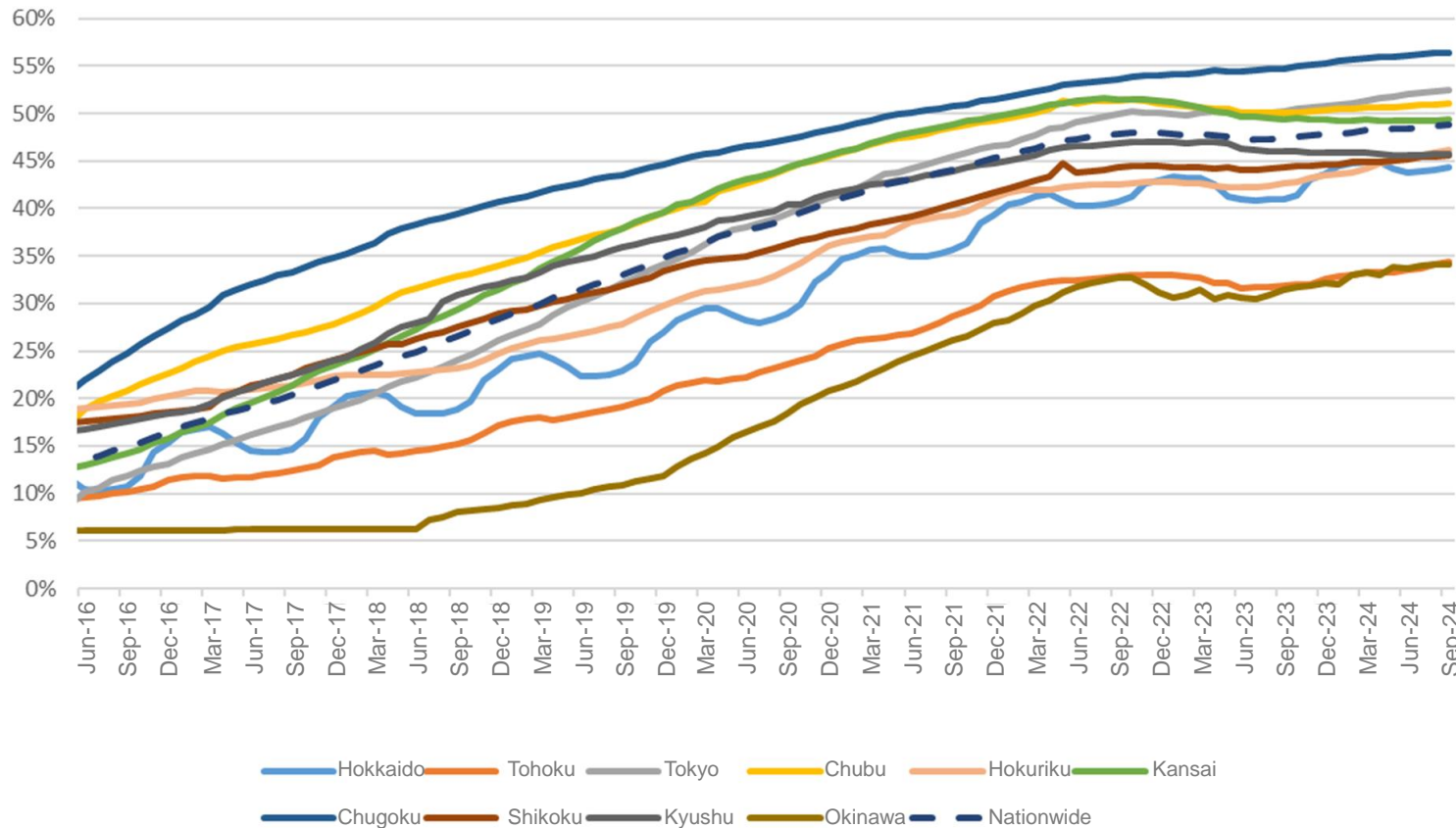
(Source)

Prepared by the Electricity and Gas Market Surveillance Commission Secretariat from Electricity Trading Reports

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 September 2024, the nationwide switching rate was 48.9%.

Percentage of switching from regulated tariffs



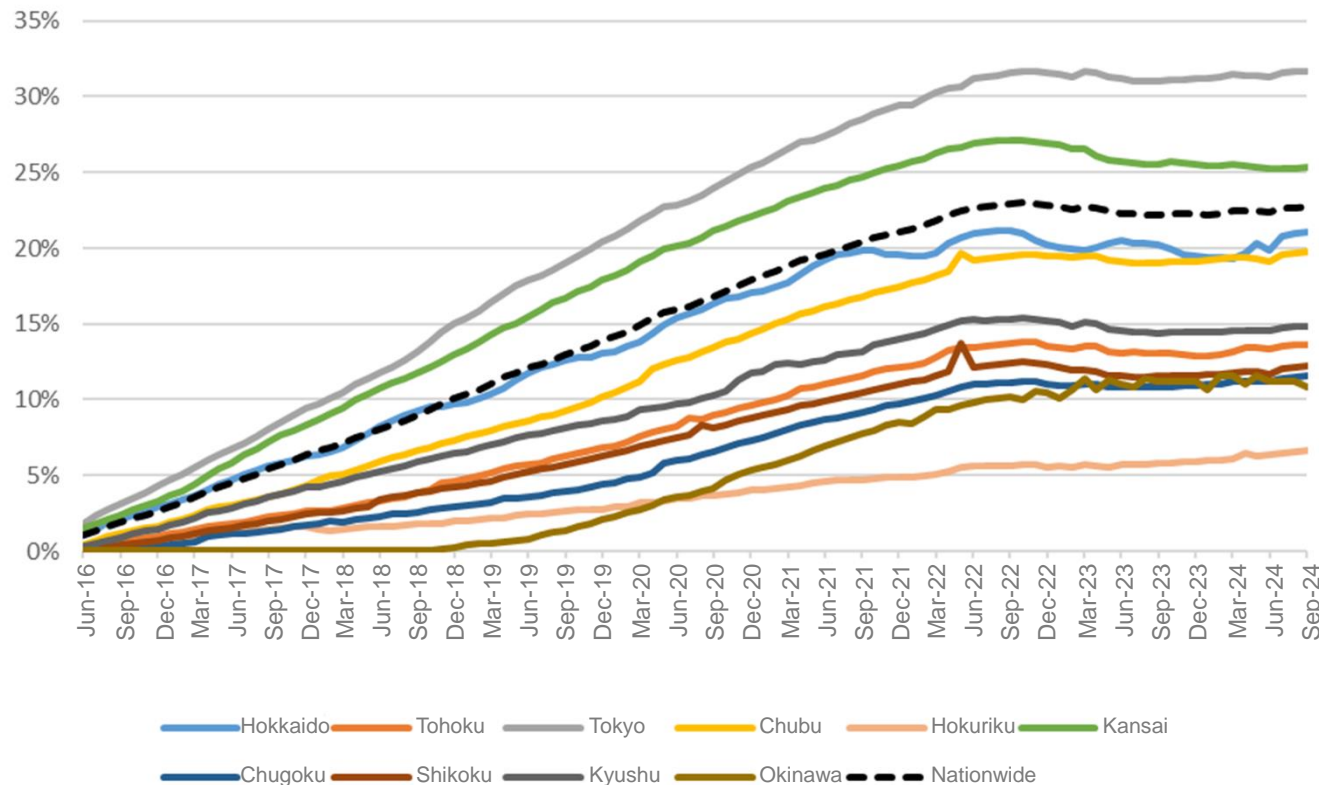
| | September 2024 |
|------------|----------------|
| Hokkaido | 44.3% |
| Tohoku | 34.4% |
| Tokyo | 52.5% |
| Chubu | 51.1% |
| Hokuriku | 46.1% |
| Kansai | 49.3% |
| Chugoku | 56.5% |
| Shikoku | 45.7% |
| Kyushu | 45.7% |
| Okinawa | 34.1% |
| Nationwide | 48.9% |

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

Trends in switching (low voltage) (2)

- The rate of 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 September 2024, the nationwide switching rate was 22.7%.

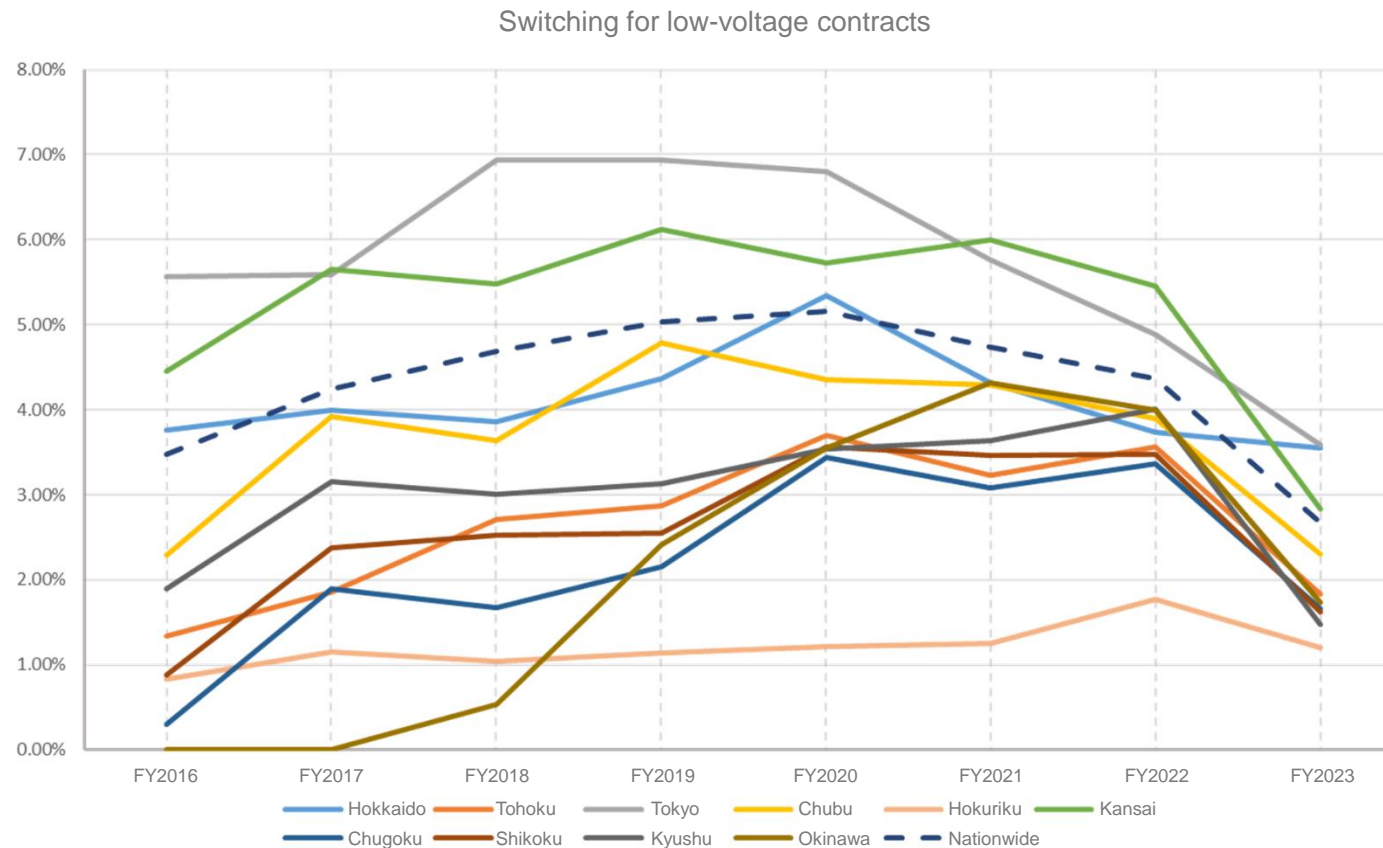
Percentage of switching from general electric utilities in each area



| | September 2024 |
|------------|----------------|
| Hokkaido | 21.1% |
| Tohoku | 13.6% |
| Tokyo | 31.7% |
| Chubu | 19.8% |
| Hokuriku | 6.6% |
| Kansai | 25.3% |
| Chugoku | 11.6% |
| Shikoku | 12.2% |
| Kyushu | 14.9% |
| Okinawa | 10.9% |
| Nationwide | 22.7% |

Trends in switching (low voltage) (3): Trends in the switching rate by fiscal year

- Observation of switching rates over years indicates that the rate has been declining after peaking in FY2020. The decline was particularly sharp in FY2023, with the rates in the Kansai, Kyushu, and Okinawa areas at approximately 2 points less than those in the previous fiscal year.



| | FY2023 |
|------------|--------|
| Hokkaido | 3.6% |
| Tohoku | 1.8% |
| Tokyo | 3.6% |
| Chubu | 2.3% |
| Hokuriku | 1.2% |
| Kansai | 2.8% |
| Chugoku | 1.7% |
| Shikoku | 1.6% |
| Kyushu | 1.5% |
| Okinawa | 1.7% |
| Nationwide | 2.7% |

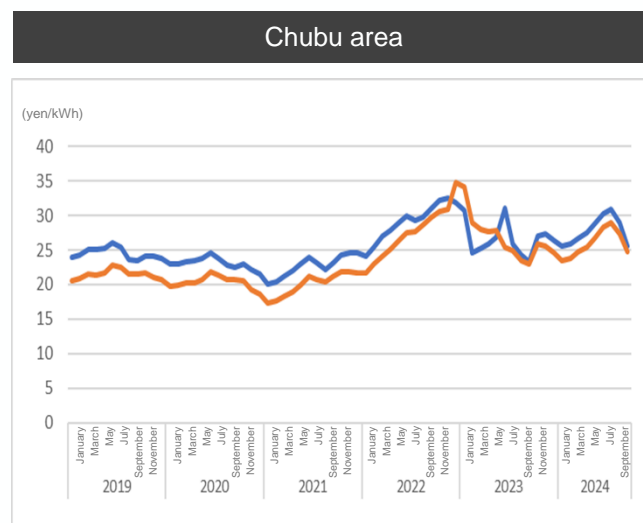
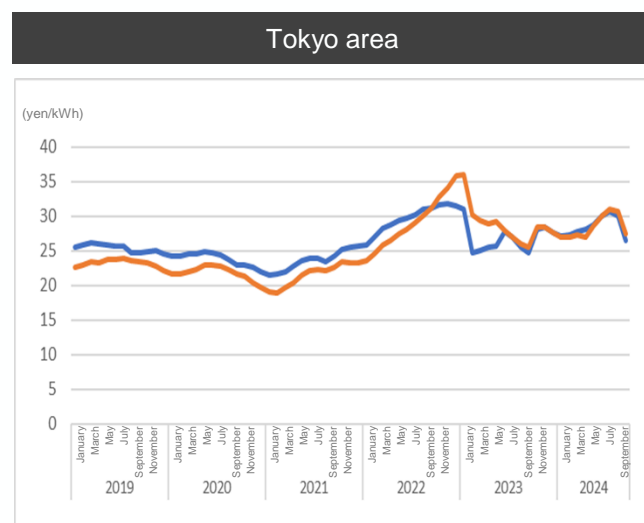
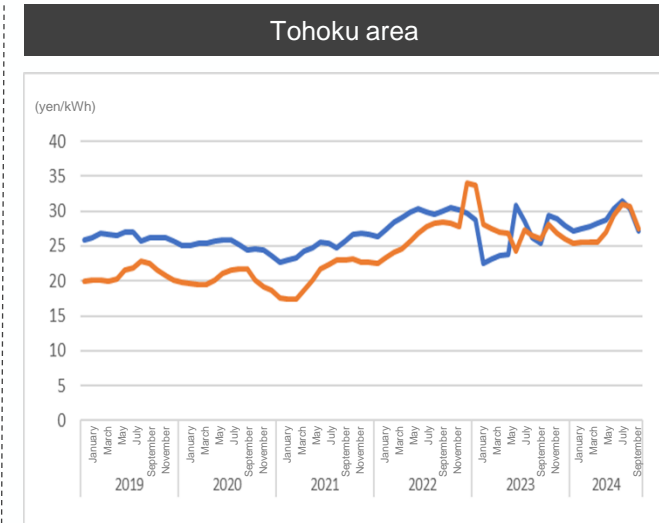
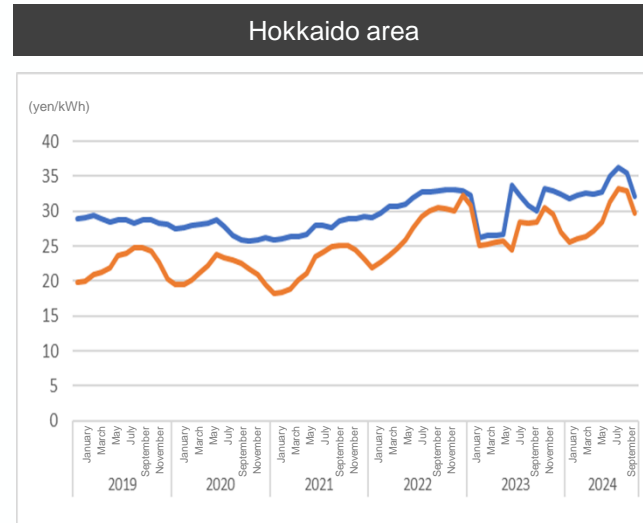
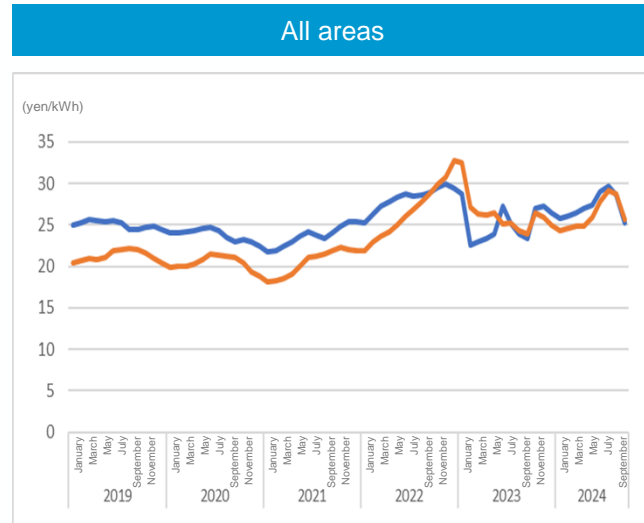
(Source: Electricity Trading Report)

(Note 1) Low voltage: Calculations are based on the number of contracts (sum of the monthly numbers of switched contracts for the fiscal year ÷ monthly average number of low-voltage contracts for the fiscal year × 100).

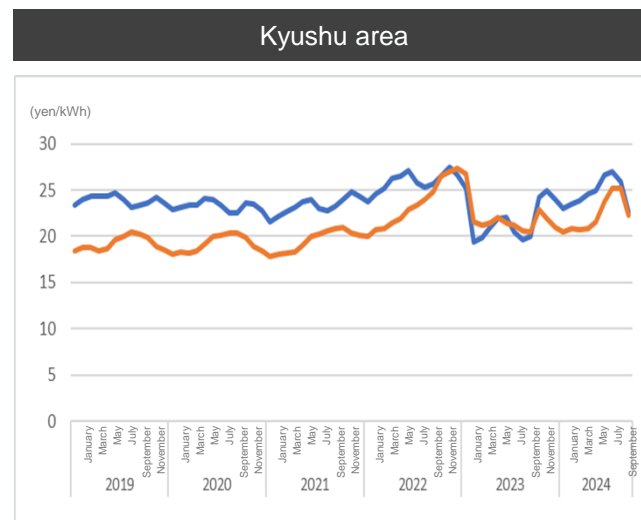
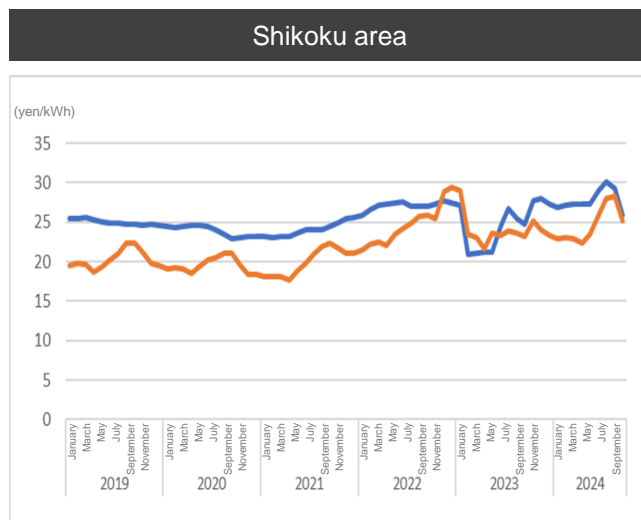
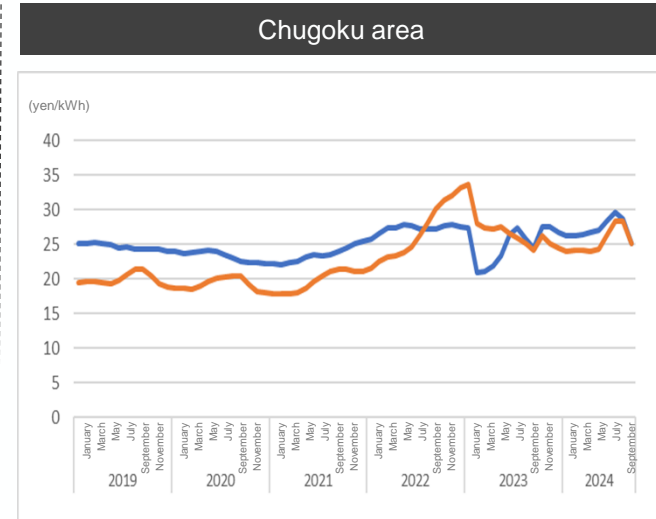
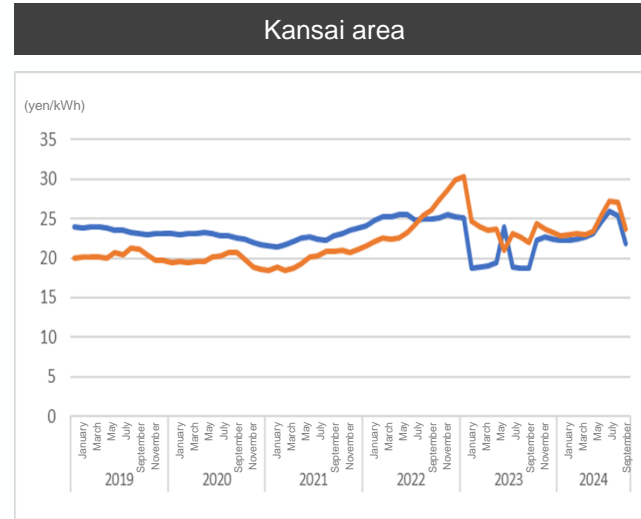
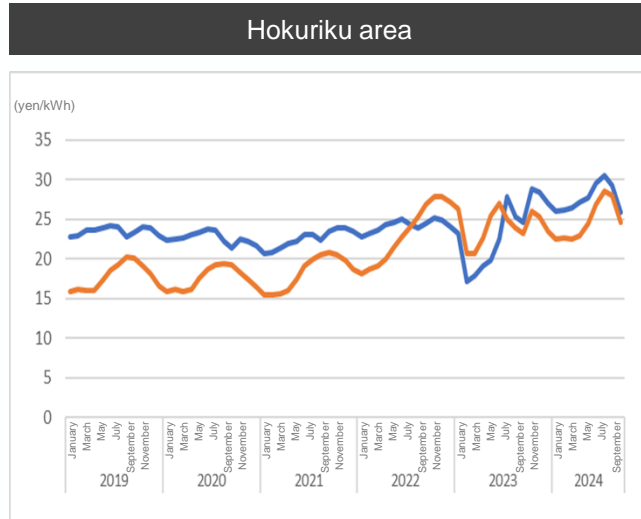
(Note 2) The data on switching is based on the sum of the number of contracts that have been switched in different combinations, such as from general electric utilities to new entrants, etc., from new entrants, etc. to general electric utilities, and from new entrants, etc. to new entrants, etc.

Trends in average unit price of low-voltage rates (by area) (1)

- Trends in regulated tariffs and voluntary rates indicate that, except in some areas, the situation continues where regulated tariff levels exceed voluntary rates, since the regulated tariffs were revised upward in 2023.



Trends in average unit price of low-voltage rates (by area) (2)



【 Quarterly report 】

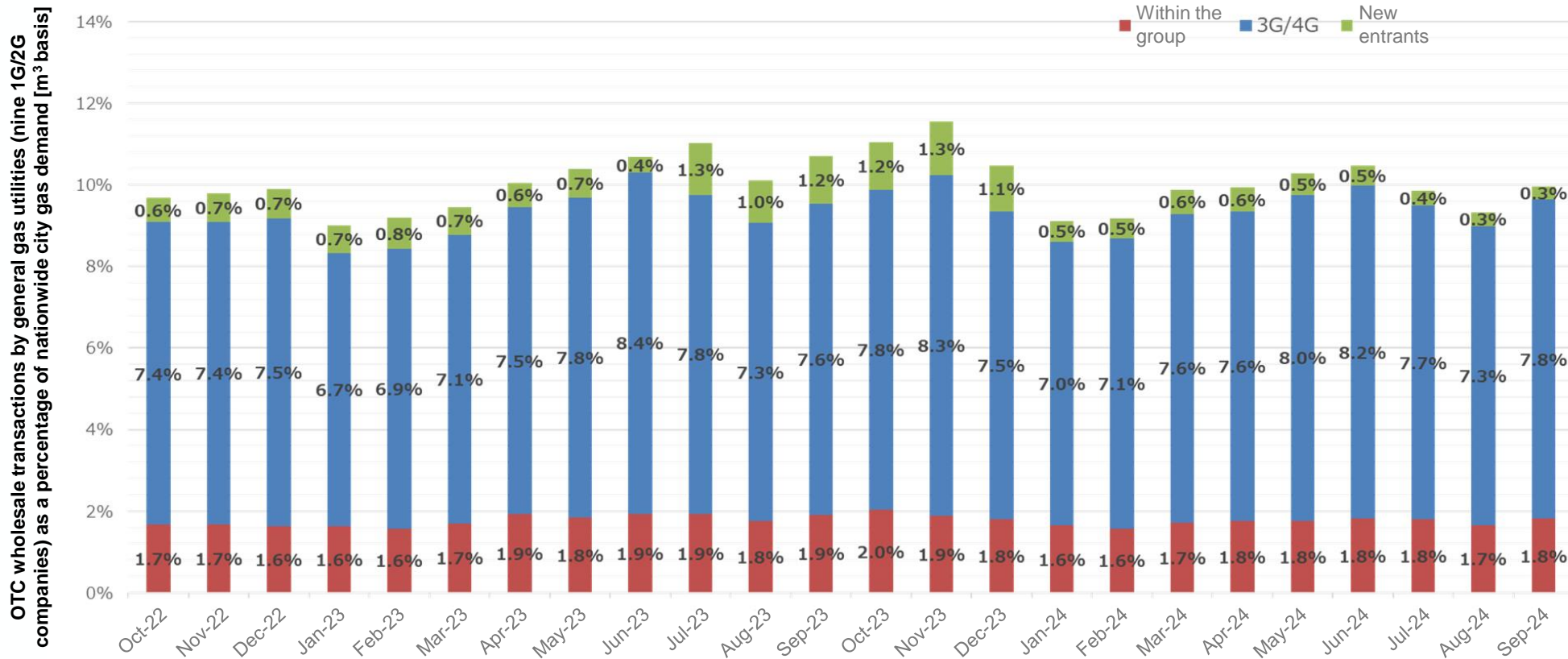
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Status of OTC transactions of general gas utilities (9 companies: 1G/2G)

- 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 October 2022).
- As of the end of September 2024, the ratio of OTC wholesale supply of 1G/2G*³ to the retail supply of city gas nationwide*² was approximately 10%.
- The ratio of OTC wholesale supply to new entrants (companies that are not general gas utilities) was approximately 0.3%. (The share of retail sales volume by new entrants was approximately 20.2% [as of the end of September 2024]).



*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 Based on 45 MJ.

*3 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 \approx 1,220 m³, and do not take into account calorific value adjustments, etc.

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

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

Usage status of Start-up Wholesale measure (as of the end of September 2024)

- 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 September 2024).

| Wholesaler name | No. of inquiries | Contracts concluded | Contracts under negotiation | Contract negotiations completed* |
|-------------------------------|------------------|---------------------|-----------------------------|----------------------------------|
| Tokyo Gas | 23 | 4 | 0 | 19 |
| Osaka Gas | 13 | 4 | 2 | 7 |
| Toho Gas | 12 | 2 | 1 | 9 |
| Hokkaido Gas | 17 | 2 | 3 | 12 |
| Shizuoka Gas | 18 | 6 | 4 | 8 |
| Saibu Gas | 16 | 4 | 1 | 11 |
| Hiroshima Gas | 6 | 1 | 0 | 5 |
| Gas Bureau, City of Sendai | 9 | 0 | 3 | 6 |
| Nippon Gas | 5 | 1 | 0 | 4 |
| Total | 119 | 24 | 14 | 81 |

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.