Aggregation of Electricity Supply Plans for Fiscal Year 2025

June 2025

Organization for Cross-regional Coordination of Transmission Operators, Japan

INTRODUCTION

The Organization for Cross-Regional Coordination of Transmission Operators, Japan, (hereinafter "the Organization") has aggregated electricity supply plans for the 2025 fiscal year (FY) submitted by electric power companies (EPCOs) to the government according to the provisions of Article 29 of the Electricity Business Act (hereinafter "the Act"). This aggregation was conducted according to the provisions of the same article and Article 28 of the Operational Rules of the Organization.

EPCOs are required to submit their electricity supply plans to the Organization according to the Network Code of the Organization. The Organization then aggregates the plans and sends them to the Ministry of Economy, Trade and Industry (METI) by the end of March of each year.

A total of 1,974 electricity supply plans were aggregated for FY 2025, including 1,965 submissions from companies that had become EPCOs by the end of November 30, 2024, and 9 submissions from companies that had become EPCOs after December 1, 2024, and had submitted the supply plans to the Organization by February 28, 2025.

Number of Electric Power Companies Subject to the Aggregation in FY 2025

Business License	Number
Generation Companies	1,135
Retail Companies	694
Specified Wholesale Suppliers	90
Specified Transmission, Distribution and Retail Companies	37
Specified Transmission and Distribution Companies	5
Transmission Companies	3
General Transmission and Distribution Companies	10
Distribution Companies	0
Total	1,974

[Reference] Electricity supply plan

A plan regarding the electricity supply and the development of generation, transmission, or other facilities for the next 10 years prepared by EPCOs according to the provisions of Article 29 of the Act.

METI may recommend that EPCOs alter their supply plans if it recognizes them as inadequate for ensuring the security of a stable supply through cross-regional operation or for other comprehensive and rational development of the electricity business.

Due Date of Submission of Supply Plans	
(1)Electric Power Company (EPCO) except General Transmission and Distribution Company, and Distribution Company: submission to the Organization	March 1, 2025 (draft submission: Feb. 10, 2025)
(2)General Transmission and Distribution Company, and Distribution Company: submission to the Organization	March 25, 2025 (draft submission: Mar. 10, 2025)
(3)The Organization: submission to the METI	End of March, 2025

* Dates in parentheses are due dates of submission of draft supply plans for the Organization.

* If a due date for submission is a closed day of the Organization, one business day prior to such date shall be the due date.

[Reference] Items to be aggregated in the electricity supply plan

Items aggregated in the electricity supply plan are described in the relevant "Cover letter for aggregation of supply plans" stipulated in the provisions of METI's Ordinance for Enforcement of the Electricity Business Act. The Organization aggregated the plans according to this description.

Items to be reported in the Aggregation (determined by the Ordinance of the METI)	Contents
I. Electricity Demand Forecast	
1. Actual and Preliminary Data for FY 2024, and Forecast for FY 2025 and 2026 (Short-Term)	**Actual peak demand for the previous year, and forecast peak demand for the 1st and 2nd years of the projected period in both each regional area and nationwide**
2. 10-Year Demand Forecast (Long-Term)	**Forecast peak demand from the 3rd to 10th years of the projected period in both each regional area and nationwide**
II. Electricity Supply and Demand	
1. Actual Data for FY 2024, and Projection for FY 2025 and 2026 (Short-Term)	**Actual supply-demand for the previous year, and projected supply-demand for the 1st and 2nd years of the projected period in both each regional area and nationwide**
2. Projection of Supply–Demand Balance for 10 years (Long-Term)	**Projected supply-demand from the 3rd to 10th years of the projected period in both each regional area and nationwide**
III. Analysis of the Transition of Power Generation Sources	**Development and retirement plans of power generation sources which express the transition of power generation in nationwide**
IV. Development Plans for Transmission and Distribution Facilities	**Aggregated reinforcement plans of inter- and intra-regional transmission and distribution facilities**
V. Cross-Regional Operation	**Aggregated transaction plans between each area**
VI. Analysis of Characteristics of Electric Power Companies	**Aggregated situation for electric power companies by each business licenses**
VII. Findings and Current Challenges	**Opinion to the Minister of Economics, Trade & Industry**

CONTENTS

I. Electricity Demand Forecast

1. Actual and Preliminary Data for FY 2024 and Forecast Values for FY 2025 and 2026 (Short Term)

a. Peak Demand (Average Value of the Three Highest Daily Loads)[1] in August

Table 1-1 presents actual data from the aggregated peak demand in each regional service area[2] submitted by 10 general transmission and distribution (GT&D) companies for FY 2024 and the forecast[3] values for FY 2025 and 2026.

The peak demand (i.e., the average value of the three highest daily loads) for FY 2025 was forecast to be 15,916 × 10^4W, which represents a 1.0% increase over 15,760 × 10^4W, the temperature-adjusted[4] value for FY 2024.

Furthermore, the peak demand for FY 2026 is forecast to be 15,954× 10^4W, which represents a 1.2% increase over the temperature-adjusted[4] actual value for FY 2024.

Table 1-1 Peak Demand (Average Value of the Three Highest Daily Loads) in August
(Nationwide, 10^4 kW at the Sending End)

FY 2024 Actual (temperature adjusted)	FY 2025 Forecast	FY 2026 Forecast
15,760	15,916 (+1.0%*1)	15,954 (+1.2%*2)

*1 Actual data for FY 2024 is an aggregate value considering the fact that the summer peak demand (before temperature-adjustment) occurred in July in some regional service areas.

*2 Percent change compared with the actual data (temperature-adjusted) for FY 2024 (summer)

b. Forecast Values for FY 2025 and 2026

Tables 1-2 and 1-3 present the monthly peak demand in FY 2025 and 2026, respectively, from the aggregated peak demand in each regional service area submitted by 10 GT&D companies.

The monthly peak demand in summer (August) is approximately 10 gigawatts (GW) more than that in winter (January) both for FY 2025 and FY 2026; therefore, the nationwide peak demand occurs in summer.

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[1] The peak demand corresponds to the average value of the three highest daily loads (hourly average) of each month..

[2] The peak demand in the regional service areas refers to the average value of the three highest daily loads in public demand supplied by retail companies and GT&D companies through the latter companies' transmission and distribution network to the respective regional service areas of GT&D companies. The Organization publishes these average values according to the provisions of paragraph 5 of Article 23 of the Operational Rules.

[3] The demand forecast beyond FY 2025 is based on normal weather. Thus, the weather conditions for the forecast assumptions may vary compared with that for the actual data or preliminary data for FY 2024

[4] Temperature adjustment is implemented to capture the current demand based on normal weather, which excludes demand fluctuations triggered by increase/decrease of air conditioner operation due to weather conditions, such as a cool summer and a warm winter.

Table 1-2 Monthly Peak Demand (Average Value of the Three Highest Daily Loads) in FY 2025
(Nationwide, 10^4 kW at the Sending End)

	Apr.	May	Jun.	Jul.	Aug.	Sep.
Peak Demand	11,086	11,113	12,706	15,879	15,916	14,058
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Peak Demand	11,766	11,985	13,974	14,892	14,879	12,958

Table 1-3 Monthly Peak Demand (Average Value of the Three Highest Daily Loads) in FY 2026
(Nationwide, 10^4 kW at the Sending End)

	Apr.	May	Jun.	Jul.	Aug.	Sep.
Peak Demand	11,132	11,154	12,750	15,917	15,954	14,106
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Peak Demand	11,818	12,037	14,030	14,946	14,935	13,017

c. Annual Electrical Energy Requirements

Table 1-4 presents the preliminary data[5] for FY 2024 and the forecast values for FY 2025 from the aggregated electrical energy requirements of each regional service area submitted by the 10 GT&D companies.

The electrical energy requirements for FY 2025 are forecast to be 849.6 TWh, which represents a 0.9% increase over 841.7 TWh, the temperature-adjusted preliminary data for FY 2024.

Table 1-4 Annual Electrical Energy Requirements
(Nationwide, TWh at the Sending End)

FY 2024 Preliminary (temperature- and leap-year-adjusted)	FY 2025 Forecast
841.7	849.6 (+0.9%*)

*Percent change compared with the preliminary data for FY 2024

[5] The preliminary data for annual electrical energy requirements are an aggregation of actual data from April to October 2024 with the preliminary data from November 2024 to March 2025.

2. 10-Year Demand Forecast (Long Term)

Table 1-5 presents nationwide major economic indicators developed and published by the Organization on November 27, 2024. These indicators are assumptions to be used by GT&D companies to forecast peak demand in their regional service areas.

The real gross domestic product (GDP)[6] was estimated to be 559.8 trillion Japanese yen (JPY) in FY 2024 and 603.8 trillion JPY in FY 2034 with an annual average growth rate (AAGR) of 0.8%. The index of industrial production (IIP)[7] was projected to be 102.5 in FY 2024 and 110.5 in FY 2034 with an AAGR of 0.8%. By contrast, the population was estimated to be 123,84 million in FY 2024 with a projected 117.36 million in FY 2034, representing an AAGR of −0.5%.

Table 1-5 Nationwide Economic Indicators

	FY 2024	FY 2034
Gross Domestic Product(GDP)	559.8 trillion JPY	603.8 trillion JPY [+0.8%]*
Index of Industrial Product(IIP)	102.5	110.5 [+0.8%]*
Population	123.84 million	117.36 million [−0.5%]*

* Average annual growth rate for the forecast values of FY 2024

a. Peak Demand in August

Table 1-6 presents the peak demand forecast for FY 2025, 2029, and 2034 from the aggregated peak demand values of each regional service area submitted by the 10 GT&D companies. Furthermore, Figure 1-1 presents the actual data and the forecast values of the peak demand from FY 2013 to 2034.

The peak demand nationwide is forecast to be 16,240 × 10^4W in FY 2029 and 16,459 × 10^4W in FY 2034 with an AAGR of 0.4% from FY 2024 to 2034.

The peak demand beyond FY 2024 is forecast to exhibit an upward trend due to larger increasing factors, such as economic growth and new installation of data centers and semiconductor factories, compared with decreasing factors, such as efforts to reduce electricity use, wider use of energy–saving electrical appliances, and a shrinking population.

Table 1-6 Peak Demand Forecast (Average Value of the Three Highest Daily Loads) for August (Nationwide, 10^4 kW at the Sending End)

FY 2025 [aforementioned]	FY 2029	FY 2034
15,916	16,240 [+0.6%]*	16,459 [+0.4%]*

* Average annual growth rate for the forecast values of FY 2024

[6] GDP is expressed as the chained price for calendar year (CY) 2015.
[7] IIP is an index value in CY 2020 = 100.

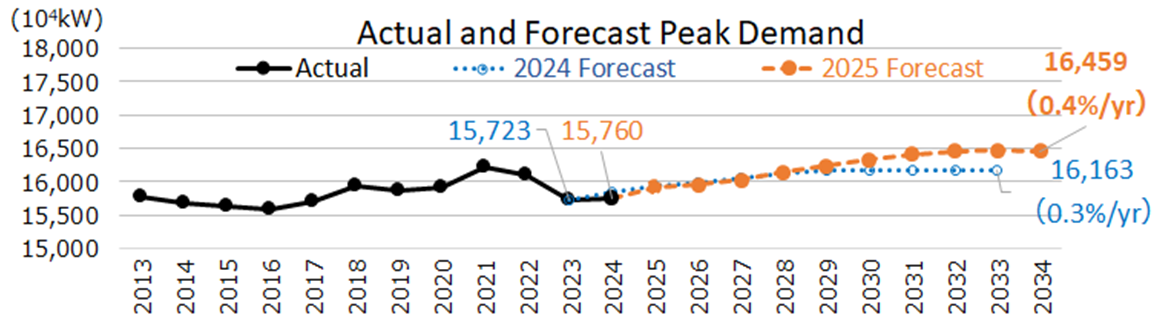

Figure 1-1 Actual and Forecast Peak Demand (August for Nationwide, 10^4 kW at the Sending End)

b. Annual Electric Energy Requirement

Table 1-7 presents the forecast of annual electrical energy requirements in FY 2025, 2029, and 2034 from the aggregated electrical energy requirements of each regional service area submitted by the 10 GT&D companies.

The nationwide annual electrical energy requirement is forecast to be 876.1 TWh in FY 2029 and 894.4 TWh in FY 2034 with an AAGR of 0.6% from FY 2024 to 2034.

Beyond FY 2024, it is forecast to exhibit an upward trend due to larger increasing factors, such as economic growth and new installation of data centers and semiconductor factories, compared with decreasing factors, such as efforts to reduce electricity use, wider use of energy–saving electrical appliances, and a shrinking population.

Table 1-7 Annual Electrical Energy Requirement Forecast
(Nationwide, TWh at the Sending End)

FY 2025 [aforementioned]	FY 2029	FY 2034
849.6	876.1 [+0.8%]*	894.4 [+0.6%]*

* Average annual growth rate for the forecast values of FY 2024

II. Electricity Supply and Demand

1. Actual and Preliminary Data for FY 2024

Table 2-1 presents actual supply–demand balance calculated based on peak demand (the average value of the three highest daily loads) in August (nationwide) and the supply capacity in August (nationwide) for FY 2024 specified in the supply plans submitted by respective EPCOs.

As nationwide aggregation of the actual supply–demand balance, 16.5% of reserve margin was secured.

Table 2-1 Actual Supply–Demand Balance in August, FY 2024
(Nationwide, 10^4kW at the Sending End)

Peak Demand [temperature-adjunsted]	Supply Capacity [Nationwide]	Reserve Capacity	Reserve Margin
15,817	18,427	2,610	16.5%

Table 2-2 presents the actual supply–demand balance of each regional service area. Because the supply capacity in each service area was transferred from the areas with a higher reserve margin to the areas with a lower reserve margin by utilizing cross-regional interconnection lines within the Available Transfer Capability (ATC) to level the reserve margin throughout the service areas, a 13% or more reserve margin was secured in all areas.

Table 2-2 Actual Supply–Demand Balance in August, FY 2024 (in Each Area at the Sending End)

[10^4kW]

	Hokkaido	Tohoku	Tokyo	Chubu	Hokuriku	Kansai	Chugoku	Shikoku	Kyushu	Okinawa
Peak Demand	417	1,321	5,404	2,321	470	2,641	1,027	474	1,581	162
Supply Capacity	517	1,524	6,147	2,740	555	3,117	1,213	560	1,866	189
Reserve Margin	24.0%	15.4%	13.7%	18.0%	18.0%	18.0%	18.0%	18.0%	18.0%	17.1%

2. Supply Reliability Criteria

Since FY 2021, the Organization has applied annual expected unserved energy (EUE) as a criterion for evaluation of supply reliability in the electricity supply plans based on discussions held by the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation[8]. After that, in the discussion at the 81st meeting of the Committee, the basic principle to review the measures against severe weather to be included in the criteria for evaluation of supply reliability was decided[9], while the calculation for measures against accidental supply–demand variance and severe weather were decided to be based on the latest data for each target year at the 94th and 95th meetings of the Committee[10]. In addition to that, it has been decided to introduce a temporary measure to increase supply capacity for severe weather in June and how to handle the capacity of interconnection lines at the 105th and 106th meeting of the Committee[11]. Therefore, the Organization applies the target outage volume in the capacity market scheme and the electricity supply plan shown in Table 2-3 as a supply reliability criterion for the FY 2025 Supply Plan. For the Okinawa area, the evaluation is implemented based on the decision at the 85th meeting of the Committee[12].

It is considered to be important to balance the supply capacity of each month according to each area's characteristics, such as winter in Hokkaido, or severe weather. Therefore, the Organization confirms the reserve margin of each area and month supplementally for the short term (FY 2025 and 2026)[8].

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[8] Reference: Material 2, 58th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (March 3, 2021) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2020/files/chousei_58_02.pdf

[9] Reference: Material 1, 81st meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (January 24, 2023) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2022/files/chousei_81_01r.pdf

[10] Reference: Material 1, 94th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (January 24, 2024) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2023/files/chousei_94_01.pdf
Reference: Material 1, 95th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (February 20, 2024) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2023/files/chousei_95_01.pdf

[11] Reference: Material 1, 105th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (January 28, 2025) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2024/files/chousei_105_01.pdf
Reference: Material 1, 106th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (February 17, 2025) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2024/files/chousei_106_01.pdf

[12] Reference: Material 1, 85th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply-Demand Balance Evaluation (April 19, 2023) [written only in Japanese]
https://www.occto.or.jp/iinkai/chouseiryoku/2023/files/chousei_85_01.pdf

Table 2-3 Target Outage Volume in the Capacity Market Scheme and the Electricity Supply Plan
(Based on various factors in the aggregation of supply plans for FY 2025)

Forecast	Nationwide Peak Demand (excl. isolated islands)* [10^4kW]	Reserve Margin for Accidental Supply-demand Variance [%]	Reserve Margin for Severe Weather Condition [%]		Reserve Margin for Rare Occurrences Risk [%]	Target Outage Volume at Capacity Market Scheme in Electricity Supply Plan [kWh/kW-year]	Reserve Margin for Continuous Supply-demand Variance [%]
			Summer/ Winter	Spring/ Autumn			
FY 2025	15,863	6.5	4.4	3.8	1	0.018	2
FY 2026	15,905	6.3	4.5	3.9		0.015	
FY 2027	15,971	6.5	4.4	3.8		0.017	
FY 2028	16,081	5.9	5.0	4.3		0.010	
FY 2029	16,179	5.8	5.0	4.3		0.010	
FY 2030	16,270	5.8	5.1	4.3		0.009	
FY 2031	16,351	5.8	5.0	4.3		0.010	
FY 2032	16,393	5.8	5.1	4.4		0.009	
FY 2033	16,398	5.8	5.1	4.4		0.009	
FY 2034	16,387	5.8	5.1	4.4		0.009	

*Nationwide peak demand is the total of peak demand in January for Hokkaido, Tohoku, and Hokuriku, in August for other areas except Okinawa.

(Reference) Characteristics of the Annual EUE

Figure 2-1 presents the characteristics of annual EUE. In evaluations using annual EUE criteria, a target supply reliability is secured throughout the year if the forecast outage volume (annual EUE) of each regional service area is less than the target outage volume in the capacity market scheme and the electricity supply plan.

Still, it is difficult to identify the lowering of the reserve margin in a specific area and month solely by the annual EUE evaluation when an imbalance in the supply capacity is caused by scheduled maintenance of generation facilities or other factors. Therefore, the Organization implements a conventional approach and confirms the reserve margin of each month supplementally.

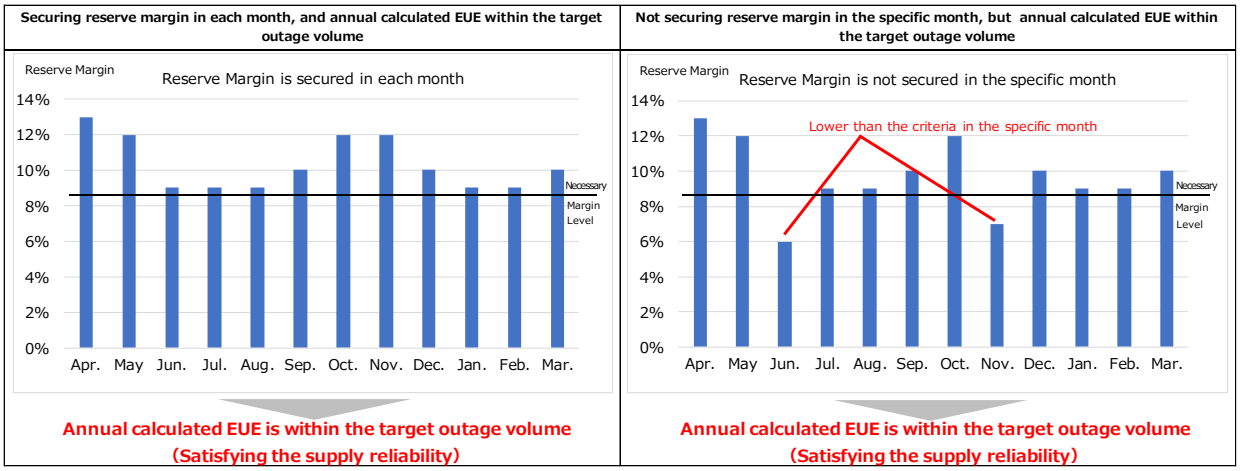

Figure 2-1 Characteristics of the Annual EUE

3. Evaluation of Supply Capacity Using the EUE Approach in the Projected Period (FY 2025–2034)

Table 2-4 presents the calculation results of annual EUE. In the short term (FY 2025 and 2026), the calculation results exceed the target outage volume in the Tokyo and Kyushu areas in FY 2025 and the Tokyo area in FY 2026 due to suspension and decommissioning or scheduled maintenance of generation facilities.

In the long term, due to the suspension and decommissioning of generation facilities, the calculation results exceed the target outage volume in the Hokkaido area in FY 2027; the Tohoku area for FY 2028–2034; the Tokyo area for FY 2027–2034; and the Kyushu area for FY 2027–2034.

Table 2-4 Calculated Supply Capacity Results Using the Annual EUE

(kWh/kW-year)

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hokkaido	0.007	0.003	0.035	0.006	0.008	0.002	0.000	0.000	0.000	0.000
Tohoku	0.001	0.004	0.003	0.049	0.060	0.034	0.021	0.018	0.021	0.020
Tokyo	0.028	0.104	0.113	0.050	0.061	0.034	0.022	0.021	0.024	0.023
Chubu	0.017	0.002	0.003	0.007	0.007	0.002	0.003	0.002	0.002	0.001
Hokuriku	0.000	0.000	0.002	0.005	0.006	0.002	0.002	0.002	0.001	0.001
Kanasai	0.000	0.000	0.003	0.006	0.008	0.004	0.003	0.002	0.002	0.001
Chugoku	0.000	0.000	0.003	0.006	0.008	0.004	0.003	0.002	0.002	0.001
Shikoku	0.000	0.000	0.002	0.006	0.008	0.004	0.003	0.002	0.001	0.001
Kyushu	0.021	0.005	0.140	0.449	0.440	0.868	0.986	0.884	0.904	0.777
Interconnected areas	0.015	0.038	0.056	0.069	0.073	0.102	0.107	0.096	0.099	0.086
Okinawa	0.346	0.121	1.983	1.509	1.583	1.672	1.735	1.827	1.660	1.756
<Target outage volume aimed by capacity market and electricity supply plan>										
Interconnected areas	0.018	0.015	0.017	0.010	0.010	0.009	0.010	0.009	0.009	0.009
Okinawa	1.996	1.996	1.996	1.996	1.996	1.996	1.996	1.996	1.996	1.996

4. Supplementary Confirmation of Supply Capacity (kW) for Short-Term

The Organization evaluated the supply–demand balance nationwide and for each regional service area (except Okinawa area) using the supply capacity[13] and peak demand data of each regional service area. Then, it confirmed that the reserve margin[14] for the peak demand exceeds the sum of the accidental supply–demand variance and the continuous supply–demand variance.

With respect to the Okinawa area, the Organization confirmed that the supply capacity from which the value of necessary reserve capacity[15] based on actual operation or the value of activation criterion[16] of Generator I', whichever is larger, is deducted exceeds the peak demand. In addition, with respect only to the Okinawa area, the evaluation is implemented at the time of the smallest reserve margin.

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[13] Supply capacity refers to the maximum power expected to be generated steadily during the period of peak demand (average value of the three highest daily loads).

[14] Reserve margin (%) refers to the reserve capacity (difference between the supply capacity and the peak demand (average value of the three highest daily loads)) divided by the peak demand.

[15] Reference: Material 2, 85th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (April 19, 2023) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2023/files/chousei_85_02.pdf

[16] Reference: Guideline for soliciting balancing capacity of Generator I' activating at severe weather for FY 2025 (The Okinawa Electric Power Company, Incorporated) [written only in Japanese].
https://www.okiden.co.jp/shared/pdf/business/free/2023/ps1/dengen_tyousei_10.pdf

Figure 2-2 summarizes the supply–demand balance evaluation. The supply capacity of each service area is the sum of the supply capacity of generation facilities owned by EPCOs (mainly generation company) and the supply capacity traded with non-EPCOs (sales are deducted from procurement) less the supply capacity traded with the registered specified transmission, distribution, and retail companies.

When EPCOs could not foresee the operation timing of a nuclear power plant or unit and reported the corresponding plant or unit's supply capacity as "uncertain", the supply capacity of such plant or unit is calculated as "zero" in accordance with the Procedures for Electricity Supply Plans of FY 2025 (published in November 2024 by the Agency for Natural Resources and Energy)[17].

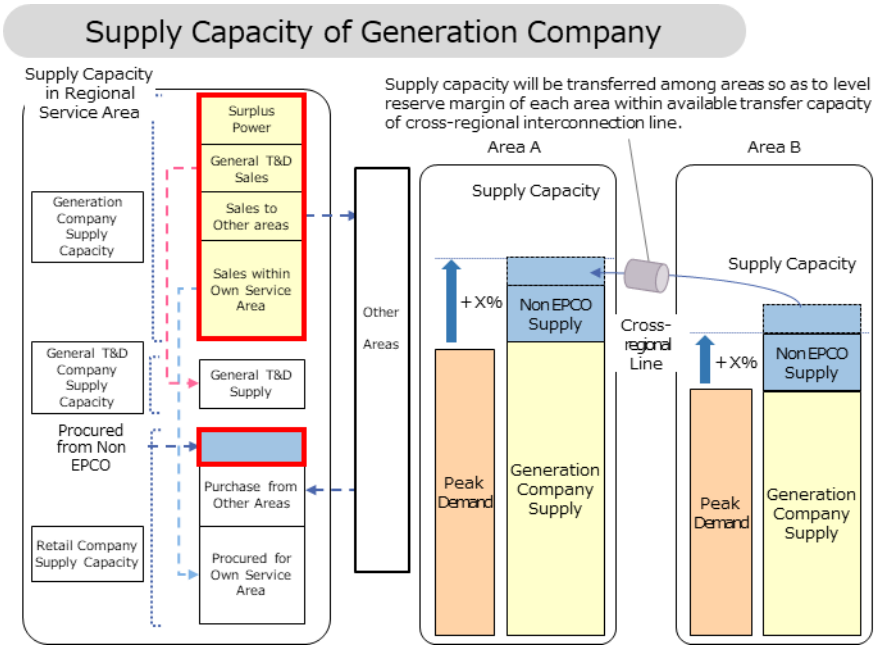

Figure 2-2 Summary of Supply–Demand Balance Evaluation

[Reference] Method for Calculating the Supply Capacity

The calculation method of supply capacity is based on the description in the "Guidelines for the Calculation of Demand and Supply Capacity Related to Supply–Demand Balance"[18] (Agency for Natural Resources and Energy: November 2024) and the "Procedures for Electricity Supply Plans of FY 2025"[17] (Agency for Natural Resources and Energy: November 2024). Essentially, the evaluation segment of supply capacity is based on the attached document, "Segment of Power Supply" of the Procedures for Electricity Supply Plans of FY 2025.

[17] Procedures for Electricity Supply Plans of FY 2025[written only in Japanese]
https://www.enecho.meti.go.jp/category/electricity_and_gas/electricity_measures/001/pdf/2024-11_kyoukei_kisaiyouryou.pdf

[18] Guideline for the Calculation of Demand and Supply Capacity Related to Supply-Demand Balance [written only in Japanese]
https://www.enecho.meti.go.jp/category/electricity_and_gas/electricity_measures/001/pdf/2024-11_jukyujuyou_keijogaidorain.pdf

[Reference] Calculation Method of Available Transfer Capability (ATC)

The following is how to calculate the available transfer capability (ATC) for the cross-regional interconnection lines. When calculating the cross-regional reserve margin, the supply capacity is transferred from the areas with higher reserve margin to the areas with lower reserve margin within the available transfer capability of interconnection lines to level the reserve margin throughout the regional service areas by utilizing cross-regional interconnection lines. The supply capacity of each regional service area before the leveling of the reserve margin is calculated based on the generation facilities owned by EPCOs and does not consider the scheduled trade between EPCOs through the cross-regional interconnection lines. Therefore, the Organization calculates the scheduled power flow as zero to calculate the ATC of cross-regional interconnection lines for the leveling of the reserve margin.

ATC = (i) Transfer Capability – (ii) Transfer Margin

Short term

(i) Transfer Capability : Values based on the "Transfer Capability of Cross-regional Interconnection Lines FY 2025-2034" (annual and long-term plans; March 1, 2025: The Organization)[19]. Values for some part of interconnection lines (between Chubu and Kansai areas, and between Chugoku and Kyushu areas) reflect the segmentation of the transfer capability by 30 minutes.

(ii) Transfer Margin: Values calculated considering the "Annual Transfer Margin FY 2025 and 2026, and concept of margin setting and reasons for securing of margin" (March 1, 2025: The Organization)[20], and the calculated figures considering expected contributions from external areas (equivalent to 3% of the transfer capability of interconnection lines)

Mid-to-long term

(i) Transfer Capability: For FY 2025 and 2026, the August value is based on the value of the Short term above; the values for FY 2027–2034 are based on the "Transfer Capability of Cross-regional Interconnection Lines FY 2025–2034" (annual and long-term plans; March 1, 2025: The Organization)[19]. For interconnection lines for which calculation conditions are still under consideration, the values for FY 2029 are applied.

(ii) Transfer Margin: For FY 2025 and 2026, the August value is based on the value of the Short term above; the values for FY 2027–2034 are calculated considering the "Transfer Margin of Cross-regional Interconnection Lines FY 2027–2034, and the concept of margin setting and reasons for securing of margin" (March 1, 2025: The Organization) [20].

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[19] Reference: Transfer Capability of Cross-regional Interconnection Lines from FY 2025 to 2034 (annual and long-term) [written only in Japanese].
https://www.occto.or.jp/renkeisenriyou/oshirase/2024/files/oshirase_1_2025-2034_unyouyouryou.pdf

[20] Reference: "Cross-regional Transfer Margin for FY 2025 and FY 2026" [written only in Japanese].
https://www.occto.or.jp/renkeisenriyou/oshirase/2024/files/20250301_margin_1_nenkan.pdf
Reference: "Cross-regional Transfer Margin from FY 2027 to FY 2034" [written only in Japanese].
https://www.occto.or.jp/renkeisenriyou/oshirase/2024/files/20250301_margin_2_thouki.pdf
Reference: "Concept of margin setting and reasons for securing of margin" [written only in Japanese].
https://www.occto.or.jp/renkeisenriyou/oshirase/2024/files/20250301_margin_3_kakuhoriyuu.pdf

a. Projection of the Supply–Demand Balance in FY 2025 and 2026

For calculation of the reserve margin, the supply capacity is transferred from the areas with higher reserve margin to the areas with lower reserve margin within the available transfer capability of interconnection lines to level the reserve margin throughout regional service areas by utilizing the cross-regional interconnection lines. Furthermore, additional supply capacity is applied to areas from Hokkaido to Kyushu for July and August based on the correlation between solar power generation and electric demand[21].

In addition, development plans for generation facilities published in the environmental impact assessment information (plans for which a report on environmental impact assessment method has been submitted[22]) probably include some generation facilities for which EPCOs has confirmed their final business judgment and started their construction. Therefore, the Organization has investigated generation facilities that are not included in electricity supply plans; however, they have already been applied for a contract of grid connections to GT&D companies and notified according to the provisions of Article 48 (Construction Plans) of the Act in cooperation with the government, then we included such generation facilities.

(i) Projection for FY 2025

Table 2-5 presents the projected reserve margin in each regional service area. The reserve margin in each regional service area[23] exceeds 12% in every area and for all month.

Table 2-5 Monthly Projection of Cross-Regional Reserve Margins Nationwide and for Each Regional Service Area
(With utilization of interconnection lines, and inclusion of generation facilities for which construction plans have been submitted at the sending end)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	27.6%	36.6%	37.5%	17.9%	17.5%	24.3%	23.5%	14.4%	19.8%	15.5%	14.8%	21.6%
Tohoku	19.9%	18.7%	19.6%	17.9%	17.5%	24.3%	12.7%	14.4%	19.8%	15.5%	14.8%	21.6%
Tokyo	19.9%	18.7%	19.6%	17.9%	17.5%	24.3%	12.4%	14.4%	19.8%	15.5%	14.8%	21.6%
Chubu	27.5%	30.1%	24.6%	17.9%	17.5%	24.3%	29.6%	21.7%	17.0%	14.7%	14.8%	25.7%
Hokuriku	27.5%	30.1%	24.6%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Kansai	27.5%	30.1%	24.6%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Chugoku	27.5%	30.1%	34.4%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Shikoku	63.5%	66.1%	54.7%	46.3%	37.1%	28.0%	31.7%	23.5%	17.0%	24.8%	35.3%	59.8%
Kyushu	27.5%	21.7%	34.4%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Okinawa	38.8%	35.2%	28.4%	24.6%	34.2%	34.4%	40.1%	56.5%	68.7%	68.4%	72.9%	94.8%

* Reserve margins with the same value are shown in the same background color after utilization of cross-regional interconnection line.
* For the Okinawa area, the evaluation is implemented at the time of the smallest reserve margin.

The network system in the Okinawa area is a small, isolated system that is unable to receive power from other areas; thus, the same criteria used in other areas cannot be applied. With respect

[21] Reference: Material 1, 69th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply–Demand Balance Evaluation (January 19, 2022) [written only in Japanese].
https://www.occto.or.jp/iinkai/chouseiryoku/2021/files/chousei_69_01.pdf

[22] Reference: Information on the environmental assessment of thermal power plants (METI website) [written only in Japanese].
https://www.meti.go.jp/policy/safety_security/industrial_safety/sangyo/electric/detail/index_assessment.html

[23] For the Okinawa area, the evaluation is implemented at the time of the least reserve margin.

to the Okinawa area, the stable supply criterion is that the supply capacity from which the necessary reserve capacity based on actual operation (342 MW) is deducted exceeds the peak demand (the average value of the three highest daily loads).

Table 2-6 presents the projected monthly reserve margin in the Okinawa area, indicating that a necessary supply capacity was projected to be secured for all months.

Table 2-6 Monthly Reserve Margin Forecast Using the Conventional Approach in Okinawa in FY 2025
(at the Sending End)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Okinawa	7.2%	9.0%	5.6%	3.0%	12.5%	12.3%	15.2%	26.2%	33.6%	35.0%	36.9%	59.3%

(ii) Projection for FY 2026

Table 2-7 presents projected reserve margin in each regional service area. The reserve margin in each regional service area exceeds 11% in every area and for all months.

Table 2-7 Monthly Projection of Cross-Regional Reserve Margins Nationwide and for Each Regional Service Area
(With utilization of interconnection lines, and inclusion of generation facilities for which construction plans have been submitted at the sending end)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	22.9%	38.4%	34.0%	25.7%	21.4%	21.7%	23.8%	19.0%	22.6%	17.9%	15.9%	22.0%
Tohoku	18.6%	37.5%	34.0%	14.4%	21.4%	21.7%	15.8%	16.8%	20.7%	15.7%	15.3%	22.0%
Tokyo	14.9%	16.9%	12.7%	11.8%	11.8%	18.0%	14.6%	16.8%	20.0%	15.7%	15.3%	22.0%
Chubu	36.2%	32.6%	26.7%	19.7%	18.8%	18.0%	14.6%	18.0%	14.0%	14.0%	15.3%	23.7%
Hokuriku	36.2%	32.6%	26.7%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Kansai	36.2%	32.6%	26.7%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Chugoku	36.2%	32.6%	35.1%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Shikoku	45.2%	52.3%	35.1%	21.9%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Kyushu	36.2%	32.6%	35.1%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Okinawa	58.8%	45.0%	31.3%	28.8%	31.5%	35.7%	43.2%	56.2%	67.3%	74.8%	76.4%	77.7%

* Reserve margins becoming the same value are shown in the same background colors after utilization of cross-regional interconnection line.
* For the Okinawa area, the evaluation is implemented at the time of the least reserve margin.

Table 2-8 presents the monthly projection of reserve margins in the Okinawa area evaluated similarly with FY 2025, indicating that the necessary supply capacity was projected to be secured for all months.

Table 2-8 Monthly Reserve Margin Forecast Using the Conventional Approach in Okinawa in FY 2026
(at the Sending End)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Okinawa	27.4%	18.9%	8.6%	7.3%	9.9%	13.7%	18.4%	26.0%	32.4%	41.5%	40.5%	42.4%

b. Scheduled Maintenance of Generation Facilities for FY 2025 Evaluated Using the Conventional Approach

Figure 2-3 presents the monthly scheduled maintenance of generation facilities planned in the Supply Plan of FY 2025 (first year), which is subject to a generation capacity of 100 MW and above, in principle. Figure 2-4 presents the difference in monthly scheduled maintenance of generation facilities between the first year in the FY 2025 Supply Plan (FY 2025) and the second year in the FY 2024 Supply Plan (FY 2025), which is subject to a generation capacity of 100 MW and above, in principle.

The Organization requested that all generation companies avoid the relatively tight supply–demand balance periods for alteration in the scheduled maintenance or for newly scheduled maintenance of generation facilities.[24] However, scheduled maintenance has increased for periods, except May, compared with the supply plan for FY 2024 because of process inspections, malfunctions of facilities, and other reasons.

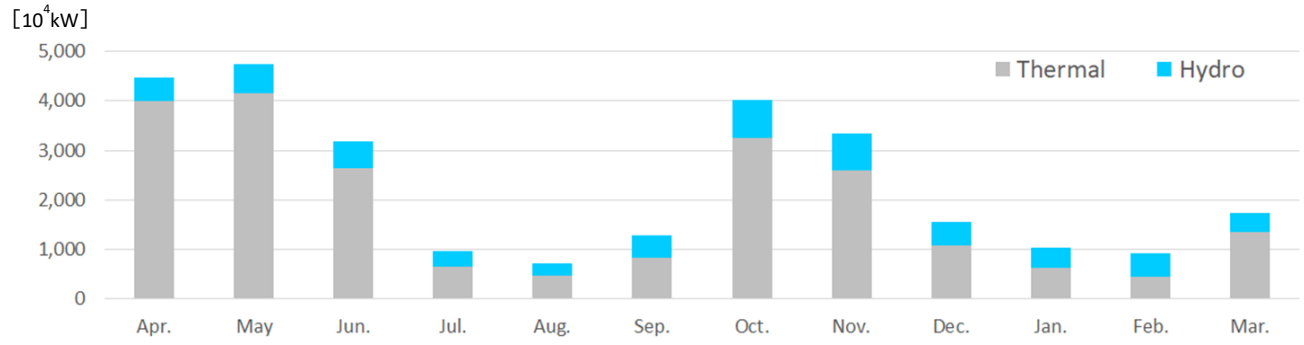


Figure 2-3 Monthly Scheduled Maintenance Planned for FY 2025 in the 2025 Supply Plan

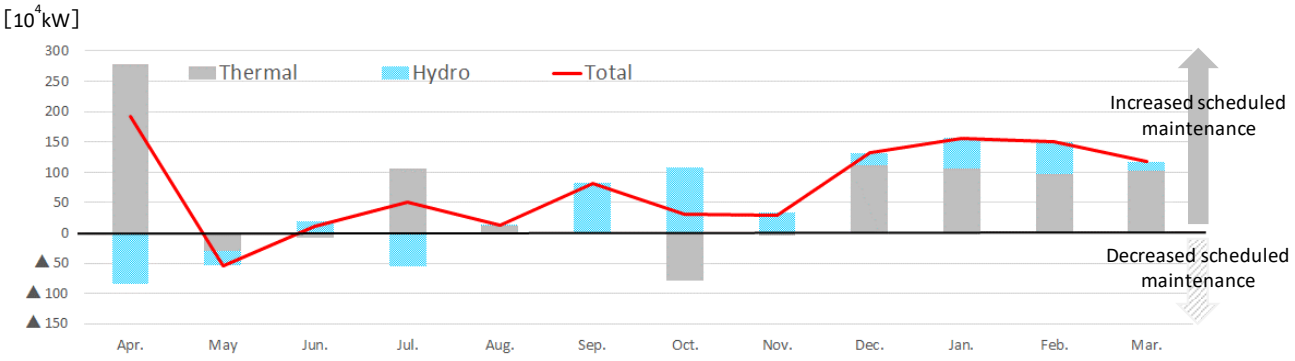


Figure 2-4 Difference in Scheduled Maintenance for FY 2025 between the FY 2024 (2nd year) and FY 2025 (1st year) Supply Plans

c. Suspension and Decommissioning of Generation Facilities in the 2025 Supply Plan

Table 2-9 presents the suspension and decommissioning of thermal generation facilities (subject to the generation capacity of 1 MW and over, in principle, excluding isolated island facilities) in the FY 2025 Supply Plan.

[24] Reference: "Further Security of Supply Capacity in FY 2025" [written only in Japanese]. https://www.occto.or.jp/kyoukei/oshirase/241001_2025kyoukyuryokukakuho.html

In total, a capacity of 602 ×10⁴W of thermal generation facilities is planned to be suspended or decommissioned in FY 2025. Precisely 336 ×10⁴W of the total has been planned to be suspended or decommissioned before FY 2025, and 266 ×10⁴W was newly added to the supply plans for FY 2025.

Table 2-9 Suspension and Decommissioning of Generation Facilities in the 2025 Supply Plan (10^4 kW)

(10^4kW)

Fuel	Newly Added	Already Included	Total Capacity to be Decommissioned
LNG	60	155	215
Oil	202	64	266
Coal	4	117	121
Total	266	336	602

* Aggregated including the generation facilities of 1,000kW and over (except those sitede on isolated islands) based on the development plan of generation and storage facilities

5. Evaluation of Energy Supply

To evaluate the electrical energy (kWh) balance, the Organization has implemented a semiannual monitoring of electrical energy for the summer and winter periods since FY 2021 in consideration of the timing when information required for the weather forecast or the demand forecast is available and when the additional fuel procurement for generation is possible. Since the Organization plans to continue such monitoring and publish the results, it did not evaluate the energy balance in the aggregated FY 2025 supply plan; however, it did confirm the annual energy balance at this point and published information to elicit a response from the EPCOs.

a. Projection Related to Electrical Energy (kWh)

Figure 2-5 presents the monthly electrical energy (kWh) balance (aggregation of nine areas) for the first year of the supply plan (FY 2025). Table 2-10 presents the difference between the projected energy supply[25] and the forecasted energy requirement (aggregation of nine areas notified by the GT&D companies). In all months, the energy supply exceeds the energy requirements.

While the Organization expects generation companies to procure fuel to meet the actual demand and supply timing based on the demand trend in the future, it will confirm projections for securing the energy supply by implementing kilowatt-hour (kWh) monitoring for the summer and winter periods.

[25] The projected energy supply is the sum of the electrical energy supplied by generation facilities owned by the EPCOs and the electrical energy traded with non-EPCOs less the electrical energy traded with registered specified transmission, distribution, and retail companies.

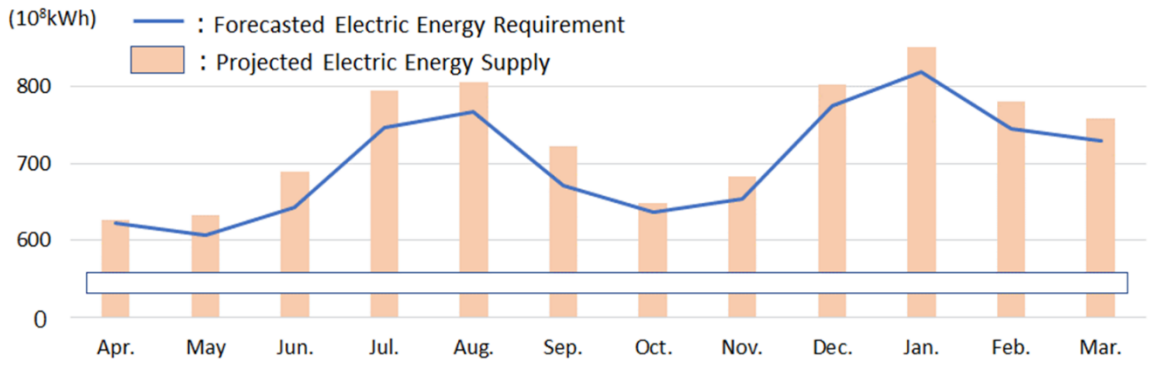


Figure 2-5 Monthly Electrical Energy (kWh) Balance for the First Year (FY 2025)

Table 2-8 Difference Between the Projected Energy Supply and the Forecasted Energy Requirement for the First Year (FY 2025)

(10⁸kWh)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Annual total
Forecasted Energy Requirement	622	606	643	747	767	671	636	654	775	819	745	729	8,415
Projected Energy Supply Shortage	5	26	45	48	38	52	13	29	27	34	34	29	380
Projected Shortage Rate	0.8%	4.3%	7.0%	6.4%	5.0%	7.7%	2.0%	4.4%	3.5%	4.2%	4.6%	4.0%	4.5%

Note: The monthly total is not necessarily equal to the annual total because of rounding to the nearest full unit.

6. Summary of Confirmed Results of Supply–Demand Balance

・ Projection of supply capacity (kW) (short and long terms)

For the first year (FY 2025), the EUE exceeds the target outage volume in the Tokyo and Kyushu areas because of suspension and decommissioning or scheduled maintenance of generation facilities.

For the second year (FY 2026), the EUE exceeds the target outage volume in the Tokyo area because of suspension and decommissioning or scheduled maintenance of generation facilities.

Also, for the long term (FY 2027 to 2034), the EUE exceeds the target outage volume in the Hokkaido (FY 2027), Tohoku (FY 2028 to 2034), Tokyo (FY 2027 to 2034), and Kyushu (FY 2027 to 2034) areas because of suspension and decommissioning of generation facilities.

・ Evaluation of Supply Capacity Using the Conventional Approach (short term)

The reserve margin is secured for 11% or more in both the first year (FY 2025) and the second year (FY 2026) in every area and for all months.

・ Monthly projection of electrical energy (kWh) (FY 2025)

The electrical energy supply exceeds the forecasted energy requirement submitted by the GT&D companies for all months.

・ For the Tokyo and Kyushu area in FY 2025, the annual EUE exceeds the target outage volume. This is because the target outage volume has become a more severe value after reconsideration of the volume due to severe weather, even though the coordination of scheduled maintenance was implemented for the Tokyo area. Meanwhile, in the supplementary confirmation of supply capacity (kW), the reserve margin was secured for 12% or more in every area and for all months. The Organization will pay close attention to the supply–demand situation and consider supply–demand

measures if necessary.

・ For the Tokyo area in FY 2026, the annual EUE exceeds the target outage volume. In future, the Organization will decide on the necessity for an incremental auction according to the provisions of Article 32-21 of the Operational Rules of the Organization based on discussions by the governmental council. Depending on the result of such a decision, supply–demand measures will be required, such as coordination of the maintenance timing of generation facilities. Therefore, the Organization will coordinate with the government and corresponding EPCOs.

・ In the supply plans beyond FY 2027, the Organization will confirm the results of coordination of the maintenance schedule implemented two fiscal years prior to the actual supply-demand timing and determine the need for incremental auctions as required. It will also carefully re-examine the supply capacity in the future supply plans based on continuous observations of the trend of generation facilities in the mid to long term.

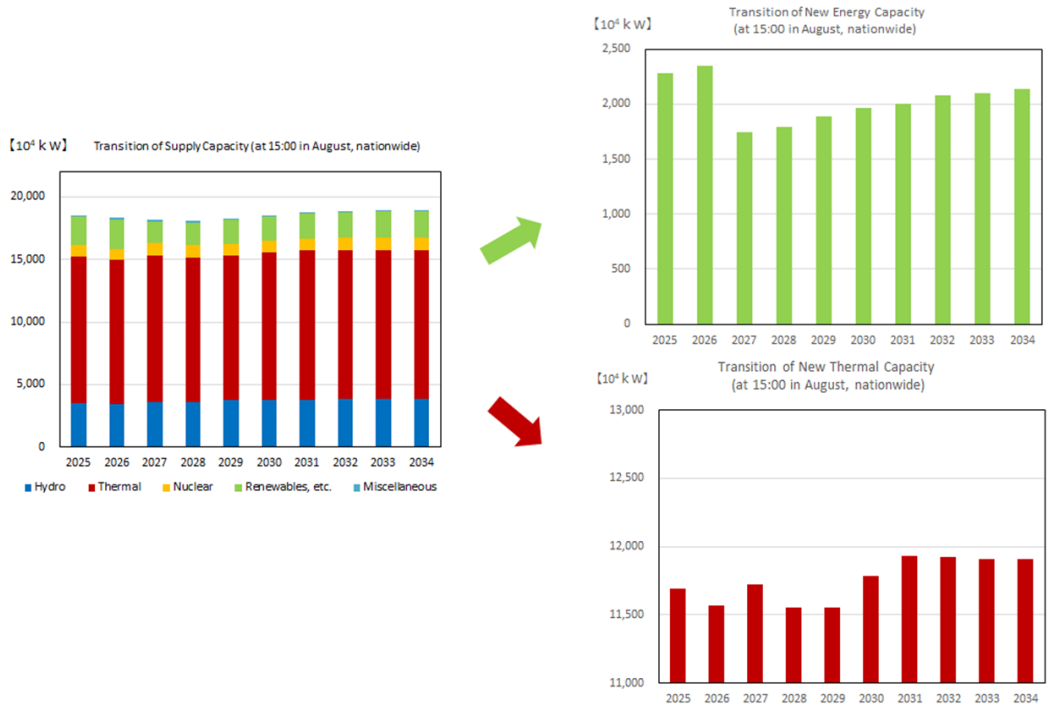
[Reference] Detailed Analysis of the Aggregation:

a. Transition of Annual Supply Capacity by Generation Sources

Figure 2-6 presents the projection of supply capacity of the respective power generation sources (nationwide in August) in the projected period up to FY 2034.

The supply capacity of new energy, among others, is projected to decrease temporarily in FY 2027 because of the difference in the calculation method of an adjustment factor; however, it is projected to increase continuously thereafter. Although the supply capacity of thermal power is projected to decrease in FY 2026 and FY 2028 because of the suspension and decommissioning of generation facilities, it is projected to increase in FY 2030 and 2031 because of the installation of new facilities and then to remain almost the same after that.

Last, supply capacity as a whole is projected to decrease until FY 2028 and increase from FY 2029 to 2031 and then to remain almost the same.



Aggregated value submitted by each electric power company

New Energy, etc: Wind, Solar, Geothermal, Biomass and Waste, classified by "Guideline for the Calculation of Demand and Supply Capacity" (Agency for Natural Resources and Energy: Dec. 2011)

Renewable Energy : New Energy and Hydro

Figure 2-6 Transition of Supply Capacity by Generation Sources

b. Transition of Annual Suspended Thermal Power Plants

Figure 2-7 presents mid-to-long-term projections of suspended thermal power plants (approximately 8–12 GW) in these aggregated evaluations of long-term supply–demand balance, which are not counted as part of the supply capacity because of the long-term planned outages.

A total amount of suspended capacity of thermal power plants tends to remain unchanged. Among these plants, some plants are planned to be suspended for one year only in FY 2026, while the others will resume operation during the period from FY 2029 to 2030.

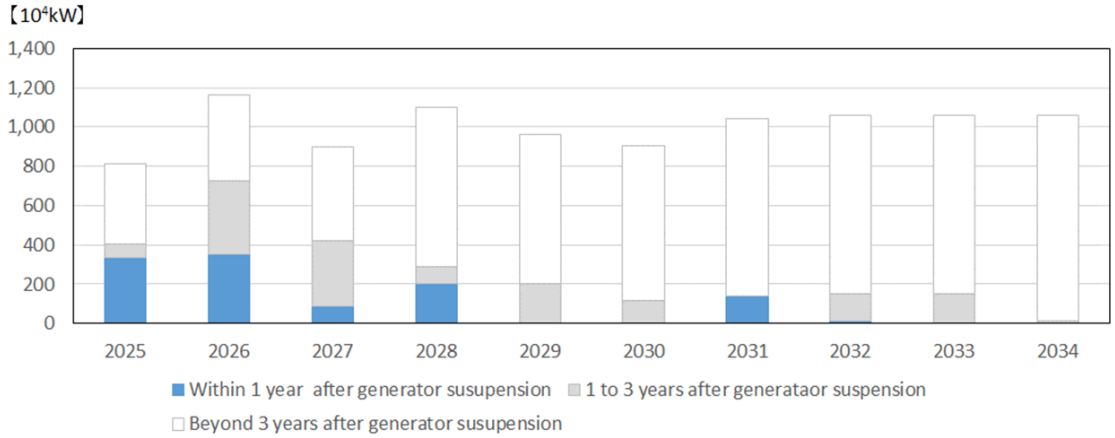


Figure 2-7 Projections of Suspended Thermal Power Plants

III. Analysis of the Transition of Power Generation Sources

This chapter's analysis is based on the automatic aggregation of values submitted by the EPCOs. These values will not necessarily be realized in the future because of the operating conditions of power plants or actions in response to political measures.

1. Installed Power Generation Capacity (kW)

Installed power generation capacity shown in Table 3-1 and Figure 3-1 presents the aggregate value of installed power generation capacity of each fiscal year submitted by the EPCOs. In particular, it is the automatic aggregation of the capacity of generation facilities expected to be owned by generation companies under certain conditions and the capacity of generation facilities (feed-in-tariff generators etc.) procured by retail companies, specified wholesale suppliers, and GT&D companies from the non-EPCOs in the projected period. For the EPCOs' development plans, only generation facilities with a given probability of development are included in the calculation; however, not all development plans will necessarily be realized. It is assumed that inefficient facilities will proceed toward being decommissioned because of political measures in the future.

The installed generation capacity by power generation source submitted by the EPCOs is calculated according to the following concepts. The capacity of suspended generation facilities not counted as part of the supply capacity because of the long-term planned outage or other reasons is also included as the capacity of the installed generation capacity.

*1 Hydro and Thermal[26]

The capacities of generation facilities owned by generation companies are aggregated. Newly installed facilities are included on the condition that their environmental assessments have proceeded and their commercial operations have been published.

*2 Nuclear

The capacities of generation facilities that are owned by generation companies and have actual operational experience in the past are aggregated (33 units that include the units for which the date for resuming operations is uncertain but exclude units that have terminated their operations).

*3 Solar and Wind

GT&D companies aggregate the values by projecting the integration of generation facilities based on the situation of the application for grid connection or the actual growth rate of integration.

[26] The same concept is applied to geothermal, biomass, waste power, storage battery, hydrogen, ammonia, and other generation sources.

Table 3-1 Installed Power Generation Capacities (Nationwide, 10^4 kW)

Power Generation Sources		FY 2024	FY 2025	FY 2029	FY 2034
Thermal[*1]		14,796	14,536	14,387	14,623
	Coal	5,246	5,155	4,911	4,695
	LNG	7,998	8,016	8,123	8,575
	Oil and others[27]	1,552	1,364	1,352	1,353
Nuclear[*2]		3,308	3,308	3,308	3,308
Hydro and Renewables		14,076	14,593	16,700	18,590
	Conventional Hydro	2,203	2,214	2,228	2,247
	Pumped Storage	2,734	2,734	2,736	2,736
	Wind[*3]	594	724	1,390	1,908
	Solar[*3]	7,670	7,981	9,206	10,494
	Geothermal[*1]	50	51	56	56
	Biomass[*1]	655	712	738	745
	Waste[*1]	134	119	115	109
	Storage(battery)[*1]	36	57	206	225
	Hydrogen[*1]	0	0	6	15
	Ammonia[*1]	0	0	20	54
Miscellaneous		236	290	80	79
Total		32,416	32,727	34,475	36,600

Note: The total of breakdown is not necessarily equal to the aggregate total because of independent rounding to the nearest full unit.

*1 The Organization automatically aggregates the values of generation facilities owned by generation companies; however, not all development plans will necessarily be realized. It is assumed that inefficient facilities will be decommissioned because of the action of responding to political measures in the future. Newly installed facilities are included on certain conditions, such as commencement of their environmental assessments.

*2 Facilities with actual operational experience (33 units that include the units for which the date for resuming operations is uncertain but exclude units that have terminated their operations).

*3 GT&D companies aggregate the values by projecting the integration of generation facilities based on the situation of the application for grid connection or the actual growth rate of integration.

[27] The category of "oil and others" shows the total installed capacities from oil, LPG, other gas, bituminous mixture, and other thermal capacities.

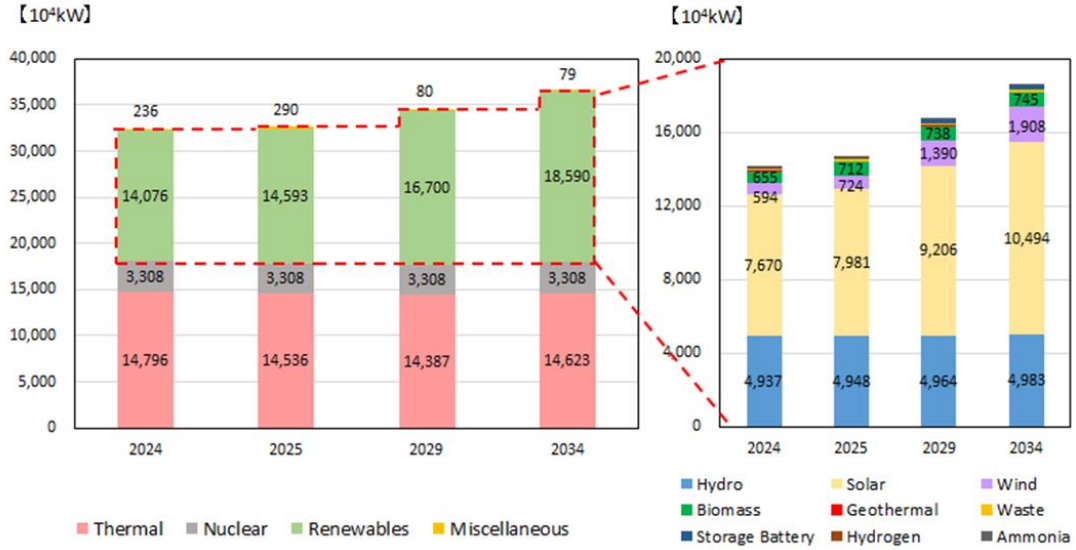


Figure 3-1 Transition of Installed Power Generation Capacities by Power Generation Sources (Nationwide)

* The sum of each power generation source's installed generation capacity is an automatic aggregation of the values submitted by EPCOs.

2. Composition of Installed Power Generation Capacity (kW) for Each Regional Service Area

Figure 3-2 presents the composition of each regional service area's installed power generation capacity by generation source at the end of FY 2024.

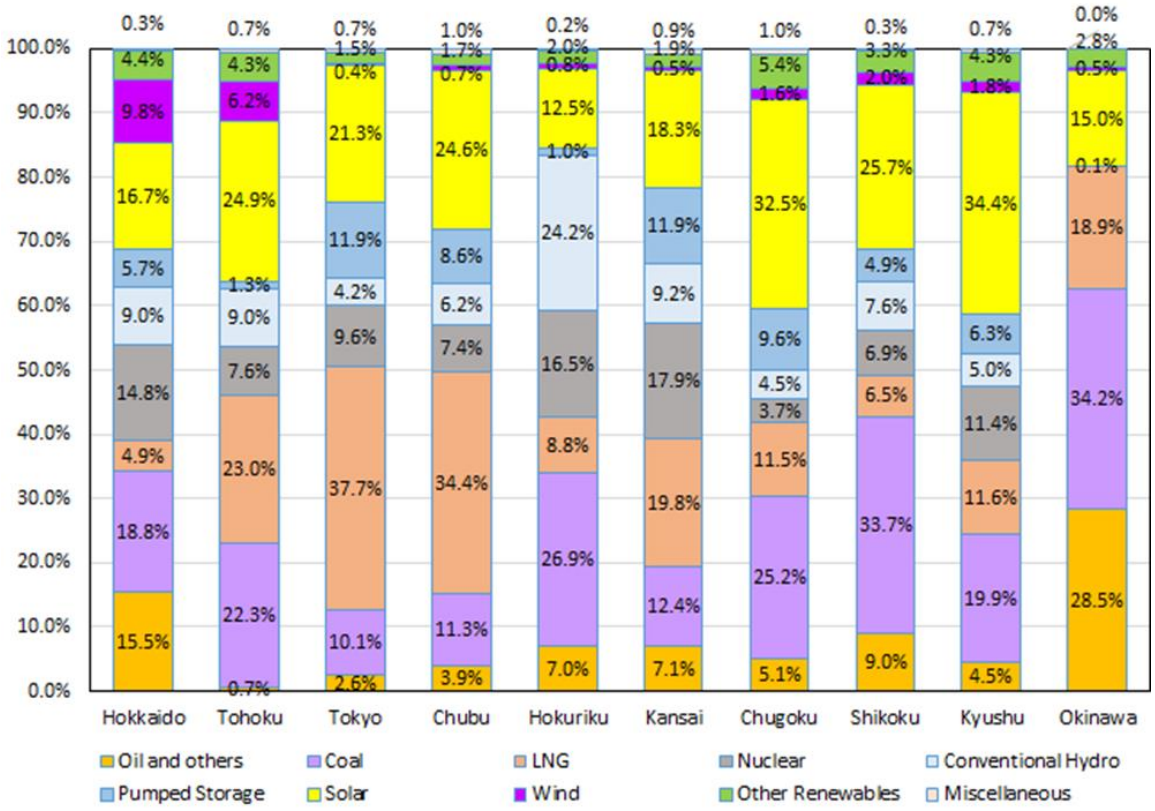


Figure 3-2 Composition of Installed Power Generation Capacity by Generation Source for Each Regional Service Area (at the end of FY 2024)

* These compositions are calculated based on the automatic aggregation of the values submitted by EPCOs.

3. Transition of Solar and Wind Generation Capacities for Each Regional Service Area

Figure 3-3 presents the projected integration of solar and wind generation capacities for each regional service area for the coming 10 years (at the end of the indicated fiscal year).[28]

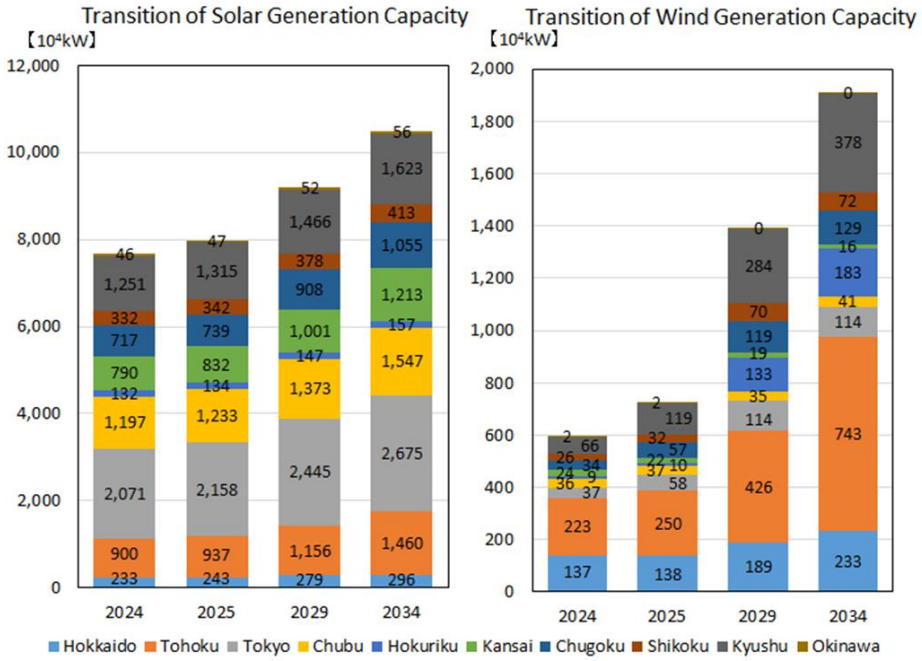


Figure 3-3 Transition of Solar and Wind Generation Capacities for Each Regional Service Area

[28] GT&D company projected the value of generation facility integration based on a situation of application for grid connection and the actual growth rate of integration.

4. Development Plans According to the Power Generation Source

Table 3-2 presents the development plans[29] of generation facilities submitted by generation companies, classified by new installation plan, uprating and derating plan, and decommissioning plan in the projected period up to the end of FY 2034.

Table 3-2 Generation Development Plans up to FY 2034 by Stages (Nationwide, 10^4 kW)

Power Generation Sources		New Installation		Uprating/Derating		Decommission	
		Capacity	Sites	Capacity	Sites	Capacity	Sites
Hydro		**20.5**	**32**	**11.8**	**68**	**△ 3.2**	**7**
	Conventional	20.5	32	10.3	67	△ 3.2	7
	Pumped Storage	—	—	1.5	1	—	—
Thermal		**958.7**	**33**	**0.5**	**2**	**△ 1,032.4**	**48**
	Coal	—	—	—	—	△ 446.3	18
	LNG	945.8	18	2.7	1	△ 385.7	10
	Oil	12.9	15	—	—	△ 200.4	20
	LPG	—	—	—	—	—	—
	Bituminous	—	—	—	—	—	—
	Other Gas	—	—	—	—	—	—
	Other Thermal	—	—	△ 2.2	1	—	—
Nuclear		**1,018.0**	**7**	**15.2**	**1**	—	—
Renewables		**1,153.0**	**342**	**△ 0.8**	**1**	**△ 72.7**	**159**
	Wind	764.4	98	—	—	△ 38.2	32
	Solar	149.0	160	—	—	△ 26.2	120
	Geothermal	5.0	4	—	—	—	—
	Biomass	84.0	24	△ 0.8	1	△ 2.9	1
	Waste	7.5	5	—	—	△ 5.4	6
	Storage(battery)	128.5	50	—	—	—	—
	Hydrogen	14.6	1	—	—	—	—
	Ammonia	—	—	—	—	—	—
Total		**3,150.2**	**414**	**26.7**	**72**	**△1,108.3**	**214**

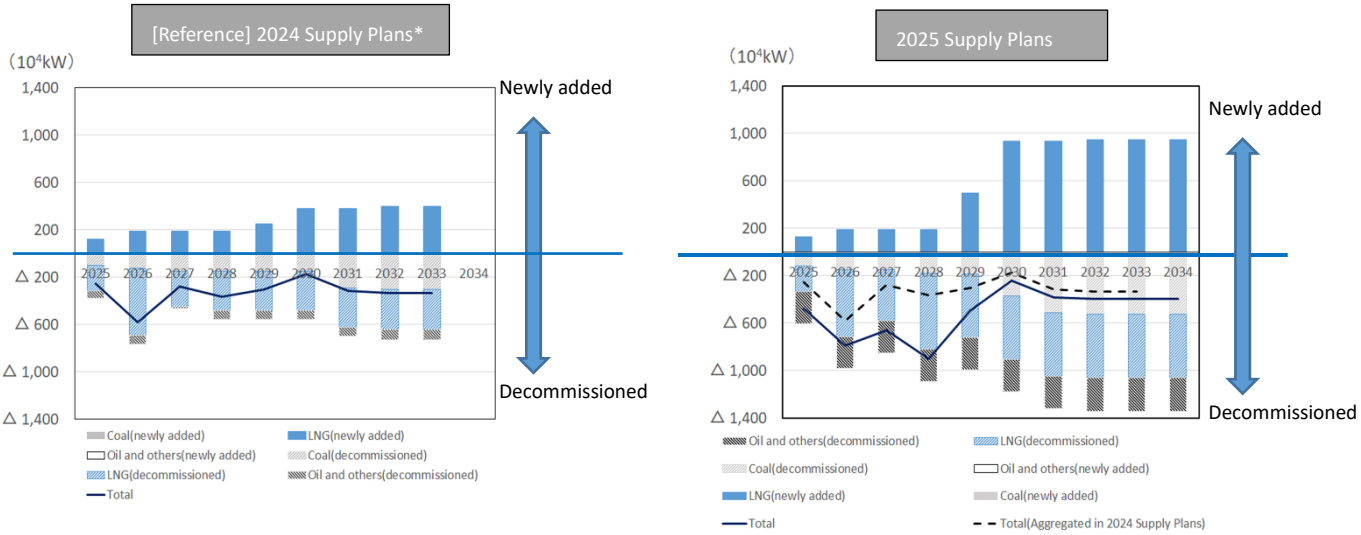
Note: The total of breakdown is not necessarily equal to the aggregate total because of independent rounding to two decimal places.

[29] These are aggregated, including facilities for which the date of new installation, uprating or derating, or decommissioning is "uncertain."

[Reference] Transition of New and Added Installation, Suspension, and Decommissioning of Thermal Power Plants:

Figure 3-4 presents the aggregated capacity of thermal power plants for the coming 10 years from the end of FY 2024, which offsets the new and added installation and the suspension and decommissioning and makes a comparison between the 2024 and 2025 Supply Plans.

Although new and added LNG thermal power plants have been installed through long-term decarbonization capacity auctions, the number of suspension and decommissioning transcends the number of new and added installations for such reasons as the decommissioning of existing plants accompanying the replacement and fading-out of coal-fired thermal plants concentrated around FY 2030.



* Preparation based on FY 2024 Supply Plan
*1 Aggregation including the generation facilities of 1,000kW and over (except those sitede on isolated islands) based on the development plan of generation and storage facilities
*2 Oil and others includes Oil, LPG, Other Gas, Bituminous, and Other Thermal.
*3 Decommissioned includes long-term scheduled maintenance, and excludes decreasing capacity of resuming operation after suspension or long-term scheduled maintenance.

Figure 3-4 New and Added Installation, Suspension, and Decommissioning of Thermal Power Plants (Capacity, Aggregation from FY 2025)

5. Transition of Balancing Capacity

From the FY 2024 Supply Plan, the Organization requests the submission of a balancing capacity plan (e.g., output variance) from generation companies that have such capacity. Figure 3-5 presents the transition of balancing capacity for the coming 10 years.

Regarding the balancing capacity, increases and decreases are observed every year according to the suspension and decommissioning, and new and added installation of generation facilities; however, almost the same level is expected to be maintained as the actual figure from FY 2024. The balancing capacity is mainly composed of thermal power plants (coal and LNG-fired) and pumped-storage hydropower plants, and the same composition will remain at the same level for the coming 10 years. In addition, storage (battery) facilities are likely to significantly increase from FY 2027.

Figure 3-5 presents the automatic aggregation of the output variance stated in the "plan regarding balancing capacity" submitted from generation companies, retail companies, and specified wholesale suppliers. The method for calculating the output variance is based on the description in the "Guidelines for the Calculation of Demand and Supply Capacity Related to the Supply–Demand Balance"[18] (Agency for Natural Resources and Energy: November 2024) and the "Procedures for Electricity Supply Plans of FY 2025"[17] (Agency for Natural Resources and Energy: November 2024).

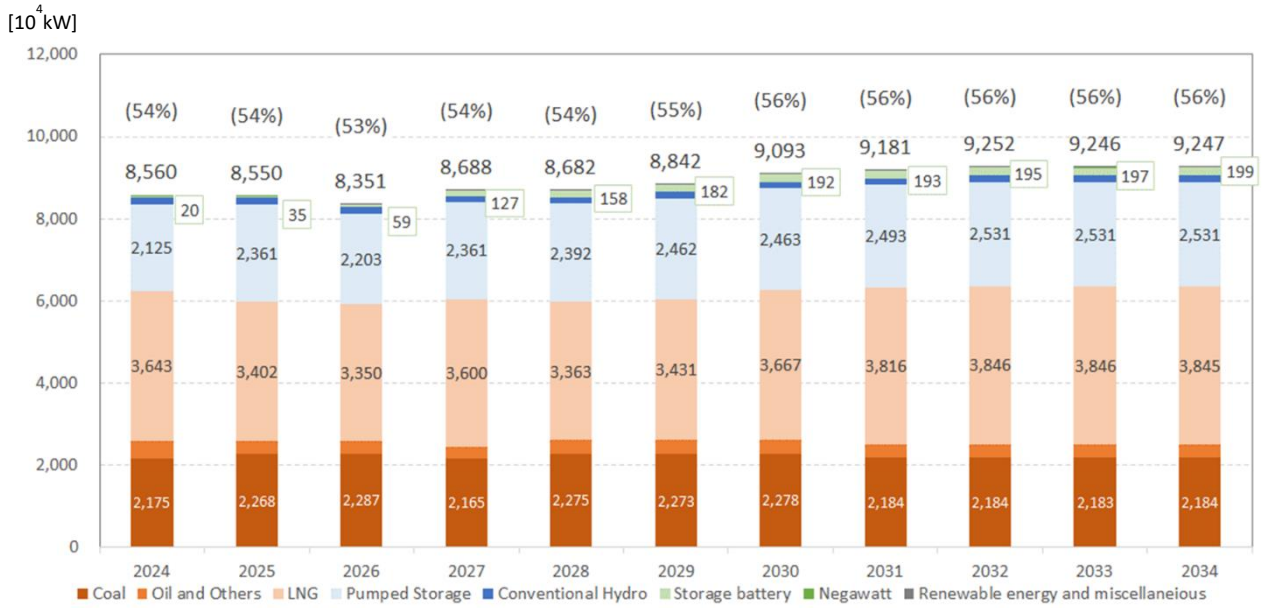


Figure 3-5 Transition of the Balancing Capacity

[Reference] Net Electrical Energy (kWh) Generation (at the Sending End):

The net electrical energy generation shown from Table 3-3 to Table 3-6 is an estimation of aggregation[30] of the values of electrical energy generation (at the sending end) by each power generation source of each FY calculated by each generation company with the given projections. It is necessary to note that this estimation is not necessarily the same as the actual net electrical energy generation.

Each generation company forecasts its future electrical energy sales based on the future sales contracts and actual sales in the past and calculates its electrical energy generation value by automatically summing up the values in merit order of operational cost regarding the generation facilities that are currently considered to be operatable in each fiscal year.

It is necessary to note that the composition of future electrical energy generation may change according to the various factors of future operating conditions of nuclear power plants and unconfirmed generation sources to be traded in future and is likely to approximate the target value of the country's energy mix in practice.

The detailed calculation method and results of net electrical energy generation (kWh) at the sending end by each power generation source are stated as follows.

(1) Renewables (Table 3-3)

For solar and wind power, each GT&D company calculates its energy generation based on the past data of actual energy generation and the projected values of generation facility integration based on the situation of the application for the grid connection and the actual growth rate of integration. For geothermal, biomass, waste, storage battery, hydrogen, and ammonia power generation sources, each generation company calculates its energy generation based on its development plan.

Table 3-3 Net Electrical Energy Generation by Renewable Power Plants
(Nationwide, at the Sending End; 10^8 kWh)

Generation Source		FY 2024	FY 2025	FY 2029	FY 2034
Renewables		1,463	1,593	1,909	2,199
	Wind	117	135	245	351
	Solar	934	972	1,110	1,257
	Geothermal	26	27	30	31
	Biomass	345	423	460	470
	Waste	38	32	31	30
	Storage(battery)	1	3	19	23
	Hydrogen	0	0	2	8
	Ammonia	1	0	12	29

[30] This estimation includes the electrical energy generated from generation facilities owned by generation companies as well as generation facilities, such as FIT generators, which retail companies, specified wholesale suppliers, and GT&D companies procure from sources other than the EPCOs.

(2) Hydro and Thermal (Table 3-4)

Each generation company calculates its energy generation based on its development plan. For thermal power generation, each generation company sums the energy in merit order of operational cost.

Table 3-4 Net Electrical Energy Generated by Hydro and Thermal Power Plants
(Nationwide, at the Sending End; 10^8 kWh)

Generation Source		FY 2024	FY 2025	FY 2029	FY 2034
Hydro		839	783	839	846
	Conventional	720	732	776	781
	Pumped Storage	119	51	63	64
Thermal		5,725	5,701	5,372	5,011
	Coal	2,626	2,788	2,619	2,209
	LNG	2,918	2,729	2,576	2,625
	Oil and others [27]	181	184	178	177

(3) Nuclear (Table 3-5)

Each generation company calculates its energy generation based on its development plan for units that resumed operations as of the end of February 2025.

Table 3-5 Net Electrical Energy Generated by Nuclear Power Plants
(Nationwide, at the Sending End; 10^8 kWh)

Generation Source	FY 2024	FY 2025	FY 2029	FY 2034
Nuclear	886	870	865	865

(4) Total (Table 3-6)

Table 3-6 presents the sum of electrical energy generation (i), (ii), and (iii) from the above with the electrical energy generation of facilities whose generation sources cannot be identified.

Table 3-6 Net Electrical Energy Generation by All Generation Sources
(Nationwide, at the Sending End; 10^8 kWh)

	FY 2024	FY 2025	FY 2029	FY 2034
Total	8,924	8,953	8,988	8,924

[Reference] Composition of the Net Electrical Energy Generation for Each Regional Service Area

Figure 3-6 presents the composition of each regional service area's net electrical energy generation by generation source in FY 2024.

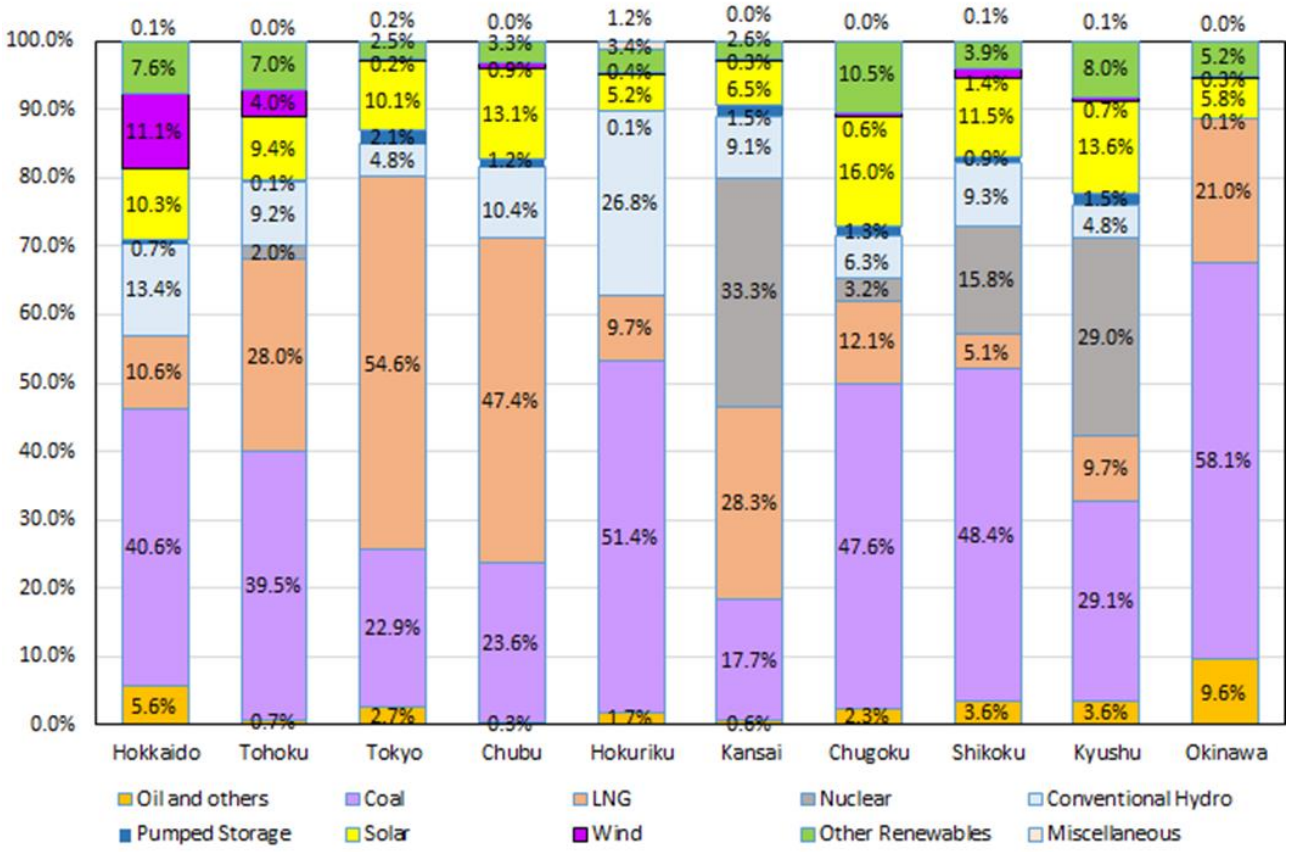


Figure 3-6 Composition of the Net Electrical Energy Generation for Each Regional Service Area in FY 2024

[Reference] Transition of Capacity Factors by Power Generation Source

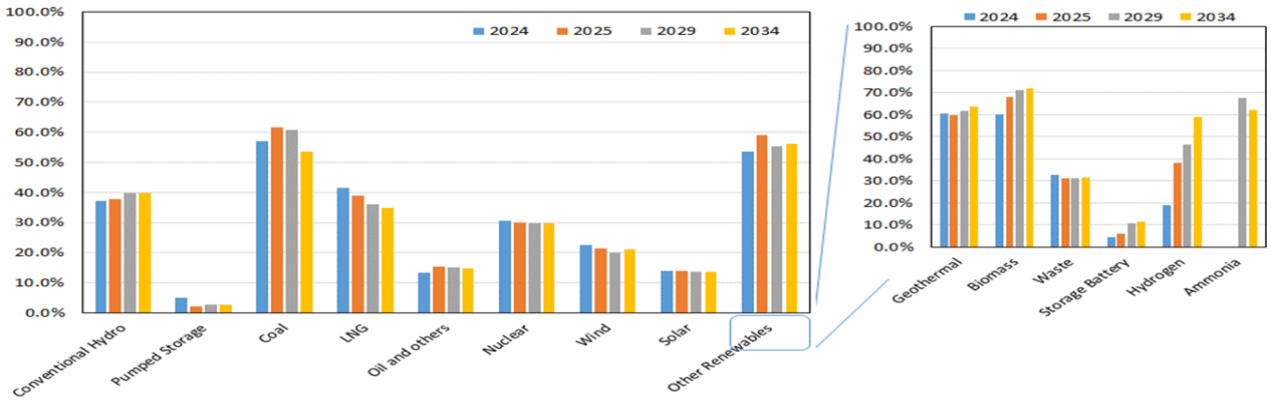
Table 3-7 and Figure 3-7 present the capacity factors by generation source. The capacity factors by generation source are calculated automatically from the value of installed generation capacity (kW) and the value of net electrical energy generation at the sending end (kWh).

As noted, these values are calculated from a given projection; it is necessary to note that the capacity factors in this chapter differ from those of actual operations.

Table 3-7 Transition of Capacity Factors by Power Generation Source (Nationwide)

Power Generation Sources	FY 2024	FY 2025	FY 2029	FY 2034
Hydro	19.4%	18.1%	19.3%	19.4%
Conventional	37.3%	37.8%	39.8%	39.7%
Pumped Storage	5.0%	2.1%	2.6%	2.7%
Thermal	44.2%	44.8%	42.6%	39.1%
Coal	57.1%	61.7%	60.9%	53.7%
LNG	41.7%	38.9%	36.2%	35.0%
Oil and others [27]	13.3%	15.4%	15.0%	14.9%
Nuclear	30.6%	30.0%	29.8%	29.8%
Renewables	18.3%	18.9%	18.6%	18.4%
Wind	22.5%	21.3%	20.1%	21.0%
Solar	13.9%	13.9%	13.8%	13.7%
Geothermal	60.6%	59.9%	61.6%	63.9%
Biomass	60.1%	67.8%	71.0%	72.1%
Waste	32.8%	31.3%	31.0%	31.6%
Storage(battery)	4.5%	6.0%	10.6%	11.5%
Hydrogen	19.0%	38.1%	46.3%	58.9%
Ammonia*	-	-	67.7%	62.1%

* For FY 2024 and 2025, capacity factor is unable to calculate because there is no installation reported.



* These values are calculated from a given projection; note that the capacity factors in this figure differ from those of actual operations.

Figure 3-7 Capacity Factors by Power Generation Source (Nationwide)

IV. Development Plans for Transmission and Distribution Facilities

The Organization aggregates development plan [31] for cross-regional transmission lines and substations (transformers and AC/DC converters) up to FY 2034, as submitted by GT&D and transmission companies. Table 4-1 presents the development plans for cross-regional transmission lines and substations, while Figure 4-1 presents the outlook for nationwide electric systems. Items (1), (2), and (3) below list the development plans according to cross-regional transmission lines, major substations, and summaries, respectively.

Table 4-1 Development Plans for Cross-Regional Transmission Lines and Substations[32]

Increased Length of Transmission Lines [33*34]	401km (443km)
Overhead Lines*	360 km (356 km)
Underground Lines	41 km (87 km)
Uprated Capacities of Transformers	32,018 MVA (30,648 MVA)
Uprated Capacities of AC/DC Converters[35]	1,200 MW (1,200 MW)
Decreased Length of Transmission Lines (Decommission)	△88 km (△94 km)
Derated Capacities of Transformers (Decommission)	△6,725 MVA (△6,300 MVA)

Enhancement plans for current cross-regional interconnection lines are summarized below.

Interconnection Facility Enhancement Plan Between Hokkaido and Honshu
(900 MW → 1,200 MW; in service: March 2028)

AC/DC Converter Stations	・Hokuto Converter Station: 300 MW→600 MW ・Imabetsu Converter Station: 300 MW→600 MW
275 kV DC Lines	・Hokuto Imabetsu DC Interconnection Line: 122 km ・Imabetsu Bulk Line extension: 50 km

[31] Development plans for transmission lines and substations must be submitted for voltages higher than 250 kV or within two classes of the highest voltage available in the regional service areas. (For the Okinawa EPCO, the requirement applies only for 132 kV or higher.) The totals are not necessarily equal because of independent rounding.
[32] The figures in parentheses are those from the previous year.
[33] Development plans corresponding to changes in the line category or circuit numbers are treated as "no change in length" and not included in the length of transmission lines.
[34] Increased length does not include the item with an asterisk (*) because of an undetermined in-service date.
[35] The DC transmission system includes the installed capacity for the converter station on one side.

Interconnection Facility Enhancement Plan Between Tohoku and Tokyo
(in service: November 2027)

500kV Transmission Lines	・Miyagi-Marumori Bulk Line: 79 km ・Marumori-Iwaki Bulk Line: 64 km ・Soma-Futaba Bulk Line/ Connecting Point Change: 16 km ・Shinchi Access Line/ Miyagi-Marumori Switching Station lead-in: 1km ・Joban Bulk Line/ Miyagi-Marumori Switching Station Dπ lead-in: 1 km ・Fukushima Bulk Line/Mountain Line connecting point change: 1 km
Switching Stations	Miyagi-Marumori Switching Station: 10 circuits

Interconnection Facility Enhancement Plan Between Tokyo and Chubu
(2,100 MW→3,000 MW; in service: FY 2027)

Frequency Converter Stations	・Shin Sakuma FC station: 300 MW ・Higashi Shimizu Substation: 300 MW→900 MW
275 kV Transmission Lines	・Higashi Shimizu Line: 19 km ・Sakuma Higashi Bulk Line/ FC Branch Line: 3 km ・Sakuma-Toei Line/ FC Branch Line: 1 km ・Shin Toyone-Toei Line: 1 km, △3km ・Sakuma-Toei Line: 11km, 2km ・Sakuma Higashi Bulk Line: 124 km
500 kV Transformers	・Shin Fuji Substation: 750 MVA×1 ・Shizuoka Substation: 1,000 MVA×1 ・Toei Substation: 800MVA×1 →1,500 MVA×2
275 kV Transformers	・Shin Fuji Substation: 200MVA×1→0 MVA

Interconnection Facility Enhancement Plan Between Chubu and Kansai
(in service: June 2030)

500 kV Transmission Lines	・Sekigahara-Kita Oomi Line: 2 km ・Sangi Bulk Line/ Sekigahara Switching Station π lead-in: 0.2 km ・Kita Oomi Line/ Kita Oomi Switching Station π lead-in: 1.0 km
Switching Stations	・Sekigahara Switching Station: 6 circuits ・Kita Oomi Switching Station: 6 circuits

Interconnection Facility Enhancement Plan Between Chubu and Hokuriku
(To be decommissioned: Apil 2026)

BTB Converter Station Decommission	Minami Fukumitsu Converter Station: 300 MW→0 MW

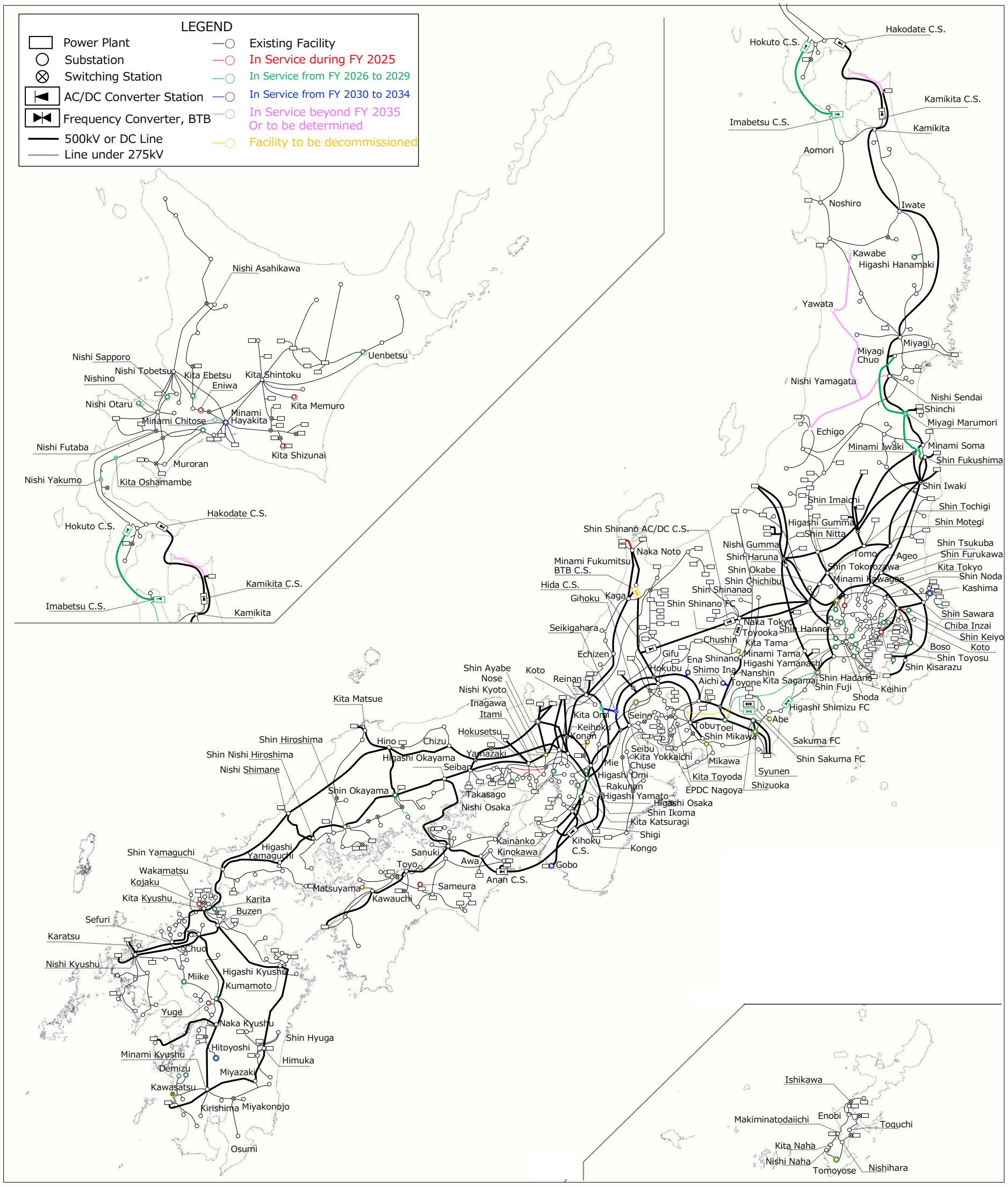


Figure 4-1 Power Grid Configuration in Japan

1. Development Plans for Major Transmission Lines

Table 4-2 Development Plans Under Construction

Company	Line[36]	Voltage	Length[37,38]	Circuit	Under construction	In service	Purpose[39]
Hokkaido Electric Power Network, Co., Inc.	Hokuto-Imabetsu DC Interconnection Line	DC-250 kV	98 km*3 24 km*2,3	1→2	Oct. 2023	Mar. 2028	Reliability upgrade*4
	Branch Line F *1	275 kV	8 km	2	May 2024	Feb. 2029	Demand coverage
	Minami Chitose UG Line No.1, No.2	187 kV	14 km*2	2	Jan. 2025	Oct. 2027	Demand coverage
Tohoku Electric Power Network Co., Inc.	Soma-Futaba Bulk Line/connecting point change	500 kV	16 km	2	Sep. 2022	Apr. 2026(No.1) Jun. 2026(No.2)	Generator connection, Reliability upgrade*4
	Dewa Bulk Line	500 kV	96 km	2	Jun. 2022	Beyond FY 2036	Generator connection
	Miyagi-Marumori Bulk Line	500 kV	79 km	2	Sep. 2022	Nov. 2027	Generator connection, Reliability upgrade*4
	Miyagi-Marumori Switching Station	500 kV	-	10	Oct. 2022	Nov. 2027 (May 2026)	Generator connection, Reliability Upgrade*4
	Imabetsu Bulk Line extension	275 kV	50 km*3	2	Apr. 2023	Nov. 2027	Generator connection, Reliability upgrade, Aging Management*4
	Akita-Kawabe Branch Line	275 kV	5 km	2	Aug. 2023	Beyond FY 2029	Generator connection
	Marumori-Iwaki Bulk Line	500 kV	64 km	2	Apr. 2024	Nov. 2027	Generator connection, Reliability upgrade*4
	Joban Bulk Line/ Miyagi-Marumori Switching Station Dπ lead-in	500 kV	1 km	2	Jun. 2024	May 2026 (No.1) Jul. 2026 (No.2)	Generator connection, Reliability upgrade*4
	Shinchi Access Line/ Miyagi-Marumori Switching Station lead-in*1	500 kV	1 km	2	Sep. 2024	May 2026 (No.1) Jul. 2026 (No.2)	Generator connection, Reliability upgrade*4
TEPCO Power Grid, Inc.	Shinjuku Line replacement	275 kV	22 km→ 21 km(No.1) 20 km→ 21 km(No.2) 20 km→ 21 km(No.3) *2*3	3	Sep. 2019	Aug. 2030(No.1) Nov. 2032(No.2) Dec. 2027(No.3)	Aging management
	Chiba Inzai Line	275 kV	11 km	2	Jun. 2020	May 2024	Demand coverage
	Johoku Line	275 kV	21 km*2	3	Sep. 2022	Feb. 2030	Economic upgrade
	Higashi Shimizu Line	275 kV	12 km 6 km (diversion)	2	Apr. 2023	Jan. 2027	Reliability upgrade*4

[36] *1 denotes the line renamed for anonymization of types of power generation sources and names of users.
[37] *2 denotes "underground" lines, otherwise "overhead" lines.
[38] *3 denotes that changes in line category and circuit number are not included in Table 4-1.
[39] Purpose" is classified as follows. *4 denotes that the purpose is related to enforcement of cross-regional interconnection lines. *5 indicates that the case is under review in the cross-regional development master plan.

Demand coverage	To be implemented in accordance with increase/decrease in electricity demand
Generator connection	To be implemented in accordance with generator connection or decommission
Aging management	To be implemented in accordance with aging of facilities (including the update of facilities at the proper timing with evaluation of obsolescence)
Reliability upgrade	To be implemented in accordance with improvement in the reliability or security of stable supply
Economic upgrade	Related to improvement in economies, such as reducing transmission loss, facility downsizing, or upgrading the stability of the system

Company	Line[36]	Voltage	Length [37,38]	Circuit	Under construction	In service	Purpose[39]
TEPCO Power Grid, Inc.	Shinjuku Line replacement	275 kV	22 km→ 21 km(No.1) 20 km→ 21 km(No.2) 20 km→ 21 km(No.3) *2*3	3	Sep. 2019	Aug. 2030(No.1) Nov. 2032(No.2) Dec. 2027(No.3)	Aging management
	Johoku Line	275 kV	21 km*2	3	Sep. 2022	Aug. 2033	Economic upgrade
	Higashi Shimizu Line	275 kV	12 km 6 km (diversion)	2	Apr. 2023	Jan. 2027	Reliability upgrade*4
	G5100026 Access Line	500 kV	0.5 km*2	2	Jun. 2024	Dec. 2028	Generator connection
	Fukushima Bulk Line / Mountain Line connecting point change	500 kV	1 km(No.1) 1 km(No.2)	2	Jun. 2024	May 2025 (No.1) Aug. 2025 (No.2)	Generator connection, Reliability upgrade*4
	Kashima Kaihin Line /connecting point change	275 kV	0.2km(No.4) *2	1	Dec. 2024 (No.4)	Apr. 2025 (No.4)	Economic upgrade
	Chiba Inzai Line	275 kV	11 km(No.3) 11 km(No.4) *2,*3	2→4	May 2024	Feb. 2027 (No.3) Nov. 2025 (No.4)	Demand coverage
	Kita Musashino Line	275 kV	14 km*2, 3	2→3	Sep. 2024	May 2027	Reliability upgrade
Chubu Electric Power Grid Co., Inc.	Shimo Ina Branch Line	500 kV	0.3 km	2	Jan. 2022	Oct. 2031	Demand coverage
	Ena Branch Line	500 kV	1 km	2	Sep. 2020	Oct. 2031	Demand coverage
	Higashi Nagoya -Tobu Line	275 kV	8 km*3	2	Apr. 2019	Oct. 2025	Aging management, Economic upgrade
	Kita Yokkaichi Branch Line	275 kV	0.2 km 5 km*2	2	Oct. 2024	Jan. 2029 (No.1) Aug. 2029 (No.2)	Demand coverage, Economic upgrade
Kansai Transmission & Distribution, Inc.	Shin Kakogawa Line extnsion	275 kV	25 km*3	2	Jul. 2021	Jun. 2025	Generator connection, Aging management
	Himeji Access East Line improvement*1	275 kV	18 km→ 18 km*3	2	Feb. 2022	Dec. 2030	Aging management
Chugoku Electrc Power Transmission & Distribution, Inc.	Kasaoka Bulk Line	220 kV	15 km*3	2	Nov. 2024	Nov. 2027	Demand coverage, Generator connection
Shikoku Electrc Power Transmission & Distribution, Inc.	Ikata North Bulk Line	187 kV	19 km*3	2	Jan. 2024	Sep. 2028	Aging management
Kyushu Electric Power Transmission & Distribution Co., Inc.	Hibiki-Wakamatsu Line	220 kV	4 km	2	May 2023	Apr. 2025	Generator connection
	Shin Kokura Line	220 kV	15 km→ 15 km*2*3	3→2	May 2021	Oct. 2029	Aging management
J-POWER Transmission Network Co.,Ltd.	Ooma Bulk Line	500 kV	61 km	2	Jun. 2006	TBD	Generator connection
	Sakuma Higashi Bulk Line	275 kV	123 km→ 124 km*3	2	Jul. 2022	Mar. 2027(No.1) Apr. 2027(No.2)	Reliability upgrade*4
	Sakuma Higashi Bulk Line/ FC Branch Line	275 kV	3 km	2	Oct. 2023	Sep. 2027	Reliability upgrade*4
	Sakuma-Toei Line/ FC Branch Line	275 kV	0.4 km	2	Oct. 2023	Sep. 2027	Reliability upgrade*4
	Shin Toyone-Toei Line	275 kV	0.1 km	1	Oct. 2023	Sep. 2027	Reliability upgrade*4
	Sakuma-Toei Line	275 kV	11 km→ 11 km*3	2	Oct. 2023	Sep. 2027	Reliability upgrade*4
	Sakuma-Toei Line	275 kV	2 km	2	Oct. 2023	Sep. 2027	Reliability upgrade*4

Table 4-3 Development Plans in Planning Stages

Company	Line[36]	Voltage	Length[37,38]	Circuit	Under construction	In service	Purpose[39]
Hokkaido Electric Power Network, Co., Inc.	Branch Line E *1	187 kV	2.4 km	2	May 2024	Aug. 2028	Demand coverage
	Branch Line G *1	187 kV	5.8 km	2	May 2024	Aug. 2028	Demand coverage
	H Interconnection Line*1	275 kV	0.1 km	1	Apr. 2026	Jul. 2027	Genrator connection
	Kita Oshamanbe Switching Station	187 kV	-	5	Oct. 2024	Aug. 2028	Generator connection
	Hakodate Bulk Line/ Kita Oshamanbe S.S. π lead-in*1	187 kV	0.7 km	2	Jun. 2026	Aug. 2028	Generator connection
	Nishi Yakumo Switching Station*1	187 kV	-	5	Oct. 2025	Aug. 2028	Generator connection
	Hakodate Bulk Line/ 187kV Nishi Yakumo Switching Station	187 kV	0.1 km	2	Oct. 2027	May 2029	Generator connection
	Minami Chitose UG Line No.3	187 kV	0.1 km	2	Oct. 2027	May 2029	Generator connection
Tohoku Electric Power Network Co., Inc.	Gonohe S.S. Acess Line	275 kV	0.6 km	1	Apr. 2026	Sep. 2027	Generator connection
	Yamagata Bulk Line uprating/ extension	275kV→500kV	53 km→103 km	2	Beyond FY 2026	Beyond FY 2033	Generator connection
	Northern Akita Prefecture HS Line	275 kV	0.2 km*2	2	Apr. 2027	Mar. 2028	Generator connection
	Akimori-Kawabe Branch Line	275 kV	0.3 km	2	Beyond FY 2027	Beyond FY 2029	Generator connection
	Asahi Bulk Line uprating	275kV→500kV	139km→138km*3	2	Beyond FY 2028	Beyond FY 2030	Generator connection
	Minami Yamagata Bulk Line uprating	275kV→500kV	23 km→23 km*3	2	Beyond FY 2029	Beyond FY 2030	Generator connection
TEPCO Power Grid, Inc.	Higashi Shinjuku Line replacement	275 kV	23km→5km(No.2) 23km→5km(No.3) *2*3	2	FY 2026	Nov. 2032 (No.2) Dec. 2027 (No.3)	Aging management
	MS18GHZ051500 Access Line (prov.)	275 kV	0.1 km(No.1) 0.1 km(No.2)	2	Sep. 2026	Aug. 2027 (No.1) Sep. 2027 (No.2)	Generator connection
	Shin Sodegaura Line	500 kV	0.1 km(No.1) 0.1 km(No.2)	2	Jul. 2027	Nov. 2028 (No.1) May 2029 (No.2)	Generator connection, Reliability upgrade
Chubu Electric Power Grid Co., Inc.	Sekigahara-Kita Oomi Line	500 kV	2 km	2	Mar. 2028	Jun. 2030	Reliability upgrade *4, *5
	Sekigahara Switching Station	500 kV	—	6	Nov. 2026	Apr. 2030 Jun. 2030	Reliability upgrade *4, *5
	Sangi Bulk Line/ Sekigahara Switching Station π lead-in	500 kV	0.2 km	2	Jul. 2027	Apr. 2030 (No.1) Jun. 2030 (No.2)	Reliability upgrade *4, *5
Hokuriku Electrc Power Transmission & Distribution, Inc.	Acess Line*1	500 kV→ 66 kV	16 km*3	2	Sep. 2025	Sep. 2025	Reliability upgrade
Kansai Transmission & Distribution, Inc.	Kita Oomi Line/ Kita Oomi Switching Station πlead-in	500 kV	0.5 km	2	TBD	TBD	Reliability upgrade *4, *5
	Kita Oomi Switching Station	500 kV	—	6	TBD	TBD	Reliability upgrade *4, *5
	Tsuruga Line/ North side improvement	275 kV	10 km→ 9 km*3	2	TBD	TBD	Aging management
Kyushu Electric Power Transmission & Distribution, Inc.	Sendai Nuclear North Line	220 kV	1 km→ 1 km	2	Dec. 2025	Nov. 2026	Economic upgrade
J-POWER Transmission Network Co.,Ltd.	Nabari Bulk Line Reihoku-Kunimi san Branch Line(prov.)	187 kV	0.1 km	1	FY 2026	FY 2027	Generator connection

Table 4-4 Decommissioning Plans

Company	Line[40]	Voltage	Length	Circuit	Decommission	Purpose[39]
Kansai Electric Power Transmission and Distribution, Inc.	M Line decommission*1	275 kV	△28 km	2	FY 2028	Generator connection
Kyushu Electric Power Transmission and Distribution, Inc.	Sensatsu Switching Station	220 kV	-	4	Nov. 2026	Economic upgrade
J-POWER Transmission Network Co.,Ltd.	Shin Toyone-Toei Line	275 kV	△3 km	1	Apr. 2027	Reliability upgrade*4
	Sakuma Nishi Bulk Line	275 kV	△58 km	2	Apr. 2027	Economic upgrade

2. Development Plans for Major Substations

Table 4-5 Development Plans Under Construction

Company	Substation[40]	Voltage	Capacity	Unit	Under construction	In service	Purpose[39]
Hokkaido Electric Power Network, Inc.	Hokuto C.S.	—	300 MW	—	Sep. 2023	Mar. 2028	Reliability upgrade*4
	Imabetsu C.S.	—	300 MW	—	Sep. 2023	Mar. 2028	Reliability upgrade*4
	Kita Memuro	187/66 kV	60 MVA→ 150 MVA	1→1	Aug. 2024	Jun. 2025	Aging management
	Eniwa	187/66 kV	200 MVA	1	Jul. 2024	Jun. 2025	Demand coverage
	Kita Shizunai	187/66/11 kV	45 MVA→ 60 MVA	1→1	May 2024	Nov. 2025	Aging management, Generator connection
Tohoku Electric Power Network, Inc.	Higashi Hanamaki	275/154 kV	300 MVA	1	Apr. 2023	Oct. 2028	Demand coverage
TEPCO Power Grid, Inc.	Naka Tokyo	275/154 kV	200 MVA×2→ 300 MVA×2	2→2	Mar. 2024	Dec. 2026 (1B) Feb. 2027 (2B)	Aging management
	Shin Fuji	500/154 kV	750 MVA	1	Oct. 2024	Feb. 2027	Reliability upgrade*4
	Toyooka	275/154 kV	450 MVA	1	Nov. 2024	Jun. 2026	Demand coverage
	Shin Toyosu	275/66 kV	300 MVA	1	Oct. 2024	Jan. 2026	Demand coverage
	Kita Sagami	275/66 kV	300 MVA×2	2	Nov. 2024	Jun. 2027	Demand coverage
Chubu Electric Power Grid Co., Inc.	Shimo Ina*6	500/154 kV	300 MVA×2	2	Oct. 2021	Oct. 2031	Demand coverage
	Ena*6	500/154 kV	200 MVA×2	2	Oct. 2022	Oct. 2031	Demand coverage
	Toei	500/275 kV	800 MVA×1→ 1,500 MVA×2	1→2	Jun. 2022	Oct. 2024 (N 2B) Mar. 2027 (1B)	Reliability upgrade*4
	Higashi Shimizu	—	300 MW→ 900 MW	—	May 2021	Mar. 2028	Reliability upgrade*4
	Shizuoka	500/275 kV	1,000 MVA	1	Mar. 2025	Mar. 2027	Reliability upgrade*4
Kyushu Electric Power Transmission & Distribution Co., Inc.	Yuge	220/110/ 66 kV	300/100/250 MVA	1	Feb. 2024	Jun. 2025	Demand coverage
	Kojaku	220/66 kV	180 MVA→ 200 MVA	1→1	Oct. 2023	Jun. 2025	Aging management
	Kumamoto	500/220 kV	1,000 MVA	1	Dec. 2024	Jun. 2027	Demand coverage
	Hitoyoshi	220/110/66kV	300/150/150MVA	1	Feb. 2025	Dec. 2026	Generator connection
	Miike	220/110/66 kV		1→1	Oct. 2024	Jun. 2026	Aging management
The Okinawa Electric Power Co., Inc.	Tomoyose	132/66 kV	125 MVA×1→ 200 MVA×1	1→1	Jul. 2018	Nov. 2026(2B)	Aging management

[40] *6 denotes a newly installed substation or a converter station, including an uprated electric facility with higher maximum voltage.

Company	Substation[40]	Voltage	Capacity	Unit	Under construction	In service	Purpose[39]
J-POWER Transmission Network Co.,Ltd.	Minami Kawagoe	275/154 kV	264 MVA×3, 300 MVA×1→ 300 MVA×2, 450 MVA×1	4→3	Sep. 2023	Mar. 2024(6B) Mar. 2025(2B) Mar. 2026(1B)	Aging management
	Shin Satkuma FC*6	—	300 MW	—	Mar. 2025	Mar. 2028	Reliability upgrade*4
	Sameura*6	187/13 kV	25 MVA	1	Feb. 2025	Nov. 2025	Demand coverage

Table 4-6 Development Plans in Planning Stages

Company	Substation[40]	Voltage	Capacity	Unit	Under construction	In service	Purpose[39]
Hokkaido Electric Power Network, Inc.	Minami Chitose*6	187/66 kV	450 MVA×2	2	May 2025	Oct. 2027	Demand coverage
	Nishi Sapporo	187/66 kV	200 MVA	1	May 2025	Jun. 2026	Demand coverage
	Nishi Otaru	187/66 kV	100 MVA→ 150 MVA	1→1	Jul. 2025	Jun. 2026	Aging management
	Nishi Otaru	187/66 kV	100 MVA→ 150 MVA	1→1	Oct. 2026	Jun. 2027	Aging management
	Uenbetsu	187/66 kV	75 MVA→ 100 MVA	1→1	Aug. 2025	May 2027	Aging management, Generator connection
	Kita Ebetsu	187/66 kV	100 MVA→ 150 MVA	1→1	Jul. 2026	Jul. 2027	Aging management
	Tomakomai	187/66 kV	100 MVA→ 150 MVA	1→1	Jul. 2026	Jun. 2028	Generator connection
	Minami Hayakita	275/187 kV	600 MVA	1	Apr. 2027	Apr. 2030	Demand coverage
Tohoku Electric Power Network Co., Inc.	Iwate	500/275 kV	1,000 MVA	1	May 2025	Beyond FY 2028	Generator connection
	Echigo*6	500/275 kV	1,500 MVA×3	3	May 2025	Beyond FY 2030	Generator connection
	Kawabe*6	500/275 kV 275/154 kV	1,500 MVA×3 400 MVA×2	3 2	Jun. 2025	Beyond FY 2036 (Beyond FY 2029)	Generator connection
	Nishi Yamagata*6	275/154 kV→ 500/154 kV	300 MVA×2→ 450 MVA×2	2→2	Oct. 2025	Beyond FY 2031 (Beyond FY 2030)	Generator connection
	Yawata*6	500/154 kV	750 MVA	1	Beyond FY 2027	Beyond FY 2031	Generator connection
TEPCO Power Grid, Inc.	Kashima	275/66 kV	200 MVA×2→ 300 MVA×2	2→2	Jun. 2028	May 2029 (7B) May 2030 (8B)	Aging management
	Koto	275/66 kV	150 MVA→ 300 MVA	1→1	Oct. 2025	Jan. 2027	Demand coverage
	Kita Tama	275/66 kV	200 MVA×2→ 300 MVA×2	2→2	Jul. 2025	Jun. 2027 (2B) Jun. 2029 (3B)	Aging management
	Chiba Inzai	275/66 kV	300 MVA×2	2	Apr. 2025	May 2026 (4B) Feb. 2027 (1B)	Demand coverage
	Shin Tokorozawa	500/275 kV	1,000,MVA×2→ 1,500 MVA×2	2→2	Apr. 2025	Apr. 2026 (4B) Jun. 2027 (5B)	Aging management
	Keihin	275/154 kV	450MVA	1	Nov. 2025	Mar. 2028	Generator connection
	Boso	275/154 kV	200MVA→ 450MVA	1→1	Mar. 2026	Dec. 2027	Demand coverage
	Shin Hanno	500/275 kV	1,500MVA	1	Mar. 2027	Mar. 2029	Demand coverage
	Eda	275/66 kV	300 MVA	1	Mar. 2027	Jun. 2028	Demand coverage
	Minami Tama	275/66 kV	200 MVA→ 300 MVA	1→1	Jan. 2026	Jun. 2027	Demand coverage
	Tomo	275/66 kV	150 MVA→ 300 MVA	1→1	Jan. 2026	Nov. 2027	Aging management

Company	Substation[40]	Voltage	Capacity	Unit	Under construction	In service	Purpose[39]
Chubu Electric Power Grid Co., Inc.	Sunen	275/77 kV	150 MVA→ 250 MVA	1→1	Sep. 2025	Dec. 2026	Aging management
	Seino	275/154 kV	300 MVA×1→ 450 MVA×1	1→1	Oct. 2025	Sep. 2026	Aging management
	Kita Yokkaichi*6	275/154 kV	450 MVA×3	3	Oct. 2024	Jan. 2029	Demand coverage, Economic upgrade
Kansai Transmission and Distribution, Inc.	Gobo	500/154 kV	750 MVA×2	2	Nov. 2028	Jan. 2032	Generator connection
	Shin Ikoma	275/77 kV	300 MVA	1	Apr. 2026	Jun. 2027	Demand coverage
	Shin Ayabe	500/275 kV→ 500/77 kV	1,000 MVA×2→ 500 MVA×2	2→2	Jul. 2027	Apr. 2030	Aging management
	Takasago	275/77 kV	450 MVA×1→ 200 MVA×1	1	Jan. 2027	Jan. 2028	Aging management
	Shigi	500/154 kV	750 MVA×4→ 750 MVA×5	4→5	Apr. 2027	Jun. 2029	Demand coverage
	Nishi Osaka	275/77 kV	300 MVA×2→ 300 MVA×3	2→3	Mar. 2026	Jun. 2028	Demand coverage
	Rakunan	275/77 kV	300 MVA×2→ 300 MVA×3	2→3	Oct. 2026	Dec. 2029	Demand coverage
	Higashi Osaka	500/154 kV	300 MVA×1, 450 MVA×1→ 450 MVA×2	2	Mar. 2027	Jul. 2028	Reliability upgrade
Chugoku Electrc Power Transmission & Distribution, Inc.	Shin Okayama	220/66 kV	200 MVA×2	2	Nov. 2025	Sep. 2028	Generator connection
Kyushu Electric Power Transmission & Distribution Co., Inc.	Demizu	220/66 kV	250 MVA	1	Jun. 2026	Nov. 2027	Generator connection
	Hitoyoshi	220/110/66kV	180/180/60MVA → 300/150/150MVA	1→1	Beyond FY 2028	Beyond FY 2030	Aging management
	Karita	220/66 kV	180 MVA→ 250 MVA	1→1	Nov. 2026	Sep. 2027	Aging management

Table 4-7 Decommissioning Plans

Company	Substation	Voltage	Capacity	Unit	Decommission	Purpose[39]
TEPCO Power Grid, Inc.	Shin Fuji	275/154 kV	200 MVA	1	Oct. 2026	Economic upgrade*4
	Shin Tokorozawa	500/275 kV	1,000 MVA	1	Mar. 2028	Aging management
Chubu Electric Power Grid Co., Inc.	Abe	275/77 kV	250 MVA	1	Apr. 2025	Economic upgrade
	Mikawa	275/154 kV	450 MVA	1	Apr. 2025	Aging management
	Minami Fukumitsu	—	300 MW	—	Apr. 2026	Aging management*4
	Seino	275/154 kV	300 MVA	1	Sep. 2026	Aging management
	Chushin	275/154 kV	300 MVA	1	Nov. 2026	Aging management
	Syunen	275/77 kV	150 MVA	1	Feb. 2027	Aging management
	Shin Mikawa	500/275 kV	1,500 MVA	1	Jan. 2033	Generator connection (canceled due to review of measures)
Kansai Transmission and Distribution, Inc.	Shin Ayabe	275/77 kV	200 MVA×1, 300 MVA×3	4	Sep. 2029	Aging management
	Higashi Osaka	275/154 kV	300 MVA	1	Dec. 2025	Aging management
	Inagawa	500/154 kV	750 MVA	1	Mar. 2026	Aging management
	Konan	275/77 kV	100 MVA	1	Oct. 2025	Aging management
The Okinawa Electric Power Co., Inc.	Tomoyose	132/66 kV	125 MVA	1	Nov. 2026	Economic upgrade

3. Summary of Development Plans for Transmission Lines and Substations

Tables 4-8 to 4-11 summarize the development or extension plans of major transmission lines and substations (transformers and converter stations) up to FY 2034. These are submitted by GT&D and transmission companies.

Table 4-8 Development Plans for Major Transmission Lines

Category	Voltage	Lines	Length [41]	Extended Length [42]	Total Length	Total Extended Length
Newly Installed or Extended	500 kV	Overhead	527 km*	1,053 km*	527 km*	1,054 km*
		Underground	1 km	1 km		
	275 kV	Overhead	△182 km	△365 km	△156 km	△292 km
		Underground	26 km	74 km		
	220 kV	Overhead	4 km	8 km	4 km	8 km
		Underground	0 km	0 km		
	187 kV	Overhead	11 km	23 km	26 km	52 km
		Underground	14 km	29 km		
	Total	Overhead	360 km*	719 km*	401 km*	822 km*
		Underground	41 km	103 km		
To be Decommissioned	275 kV	Overhead	△88 km	△174 km	△88 km	△174 km
		Underground	0 km	0 km		
	220 kV	Overhead	0 km	0 km	0 km	0 km
		Underground	0 km	0 km		
	Total	Overhead	△88 km	△174 km	△88 km	△174 km
		Underground	0 km	0 km		

[41] Length denotes the increased length for new and added installation and the decreased length for decommissioning. Development plans corresponding to changes in the line category or number of circuits are treated as "no change in length" and not included in the length of transmission lines shown in Table 4-8. Because of independent rounding, the total and overall lengths are not necessarily equal.

[42] Extended length denotes the aggregation of the length multiplied by the number of circuits in the individual development plan for all development plans. Similarly with the category of "length," development plans corresponding to changes in the line category or number of circuits are treated as "no change in extended length" and not included in the extended length of transmission lines shown in Table 4-8.

Table 4-9 Revised Plans for Line Category and the Numbers of Circuits[43]

Voltage	Length Extended	Total Extended Length
500 kV	0 km	0 km
275 kV	287 km*	631 km*
220 kV	30 km	60 km
187 kV	33 km	81 km
DC 250 kV	122 km	245 km
Total	473 km	1,017 km

Table 4-10 Development Plans for Major Substations

Category [44]	Voltage [45]	Increased Numbers	Increased Capacity
Newly Installed or Extended	500 kV	22 [11]	21,350 MVA [10,750 MVA]
	275 kV	15 [5]	7,408 MVA [2,150 MVA]
	220 kV	5 [0]	1,530 MVA [0 MVA]
	187 kV	5 [3]	1,655 MVA [925 MVA]
	132 kV	0 [0]	75 MVA [0 MVA]
	Total	47 [19]	32,018 MVA [13,825 MVA]
To be Decommissioned	500 kV	△3	△3,250 MVA
	275 kV	△12	△3,150 MVA
	187 kV	△1	△200 MVA
	132 kV	△1	△125 MVA
	Total	△17	△6,725 MVA

The figures in square brackets denote increases in the number of transformers resulting from new substation installations.

Table 4-11 Development Plans for AC/DC Converter Stations

Category	Company and Number of Sites		Capacity[46]
Newly Installed or Extended	Hokkaido Electric Power Network, Inc.	2	300 MW×2
	Chubu Electric Power Grid Co.,Inc.	1	600 MW
	J-POWER Transmission Network Co., Ltd.	1	300 MW
To be Decommissioned	Chubu Electric Power Grid Co.,Inc.	1	△300 MW

[43] Table 4-9 aggregates the length and the extended lengths after changes in the development plans corresponding to changes in the line category and number of circuits.
[44] Decommissioning plans with transformer installations are included in "Newly Installed" or "Extended," while such plans are included as negative values in the increased numbers and the increased capacity.
[45] Voltage class by upstream voltage of transformer.
[46] For DC transmission, the capacities of both converter stations are included.

4. Challenges on Aging of Existing Facilities

When significant numbers of transmission and distribution facilities installed after the remarkable economic expansion (from the 1960s to the 1970s) require full-scale aging management in future, significant volumes of construction that cannot be handled at the recent replacement pace will be expected. Therefore, proper decisions for the replacement schedule which takes construction capacity into account are necessary for securing a stable electricity supply into the future based on the guidelines for replacement of aging facilities. Figures 4-2 through 4-4 present for reference the actual installation years of existing facilities aggregated in the long-term cross-regional development policy.

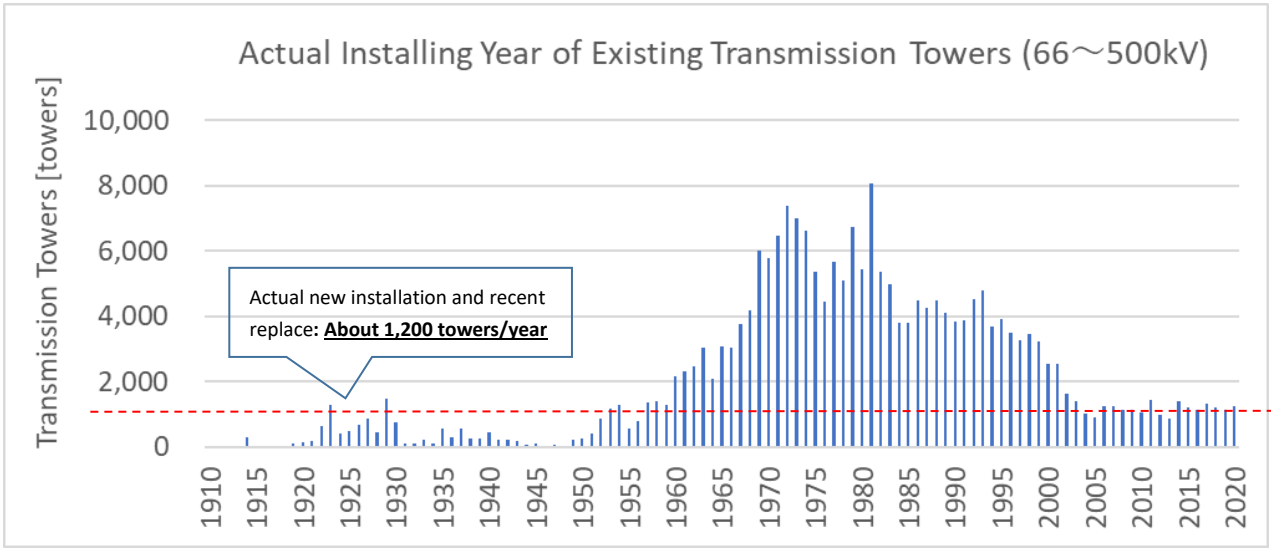


Figure 4-2 Actual Installation Years of Existing Transmission Towers (66–500 kV)

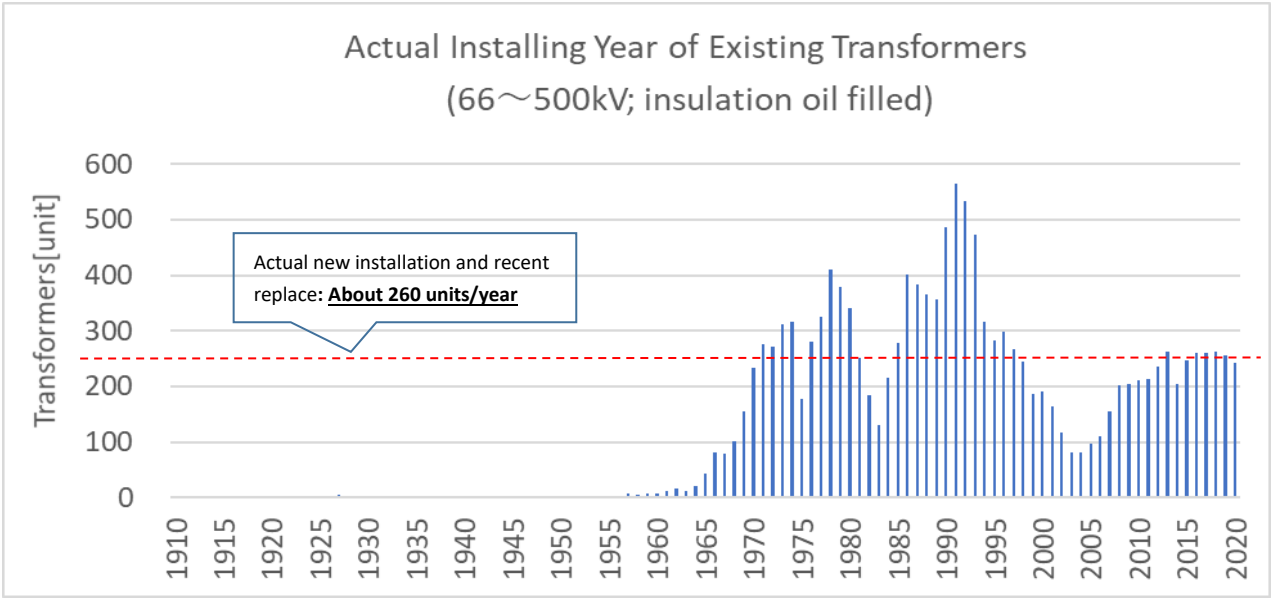


Figure 4-3 Actual Installation Years of Existing Transformers (66–500 kV; Insulating Oil-Filled)

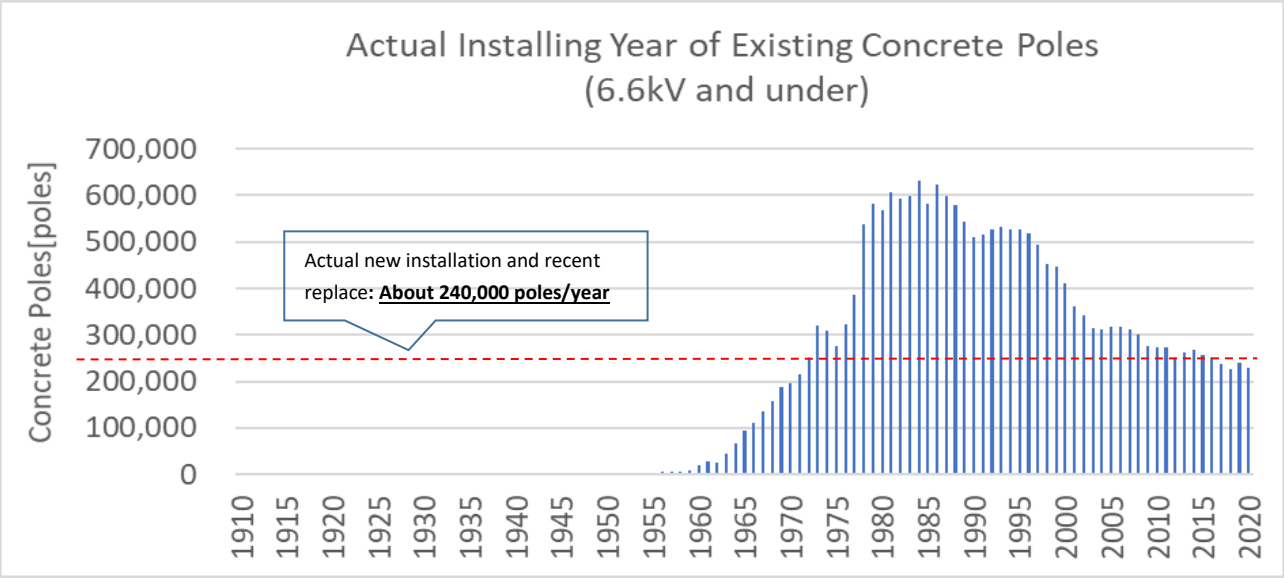


Figure 4-4 Actual Installation Years of Existing Distribution Concrete Poles (Under 6.6 kV)

V. Cross-Regional Operation

With respect to the supply capacity scheduled to be traded by the EPCOs in August 2025, Figure 5-1 presents the electric power to be traded between regional service areas, and Figure 5-2 presents the ratio of the electric power to be traded between regional service areas to the peak demand. Figures 5-3 and 5-4 present the electrical energy to be traded between regional service areas and the ratio of such electrical energy to the forecasted electrical energy requirement in the trade plan for FY 2025, respectively. These figures are shown for calculating values offset procurement (received) and sales (sent) for each counterparty area of the trade.

As a whole, the higher ratios for procurement from external regional service areas are observed in the Tokyo, Hokuriku, and Chugoku areas. By contrast, the higher ratios for sales to external regional service areas are observed in the Tohoku, Shikoku, and Kyushu areas.

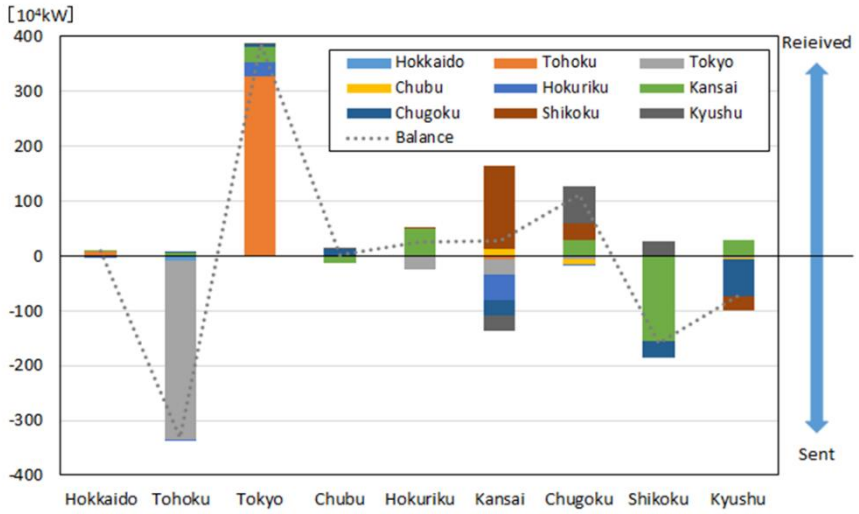


Figure 5-1 Scheduled Procurement of Supply Capacity from External Regional Service Areas

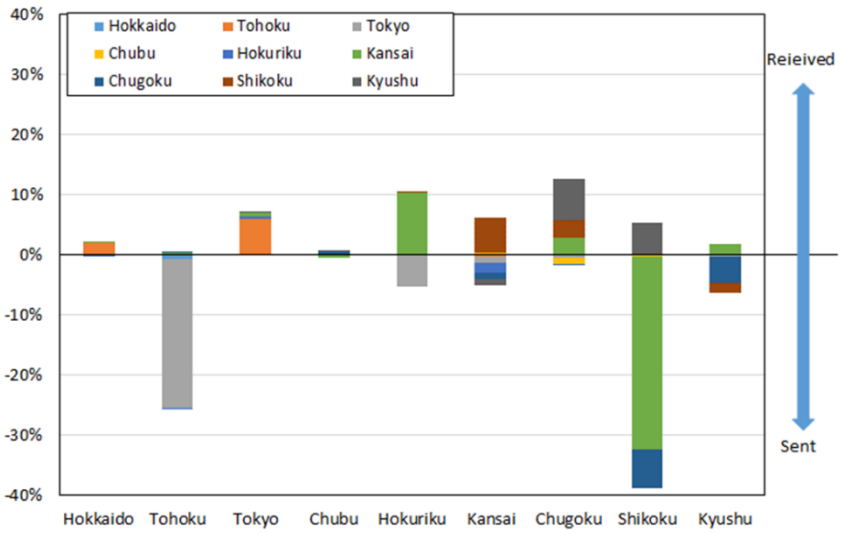


Figure 5-2 Ratio of Scheduled Procurement of Supply Capacity from External Regional Service Areas

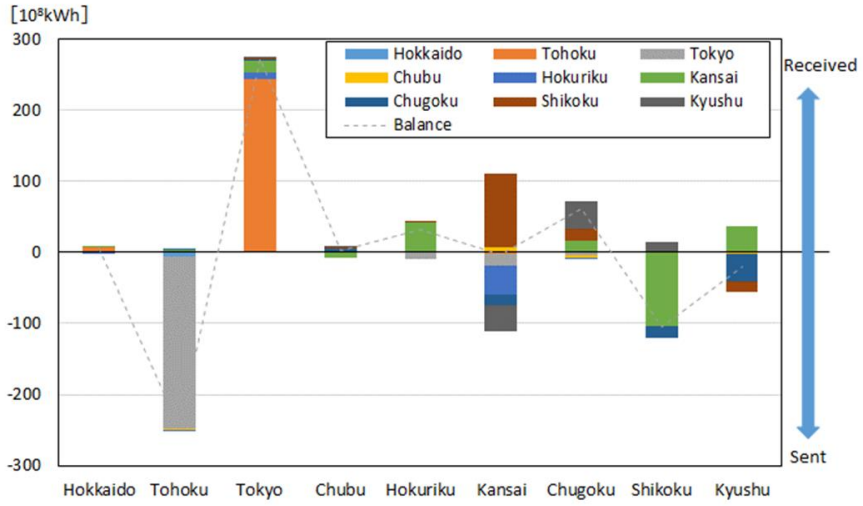


Figure 5-3 Scheduled Procurement of Energy Supply from External Regional Service Areas

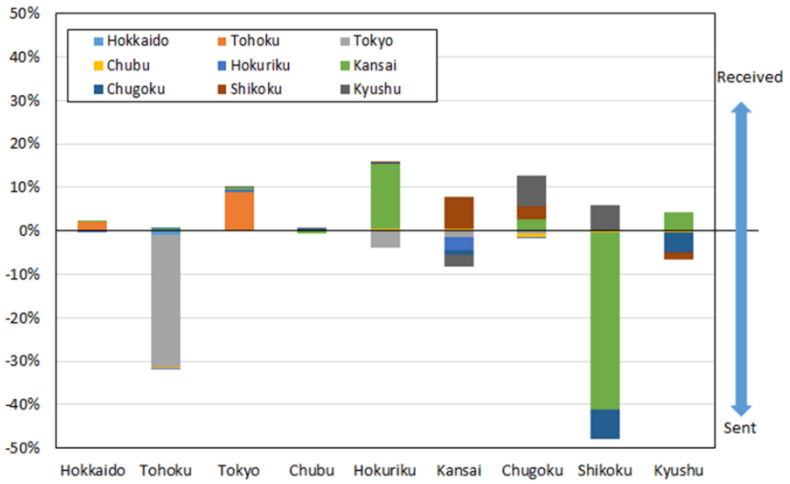


Figure 5-4 Ratio of Scheduled Procurement of Energy Supply from External Regional Service Areas

VI. Analysis of the Characteristics of EPCOs

1. Distribution of Retail Companies by Business Scale (Scale of Retail Demand)

In total, 694 retail companies were classified by scale of peak demand forecasted by the corresponding companies. Figures 6-1 and 6-2 present the distributions of the number of retail companies by business scale and the accumulated peak demand forecasted by said companies of each scale, respectively. Retail companies whose business scales are under 1 GW account for the majority throughout the projected period; however, more than half of the accumulated peak demand was accounted for by retail companies whose business scales were 10 GW and over.

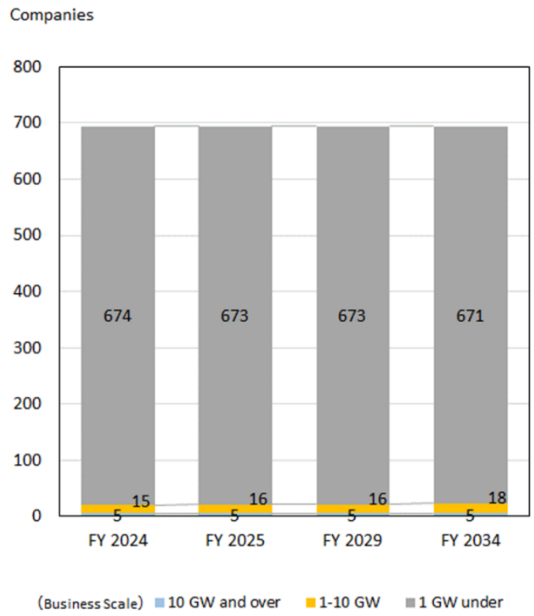


Figure 6-1 Distribution of the Number of Retail Companies by Business Scale (Peak Demand)

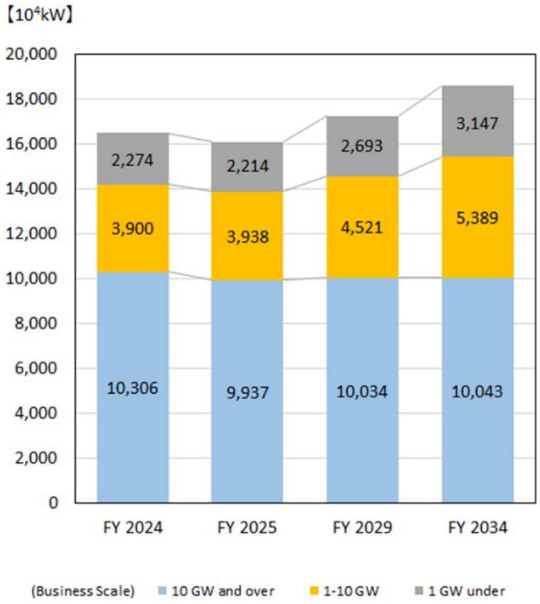


Figure 6-2 Distribution of Accumulated Peak Demand by Business Scale (Peak Demand)

Retail companies were classified by scale of electrical energy requirement forecasted by the corresponding companies. Figures 6-3 and 6-4 present the distributions of the number of retail companies by business scale and the accumulated electrical energy requirements forecasted by the said companies of each scale, respectively. Retail companies whose business scales are under 1 TWh account for the majority throughout the projected period; however, more than half of the accumulated electrical energy requirements were accounted for by retail companies whose business scales were 10 TWh and over.

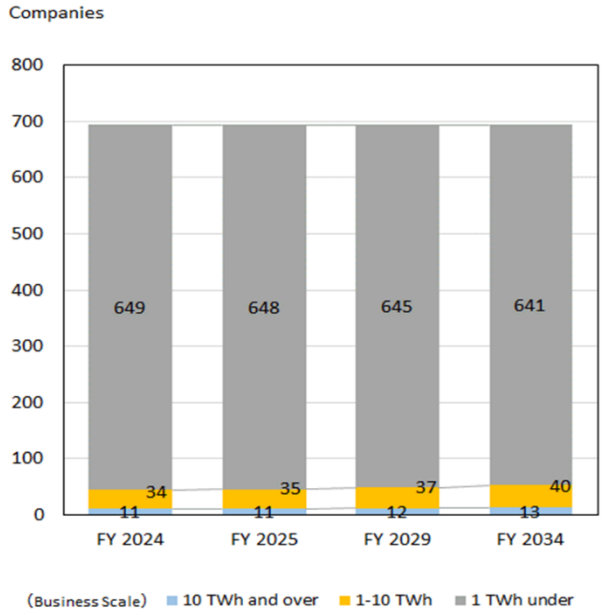


Figure 6-3 The Number of Retail Companies by Business Scale (Energy Requirement)

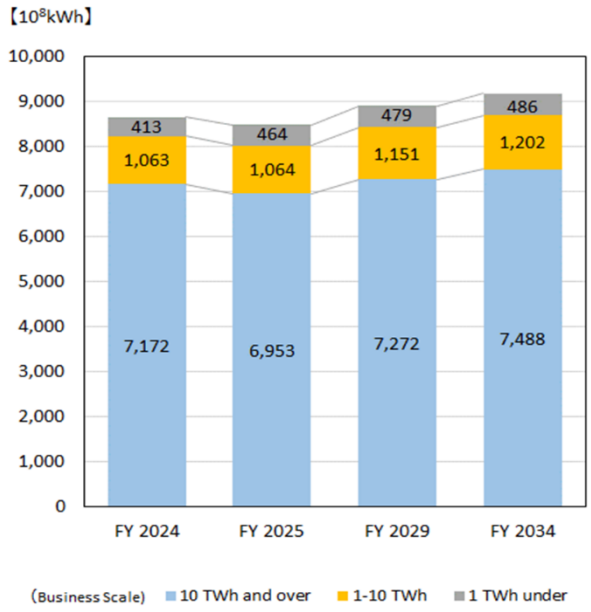


Figure 6-4 Accumulated Electrical Energy Requirement by Business Scale (Energy Requirement)

2. Retail Companies' Business Areas

Figure 6-5 presents the compositions of retail companies by the number of areas in which they plan to conduct business as of August 2025. Retail companies who plan their business in a single area consist of the highest percentage. Figure 6-6 presents the number of retail companies who plan to conduct business in each regional service area as of August 2025. The number of retail companies has increased compared with FY 2024 in every area except the Okinawa area.

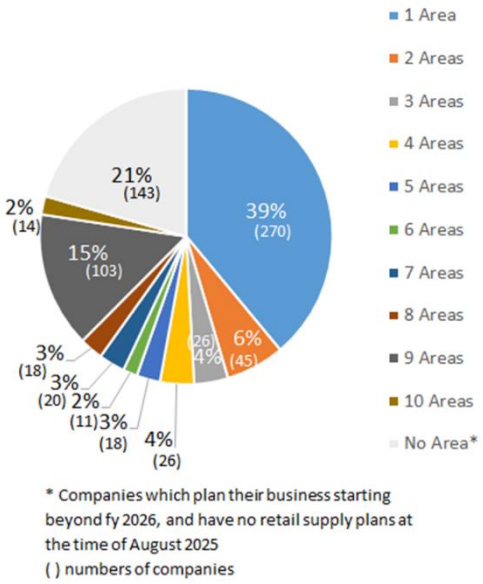


Figure 6-5 Compositions of Retail Companies by the Number of Planned Business Areas

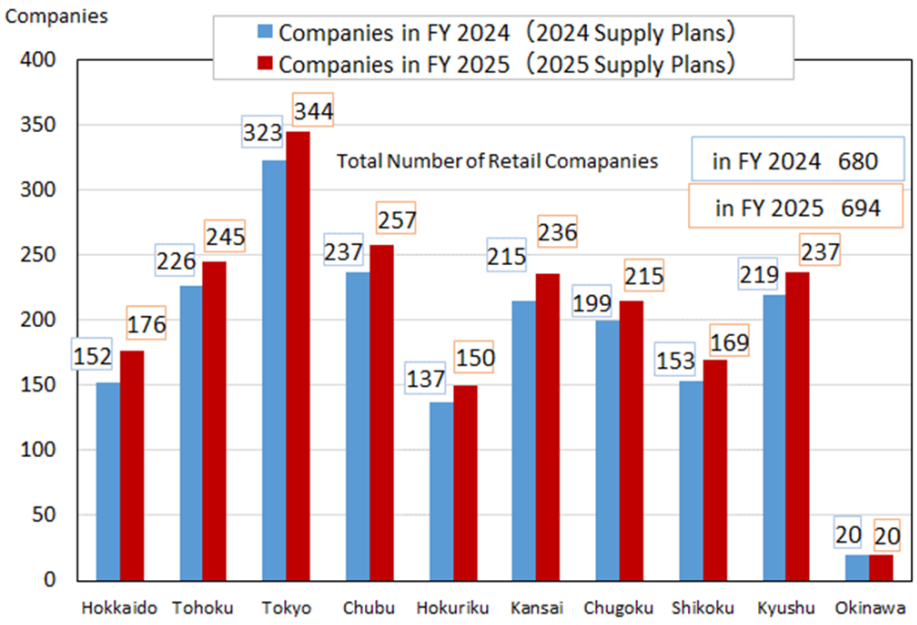


Figure 6-6 Number of Retail Companies Who Conduct Business in Each Regional Service Area

3. Transition of Supply Capacity Procured by Retail Companies

Figure 6-7 presents the transition of the supply capacity procured (by bilateral contracts) by retail companies. For FY 2025, the bilateral contracts are made at a certain level; however, after FY 2026, they are projected to decrease. The generation departments of former general electric utility companies are wholesaling based on the standard menu for one to five years. The procured supply capacity will decrease for the former general electric utility companies and others,[47] due to uncertainty of future contracts or other reasons. By contrast, the procured supply capacity of other retail companies is projected to remain the same during the 10-year period.

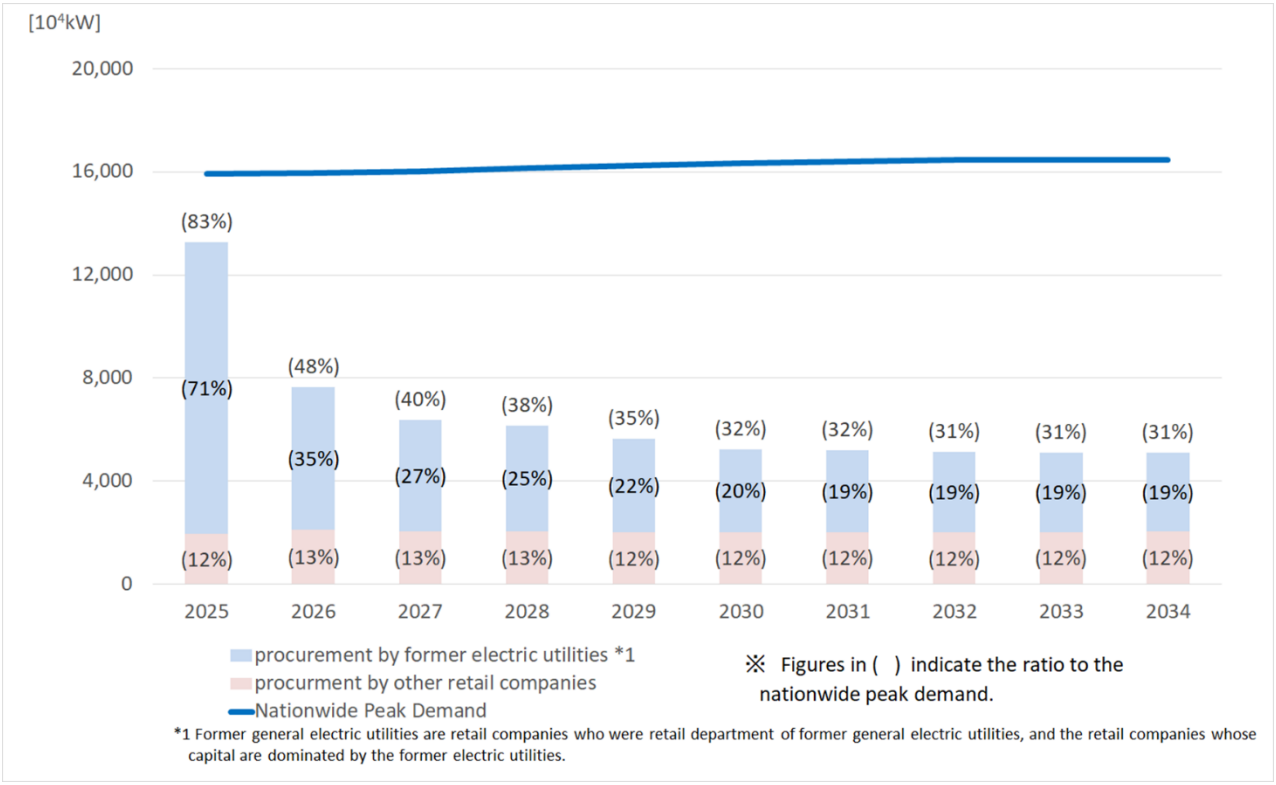


Figure 6-7 Supply Capacity Procured by Retail Companies (in August at the Sending End)

[47] Former general electric utility companies and others are composed of the retail department of the former general electric utilities and the retail company whose capital are dominated by the former general electric utilities.

4. Distribution of Generation Companies by Business Scale (Installed Capacity)

In total, 1,135 generation companies were classified by scale of power supply of installed generation facilities owned by the corresponding companies. Figure 6-8 presents the number of companies classified by business scale, while Figure 6-9 presents the accumulated power supply forecasted by the corresponding companies of each scale.

Generation companies with a business scale under 1 GW account for the majority throughout the projected period; however, more than half of the accumulated power supply was accounted for by generation companies with a business scale of 10 GW and over.

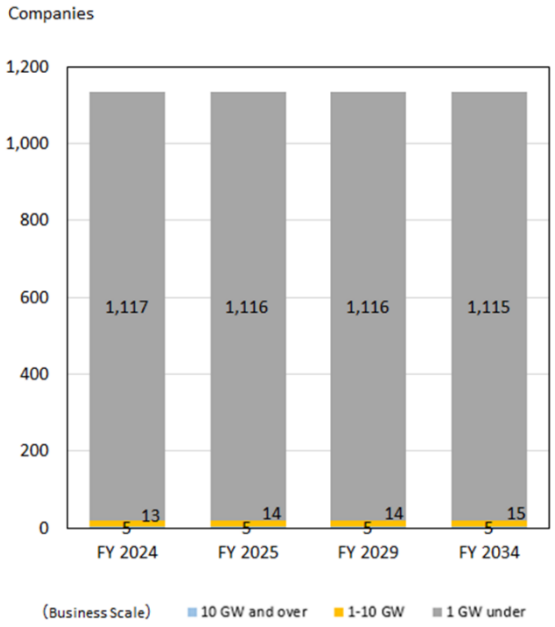


Figure 6-8 The Number of Generation Companies by Business Scale (Power Supply)

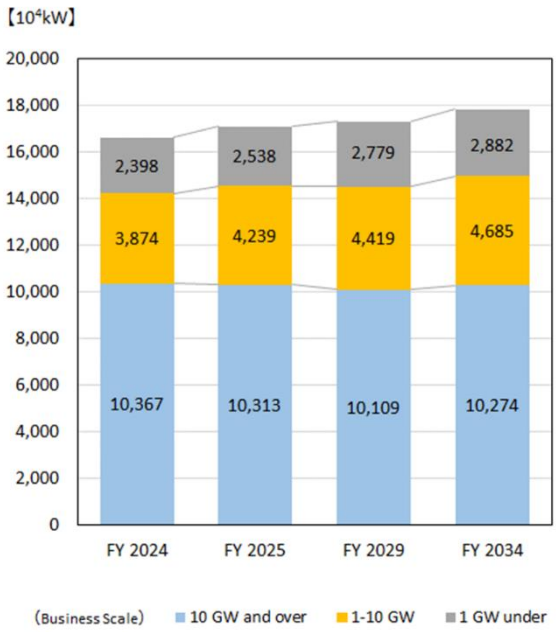


Figure 6-9 Accumulated Power Supply by Business Scale (Power Supply)

The generation companies were classified by scale of energy supply of generation facilities owned by the corresponding companies. Figure 6-10 presents the number of companies classified by business scale, while Figure 6-11 presents the accumulated energy supply projected by the corresponding companies of each scale. Generation companies with a business scale under 1 TWh account for the majority throughout the projected period; however, more than half of the accumulated energy supply was accounted for by generation companies with a business scale of 10 TWh and over.

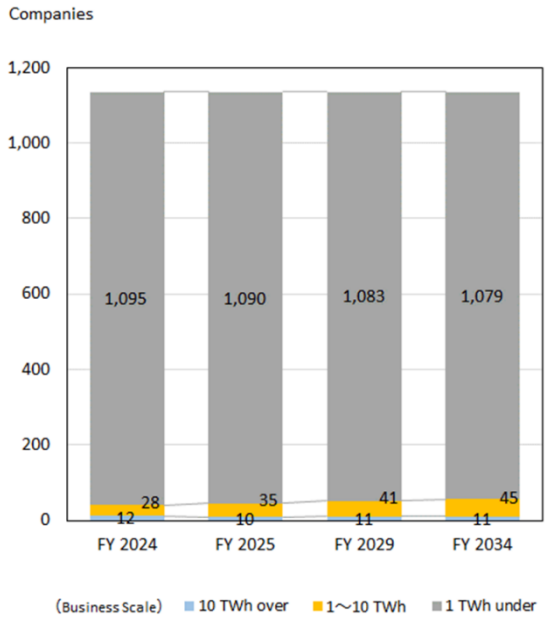


Figure 6-10 Generation Companies' Distribution of Energy Supply by Business Scale

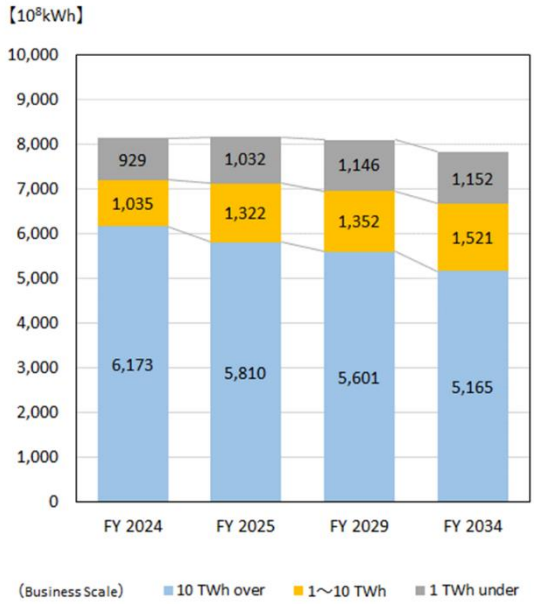
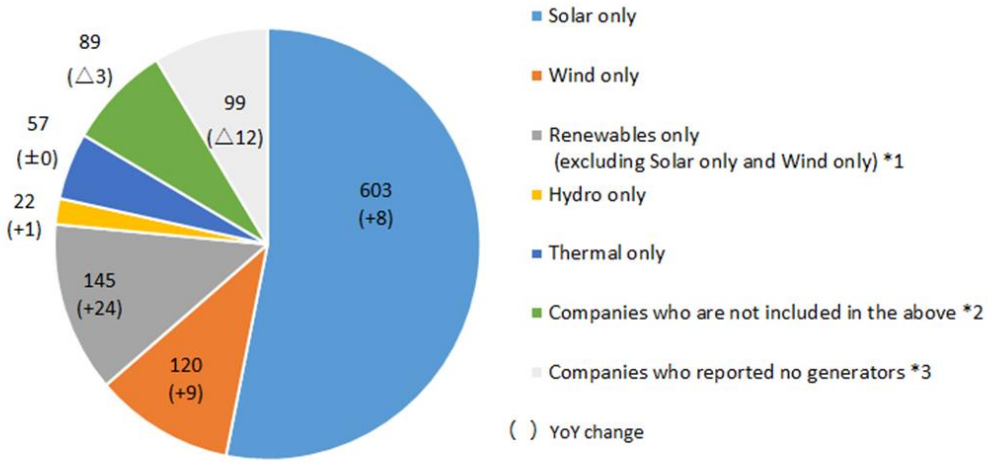


Figure 6-11 Generation Companies' Distribution by Accumulated Energy Supply

Figure 6-12 presents the number of generation companies classified by power generation source of generation facilities owned by the corresponding companies at the end of FY 2025. The number of generation companies that use renewable energy is notably increasing with new generation companies expanding the introduction of renewable energy.



*1 Subject to the companies which own only geothermal, biomass, waste, storage battery, hydrogen and ammonia, or companies which own several types of Renewables generating facilities including solar and wind
*2 Include the companies which own only multifuel facilities of fossil fuel and biomass etc., and report their facilities by several fuel types
*3 Companies which plan their business starting beyond FY 2026, and have no generators in FY 2025

Figure 6-12 Number of Generation Companies by Power Generation Sources

5. Generation Companies' Business Areas

Figure 6-13 presents the composition of generation companies by the number of areas where they have generation facilities as of August 2025. Generation companies who plan their business in a single area consist of the highest percentage.

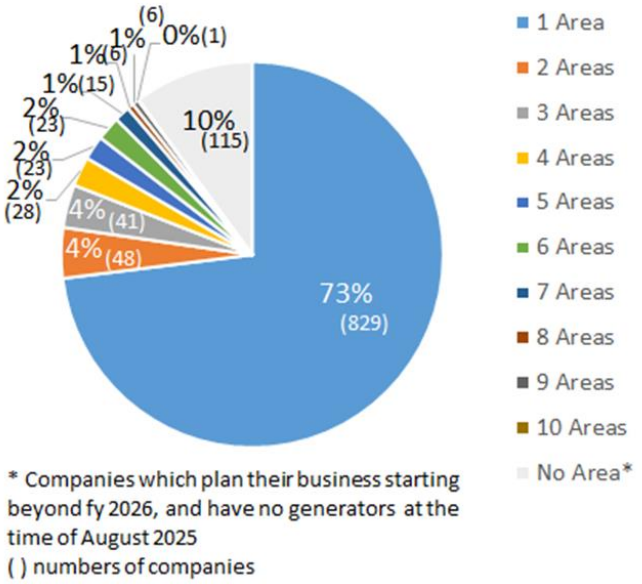


Figure 6-13 Ratio of Generation Companies by the Number of Planned Business Areas

Figure 6-14 presents the number of generation companies who plan to conduct business in each regional service area as of August 2025. In regional service areas other than Hokuriku and Okinawa areas, the number of generation companies increased compared with FY 2024.

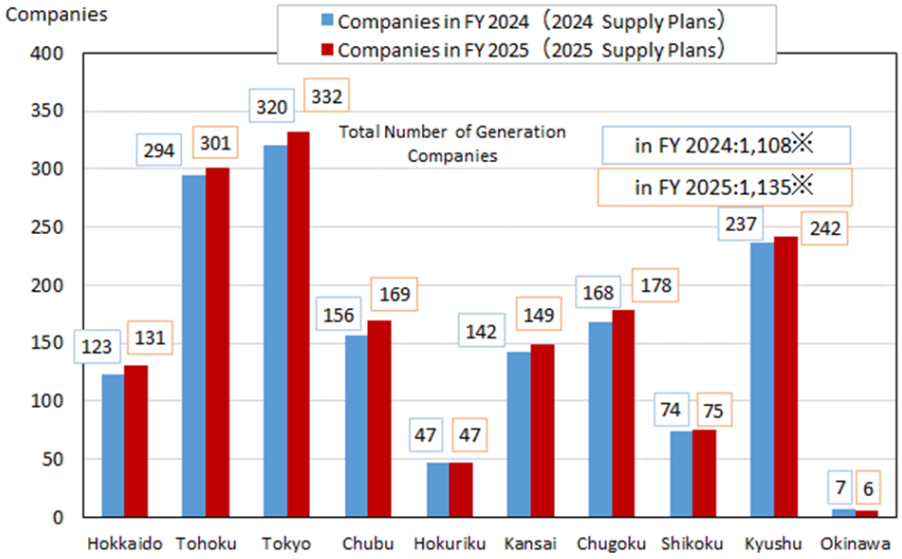


Figure 6-14 Number of Generation Companies by Their Business Planning Areas

VII. Findings and Current Challenges

Current challenges that relate to the aggregation of electricity supply plans are described as follows:

1. Challenges regarding the procurement of supply and balancing capacities in the mid-to-long term

In the FY 2025 Supply Plan, the demand in the mid-to-long term is expected to increase compared with the FY 2024 Supply Plan because of a trend of large-scale demand of data centers and semi-conductor factories.[48] On the other hand, with respect to the trend of power generation facilities, suspension and decommissioning exceeds an increase of new and added installations. The offset capacity between increased and decreased becomes the larger decrease.[49]

As a result, severe supply–demand balance is observed in some regional service areas for the mid-to-long term in the aggregated supply plan.[50]

A part of the reasons behind the increase in the suspension and decommissionin of generation facilities is that the plans for the suspension and decommissioning of coal-fired generators concentrated around 2030 were included because of the consideration by the companies toward the fading-out of coal-fired power generation. Especially with respect to ineffective coal-fired generators, suppression of the operating ratio (50% or less) is expected to be required in the capacity market scheme from FY 2025. Close attention has to be paid to these trends in the generation facilities.

In addition, another point is that the new and added installation, suspension and decommissioning in this supply plan reflect the situation of LNG-fired generators contracted at the long-term decarbonization capacity auction in April 2024. In particular, although these newly installed LNG-fired generators are planned to start operation sequentially from FY 2029, some replacement work requires decommissioning of existing generators, and the supply capacity during such replacement work will decrease in the latter part of the 2020s.

These plans on suspension, decommissioning, new installation, and replacement were prepared by the EPCOs and included in the supply plan of FY 2025; however, these plans do not consider the impact of such processes on the whole supply–demand balance. As a result, supply capacity in the mid-to-long term will decrease. If this trend continues, the subsequent supply–demand balance is expected to deteriorate.

Therefore, we expect the government to further consider institutional measures to strike a balance between decarbonization and the secure supply capacity, such as systems to promote decarbonization of thermal generators by utilizing hydrogen, ammonia, or CCUS in the long-term decarbonization capacity auction or measures to maintain thermal generators by further decreasing the operating ratio toward carbon neutrality and then utilize such generators as supply, balancing, or inertia as measures to maintain existing thermal generators as the supply capacity without suspension and decommissioning.

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[48] See Figure 1-1 on p4.

[49] See Figure 3-4 on p24.

[50] See Table 2-4 on p8.

The impact of the recent trend of suspension, decommissioning, and replacement on the supply–demand balance has become clear in this aggregation of supply plans. We expect the EPCOs to use this result of aggregation as a trigger for a review of their plans. At the same time, the Organization scrutinizes the contents of supply plans and considers room for adjustment so that the timing of suspension and decommissioning or the replacement plans of generation facilities will not be concentrated within a certain period of time. We expect the government to consider implementing the necessary measures in a coordinated manner.

2. Challenges regarding impact of maintenance of generation facilities on supply–demand balance

In the supply plans of each year, the transition of scheduled maintenance of thermal generation facilities is confirmed. Scheduled maintenance in FY 2025 increased compared with the time of aggregation of supply plans for FY 2024.[51] A similar trend has been observed in the aggregation of the supply plans for FY 2024.[52]

As such, we have confirmed the transition of the capacity and scheduled maintenance of thermal generation facilities of each fiscal year going back to 2020. Although the capacity has been decreasing year by year, an increasing trend of scheduled maintenance has been observed.[53]

Considering comprehensively through interviews with generation companies and GT&D companies regarding the causes of the increase in scheduled maintenance, not only the influence from the aging of facilities but also the influence from the prolonged period of maintenance work due to work-style reform[54] in the construction industry were pointed out. Furthermore, it is assumed that the increase in scheduled maintenance is also caused by the load on the equipment of facilities due to the increase in the frequency of output adjustments and the start/stop operation of generation facilities[55] as measures for the increase in power generation from renewable energy and its output control.

Although such suspension of generation facilities for scheduled maintenance has been concentrated around off-peak periods and avoided peak periods, high temperatures are forecasted throughout the year in recent years,[56] and the coordination of maintenance schedules tends to be normalized as a supply–demand measure during the off-peak periods.[57] However, it is difficult to change the maintenance work period due to difficulty in securing workers and other reasons.

Therefore, the Organization will continue discussions as suggested upon the aggregation of supply

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[51] See Figure 2-4 on p13.

[52] In the requirement rules for the capacity market scheme, if capacity providers make the scheduled maintenance period longer than the submitted maintenance schedule after the coordination of scheduled maintenance and this threatens the supply reliability, such capacity providers may be penalized.
Reference: Item 1, Paragraph 1 of Article 16, Terms and Conditions for Supply Capacity Procurement Contract (published in January 2025) [written only in Japanese]
https://www.occto.or.jp/market-board/market/jitsujukyukanren/files/250130_kakuhokeiyaku.pdf

[53] See Figure 7-1, and Figure 7-2 on p56.

[54] Restriction on working long hours through work-style reform has been applied since FY 2024 in the construction industry.

[55] See Figure 7-3, and Figure 7-4 on p57.

[56] See Figure 7-5 on p58.

[57] With respect to operation in September 2025, coordination of maintenance schedule for improvement of supply-demand situation was implemented. In the supply plans for FYs 2024 and 2025, we requested cooperation in preparation of plans considering the supply-demand situation during off-peak periods for planning of scheduled maintenance for the next fiscal year.

plans for FY 2024 in coordination with GT&D companies to evaluate in detail the prospect of demand and supply, including the off-peak period.

Based on the increasing trend of scheduled maintenance and the tight supply–demand balance during off-peak periods in recent years, we consider that it is necessary to review and reconsider the annual available scheduled maintenance. In particular, we consider that it is necessary to proceed with quantitative analysis and an evaluation of annual available planned outages of generation facilities (1.9 months),[58] which is a calculation factor in the target procurement of the capacity market scheme based on an understanding of the actual situation of the increasing trend in scheduled maintenance in recent years in coordination with GT&D companies and generation companies.

In addition, an increase in the necessary annual available planned outages is due to the multiple factors of the aging of facilities, work-style reform, and an increase in the frequency of daily start/stop operation of facilities. If it becomes necessary to review the plans, we expect the government to develop a consensus on the validity of such increases and examine the share of increased cost to secure generation capacities along with such reviews.

3. Challenges regarding coordination between large-scale demand and reinforcement of network facilities

From the perspective of industrial competitiveness in Japan, the necessity of a timely power supply to prepare for the future electricity demand toward digital transformation(DX) or green transformation(GX) is pointed out in the 7th basic energy plan of the government. Also, in the supply plan for this year, a remarkable increase of demand is observed[48] in more regional service areas compared with the last year because of new and added installations of data centers and semiconductor factories. Therefore, the respective GT&D companies provide incentives for siting with a welcome zone map for early connection of generation facilities for such demand; however, system reinforcement is expected to be required in some cases because of the concentration of applications for connections to a specific system.

Considering the period necessary for the construction of transmission lines and substations for system reinforcement, the installation of these facilities may not be ready in time. Under such circumstances, there is a concern that some customers may secure the grid connection capacity tentatively even though the demand scale is unclear.

Before these problems become more serious, it is expected that the government will take the lead in considering coordination from the perspective of total optimization and a fair allocation of the cost for system development, as well as discipline on grid connection for large-scale demand not only through cooperation between such customers and GT & D companies, but also through cooperation with the national and local governments.

The Organization will continue gathering information on the trend of large-scale demand, such as demand from data centers, and will reflect such information in practice based on the result of

[58] Reference: Material 1, page 42 of the 94th meeting of the Study Committee on Regulating and Marginal Supply Capability and Long-Term Supply-Demand Balance Evaluation (January 24, 2024) [written only in Japanese] https://www.occto.or.jp/iinkai/chouseiryoku/2023/files/chousei_94_01.pdf

discussion at the governmental council in coordination with GT&D companies.

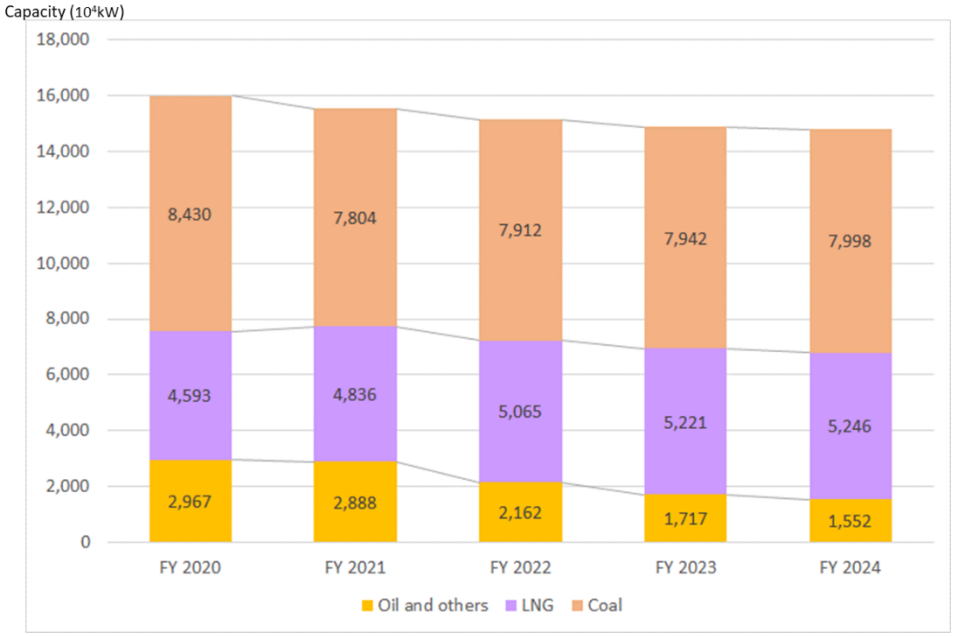

Figure 7-1 Transition of the Capacity of Thermal Generation Facilities (Nationwide)

*Based on the capacity as of the end of fiscal year in the past aggregations of supply plans

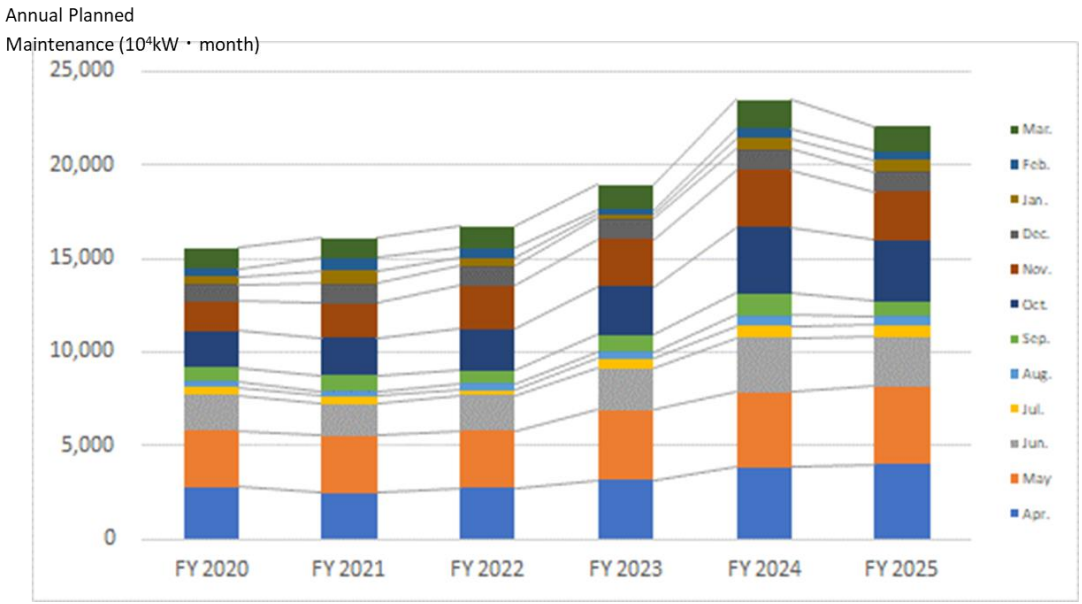

Figure 7-2 Transition of Annual Planned Outage (Nationwide)

*Based on the maintenance volume for the first year in the past aggregations of supply plans

*FY 2024 includes the trouble of generation facilities due to Noto Peninsula Earthquake (occurred on January 1, 2024)

Net Electrical Energy Generation (at the sending end; 10^8kWh)

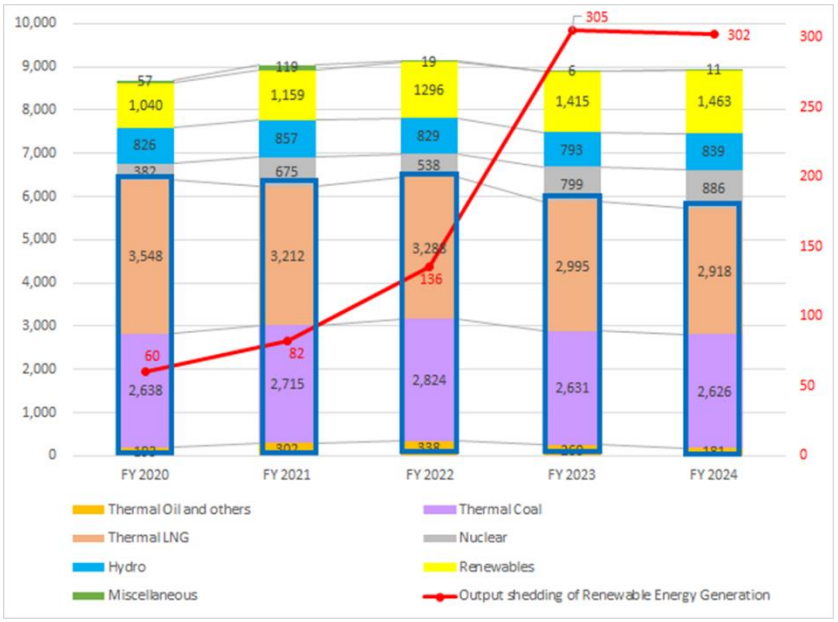

Figure 7-3 Preliminary Data of the Net Electrical Energy Generation and the Transmission of the Number of Generation Control of Renewable Energy (Nationwide)

*Based on the preliminary data in the past aggregations of supply plans

*The number of generation control of renewable energy in FY 2024 presents the actual data as of the end of January

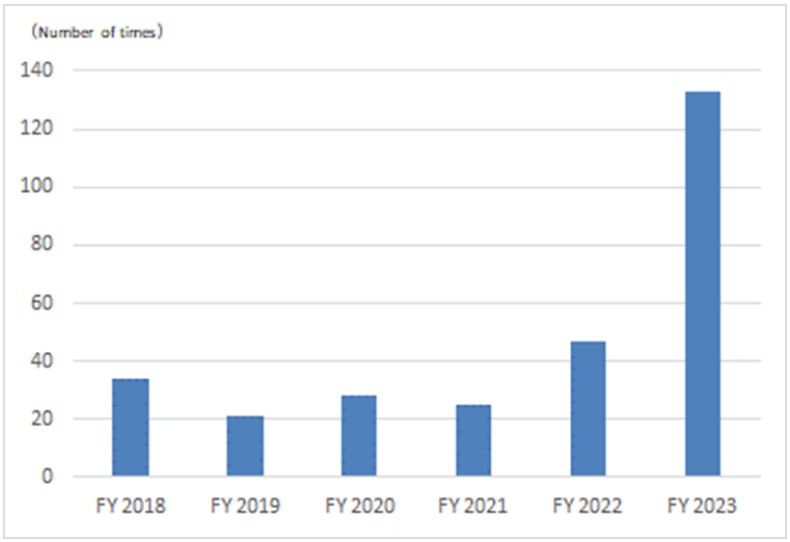

Figure 7-4 Number of DSS* of Power Plant A (LNG-fired)

*Abbreviation for Daily Start and Stop. Operation of generator is started and stopped on daily basis.

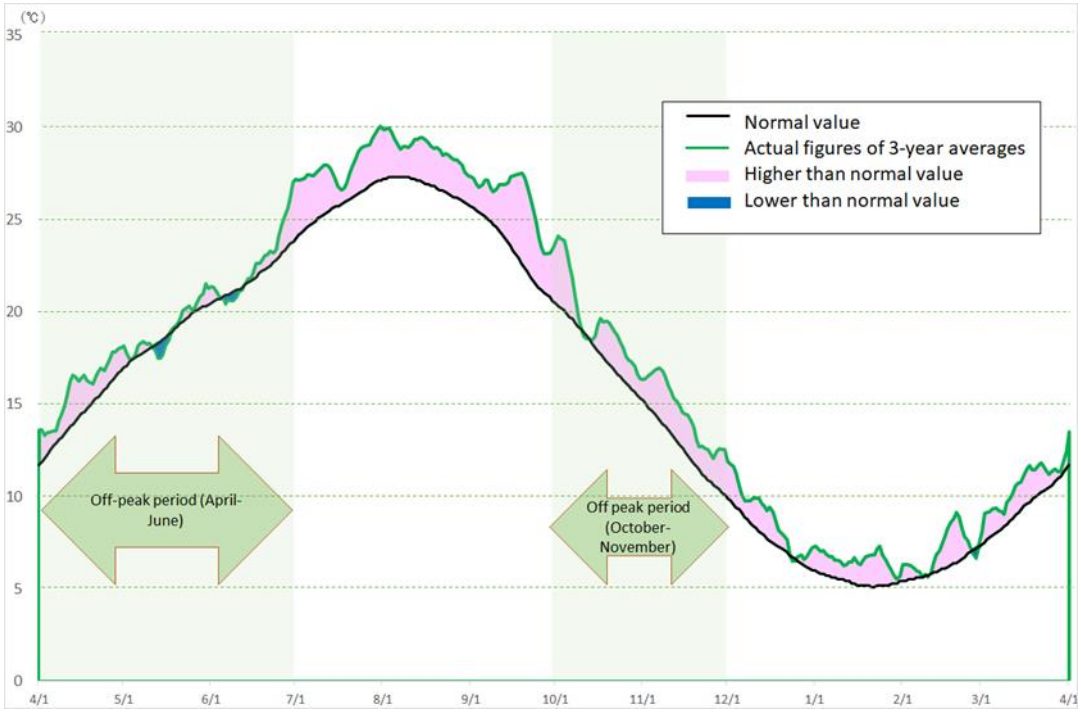

Figure 7-5 Transition of Daily Average Temperature (Tokyo)

*Based on data published on a homepage of Japan Meteorological Agency

*Actual data presents 7-day moving average of 3-year average (2022 to 2024)

VIII. Conclusions

1. Electricity Demand Forecast

The AAGR of peak demand (average value of the three highest daily loads) nationwide for the coming 10 years is forecast to be 0.4%. This forecast for an increasing trend is attributable to larger increasing factors, such as economic growth and new and added installations of data centers and semiconductor factories, compared with decreasing factors, such as a shrinking population, and efforts to reduce electricity use.

2. Electricity Supply and Demand Balance

In the evaluation of the supply–demand balance of each service area in terms of annual EUE, EUE exceeds the target outage volume in the Tokyo and Kyushu areas in FY 2025, and the Tokyo area in FY 2026 because of suspension and decommissioning or the scheduled maintenance of generation facilities.

In the long term as well, the EUE exceeds the target outage volume in the Hokkaido area in FY 2027, Tohoku area from FY 2028 to 2034, Tokyo area from FY 2027 to 2034, and Kyushu area from FY 2027 to 2034 because of the suspension or decommissioning of generation facilities.

For FYs 2025 and 2026, the monthly reserve margin was confirmed supplementally, and the reserve margin is secured for 11% and more in every area and for all months.

With respect to the projection of monthly electrical energy (kWh) in FY 2025, the energy supply on the generation-side exceeds the electrical energy requirement for all months.

In the Tokyo and Kyushu areas for FY 2025, annual EUE exceeds the target outage volume. This is because the target outage volume has become more severe value after reconsideration of the volume due to severe weather, notwithstanding the coordination of scheduled maintenance in the Tokyo area. We will pay close attention to the supply–demand situation of each month and consider the supply–demand measures according to the necessity in future.

In the Tokyo area for FY 2026, annual EUE exceeds the target outage volume. We will determine the necessity of incremental auctions according to the provisions of Article 32-21 of the Operational Rules of the Organization based on the discussion in the governmental council. Depending on the result of such a decision, supply–demand measures will be required for coordination of maintenance timing of generation facilities. Therefore, we will coordinate with the government and corresponding EPCOs.

Beyond FY 2027, the Organization will confirm the results of coordination of maintenance schedules implemented two years prior to the actual supply–demand timing and determine the necessity of incremental auctions as required. It will also carefully re-examine the supply capacity in the future supply plans based on continuous observations of the trend for generation facilities in the mid-to-long term.

3. Analysis of the Transition of Power Generation Sources Nationwide

Renewable energy, such as solar and wind power, is projected to increase regarding the installed power generation capacity (kW) and the net electrical energy generation (kWh) at the sending end for the coming 10 years. Installed power generation capacity (kW) and net electrical energy

generation (kWh) are automatically calculated from the values specified in the plans submitted by EPCOs with the given projections.

4. Development Plans for Transmission and Distribution Facilities

As development plans for major transmission lines and substations, the development of multiple transmission lines and transformers is planned especially for the Hokkaido, Tohoku, Tokyo, Chubu, Kansai, and Kyushu areas along with the connection of new generation facilities that include renewable energy generation facilities as well as connections to deal with new demand. In addition, as development plans for cross-regional interconnection lines, development necessary for cross-regional operation is planned.

5. Cross-Regional Operation

The aggregated results of procurement and sales with respect to the supply capacities scheduled to be traded by the EPCOs (as of August 2025) are stated as follows: higher ratios for procurement from external regional service areas are observed in the Tokyo, Hokuriku, and Chugoku areas, whereas higher ratios for sales to external regional service areas are observed in the Tohoku, Shikoku, and Kyushu areas.

6. Analysis of EPCOs' Characteristics

Retail and generation companies were classified by business scale and business areas and aggregated to the projection for 10 years. For FY 2025, contracts of supply capacity of retail companies are made at a certain level; however, after FY 2026, contract volumes are projected to decrease. This is attributable to the thorough indiscriminate treatment of the generation departments of former general electric utility companies between the retail companies of the said utilities and other retail companies.

7. Findings and Challenges

The Organization submitted the aggregated supply plan to METI accompanied with its opinions regarding three challenges above confirmed through the aggregation of electricity supply plans.

The following appendices are attached as relevant materials for the aggregation of electricity supply plans:

APPENDIX 1 Projection of demand and supply for FY 2025 and 2026 (short term)

i) Projection for FY 2025

Table A1-1 presents the peak demand of each regional service area, while Table A1-2 presents the supply capacity including the development plans of generation facilities notified according to the provisions of Article 48 (Construction Work) of the Act.

Table A1-3 presents monthly projections of supply capacity recalculated with the exchange of supply capacity between services areas,[59] while Table A1-4 presents the reserve margin. In the Okinawa area, the figures in these tables from A1-1 through A1-4 are at the least reserve margin.

Furthermore, Table A1-5 presents the supply–demand balance (peak demand, supply capacity, reserve capacity, and reserve margin) at the designated time in the Okinawa area

Table A1-1 Monthly Peak Demand Forecast for Each Regional Service Area in FY 2025 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	386	349	362	416	419	384	378	433	483	502	499	452
Tohoku	1,048	968	1,067	1,281	1,314	1,170	1,022	1,150	1,290	1,352	1,349	1,237
Tokyo	3,705	3,617	4,298	5,491	5,491	4,699	3,887	3,956	4,370	4,776	4,776	4,220
50Hz areas Total	5,139	4,934	5,727	7,188	7,224	6,253	5,287	5,539	6,143	6,630	6,624	5,909
Chubu	1,758	1,775	1,951	2,313	2,313	2,212	1,849	1,853	2,128	2,303	2,303	2,026
Hokuriku	355	332	389	473	473	416	349	377	451	489	489	419
Kansai	1,721	1,839	2,090	2,669	2,669	2,337	1,898	1,840	2,359	2,474	2,474	2,106
Chugoku	687	689	784	1,018	1,018	883	733	774	968	986	986	825
Shikoku	319	330	385	476	476	424	356	340	452	452	452	379
Kyushu	1,000	1,084	1,229	1,583	1,583	1,380	1,157	1,149	1,376	1,456	1,456	1,198
60Hz areas Total	5,840	6,049	6,828	8,532	8,532	7,651	6,341	6,333	7,733	8,160	8,160	6,953
Interconnected	10,978	10,982	12,555	15,719	15,756	13,904	11,628	11,873	13,876	14,790	14,784	12,862
Okinawa	108	130	150	158	157	154	137	113	98	102	95	96
Nationwide	11,086	11,113	12,705	15,878	15,913	14,058	11,766	11,985	13,974	14,892	14,879	12,958

Table A1-2 Monthly Projected Supply Capacity for Each Regional Service Area in FY 2025 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	556	532	541	522	535	490	508	547	629	612	622	554
Tohoku	1,524	1,493	1,756	2,025	2,044	1,853	1,586	1,627	1,840	1,927	1,903	1,724
Tokyo	4,016	3,816	4,521	5,799	5,819	5,367	3,791	4,055	5,009	5,239	5,081	4,821
50Hz areas Total	6,096	5,841	6,817	8,346	8,399	7,710	5,885	6,229	7,478	7,778	7,606	7,099
Chubu	2,109	2,220	2,348	2,768	2,719	2,580	2,386	2,175	2,193	2,262	2,521	2,534
Hokuriku	555	532	520	638	641	606	524	535	599	593	585	517
Kansai	2,070	2,131	2,361	2,750	2,809	2,662	2,207	2,202	2,606	2,710	2,773	2,484
Chugoku	955	1,105	1,238	1,401	1,362	1,185	996	940	1,180	1,219	1,150	1,100
Shikoku	656	682	730	847	818	758	596	548	653	754	751	726
Kyushu	1,310	1,304	1,723	1,915	1,864	1,798	1,623	1,498	1,698	1,749	1,672	1,590
60Hz areas Total	7,655	7,974	8,920	10,320	10,215	9,589	8,331	7,898	8,929	9,287	9,454	8,952
Interconnected	13,751	13,815	15,737	18,666	18,613	17,299	14,216	14,127	16,407	17,066	17,059	16,050
Okinawa	150	176	193	197	211	207	193	176	165	172	164	188
Nationwide	13,901	13,991	15,930	18,863	18,824	17,507	14,408	14,303	16,571	17,238	17,224	16,238

* Including generating facilities to be developed which submit their construction plans

[59] Supply capacity is transferred from the areas with higher reserve margin to the areas with lower reserve margin within the available transfer capability of interconnection lines to level the reserve margin throughout the regional service areas.

Table A1-3 Monthly Projected Supply Capacity Recalculated with Power Exchange and submitted generators construction plans for Each Regional Service Area in FY 2025 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	493	477	498	490	492	477	467	495	579	580	573	549
Tohoku	1,256	1,149	1,276	1,510	1,544	1,454	1,152	1,316	1,545	1,562	1,548	1,504
Tokyo	4,443	4,293	5,140	6,473	6,454	5,841	4,369	4,526	5,234	5,517	5,481	5,130
50Hz areas Total	6,192	5,918	6,914	8,473	8,491	7,772	5,989	6,337	7,358	7,658	7,602	7,183
Chubu	2,241	2,309	2,432	2,727	2,719	2,750	2,397	2,256	2,490	2,642	2,643	2,546
Hokuriku	453	431	484	558	556	516	452	466	527	561	561	526
Kansai	2,193	2,392	2,605	3,146	3,137	2,905	2,460	2,273	2,760	2,838	2,839	2,647
Chugoku	876	896	1,054	1,200	1,197	1,098	950	956	1,133	1,131	1,132	1,037
Shikoku	522	548	596	696	653	543	469	420	529	564	611	606
Kyushu	1,275	1,320	1,652	1,866	1,861	1,715	1,500	1,419	1,610	1,671	1,671	1,506
60Hz areas Total	7,559	7,896	8,824	10,193	10,122	9,527	8,227	7,790	9,049	9,407	9,458	8,868
Interconnected	13,751	13,815	15,737	18,666	18,613	17,299	14,216	14,127	16,407	17,066	17,059	16,050
Okinawa	150	176	193	197	211	207	193	176	165	172	164	188
Nationwide	13,901	13,991	15,930	18,863	18,824	17,507	14,408	14,303	16,571	17,238	17,224	16,238

Table A1-4 Monthly Projected Cross-Regional Reserve Margin for Each Regional Service Area in FY 2025 (Calculated on the Supply Capacity of Table A1-3)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	27.6%	36.6%	37.5%	17.9%	17.5%	24.3%	23.5%	14.4%	19.8%	15.5%	14.8%	21.6%
Tohoku	19.9%	18.7%	19.6%	17.9%	17.5%	24.3%	12.7%	14.4%	19.8%	15.5%	14.8%	21.6%
Tokyo	19.9%	18.7%	19.6%	17.9%	17.5%	24.3%	12.4%	14.4%	19.8%	15.5%	14.8%	21.6%
Chubu	27.5%	30.1%	24.6%	17.9%	17.5%	24.3%	29.6%	21.7%	17.0%	14.7%	14.8%	25.7%
Hokuriku	27.5%	30.1%	24.6%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Kansai	27.5%	30.1%	24.6%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Chugoku	27.5%	30.1%	34.4%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Shikoku	63.5%	66.1%	54.7%	46.3%	37.1%	28.0%	31.7%	23.5%	17.0%	24.8%	35.3%	59.8%
Kyushu	27.5%	21.7%	34.4%	17.9%	17.5%	24.3%	29.6%	23.5%	17.0%	14.7%	14.8%	25.7%
Okinawa	38.8%	35.2%	28.4%	24.6%	34.2%	34.4%	40.1%	56.5%	68.7%	68.4%	72.9%	94.8%

*1 Reserve margins with the same value are shown in the same background color after utilization of cross-regional interconnection line.
*2 For Okinawa area, the least reserve margin is shown

Table A1-5 Monthly Projected Supply–Demand Balance in Okinawa in FY 2025 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Peak Demand	108	130	151	160	160	154	137	113	98	102	95	96
Supply Capacity	155	181	195	202	217	209	196	181	167	174	167	191
Reserve Capacity	47	51	44	42	56	55	59	68	69	72	72	95
Reserve Margin	43.3%	39.0%	29.4%	26.0%	35.2%	35.8%	42.8%	60.7%	71.2%	70.5%	75.7%	98.6%

ii) Projection for FY 2026

Table A1-6 presents the peak demand of each regional service area, while Table A1-7 presents the supply capacity including the development plans of generation facilities notified according to the provisions of Article 48(Construction Work) of the Act.

Table A1-8 presents the monthly projection of the supply capacity recalculated with the exchange of supply capacity between regional service areas, while Table A1-9 presents the reserve margin. For the Okinawa service area, the figures in these tables from A1-6 through A1-9 are at the least reserve margin.

Furthermore, Table A1-10 presents the supply–demand balance (peak demand, supply capacity, reserve capacity, and reserve margin) at the designated time in the Okinawa area.

Table A1-6 Monthly Peak Demand Forecast for Each Regional Service Area in FY 2026 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	388	351	364	418	422	387	381	435	484	503	501	455
Tohoku	1,051	971	1,070	1,284	1,317	1,173	1,031	1,159	1,299	1,361	1,358	1,246
Tokyo	3,733	3,645	4,329	5,521	5,521	4,731	3,918	3,986	4,401	4,801	4,801	4,248
50Hz areas Total	5,172	4,967	5,763	7,223	7,260	6,291	5,330	5,580	6,184	6,665	6,660	5,949
Chubu	1,762	1,779	1,955	2,311	2,311	2,217	1,853	1,857	2,133	2,308	2,308	2,030
Hokuriku	355	332	389	473	473	416	350	378	452	490	490	420
Kansai	1,724	1,840	2,091	2,668	2,668	2,337	1,899	1,843	2,363	2,482	2,483	2,115
Chugoku	689	691	785	1,020	1,020	884	734	776	971	989	989	828
Shikoku	317	327	382	472	472	421	353	337	448	448	448	376
Kyushu	1,004	1,088	1,234	1,589	1,589	1,386	1,162	1,153	1,381	1,462	1,462	1,203
60Hz areas Total	5,851	6,057	6,836	8,533	8,533	7,661	6,351	6,344	7,748	8,179	8,180	6,972
Interconnected	11,023	11,023	12,598	15,756	15,793	13,951	11,680	11,924	13,932	14,844	14,839	12,920
Okinawa	109	131	151	159	158	155	138	113	98	103	95	97
Nationwide	11,132	11,154	12,749	15,915	15,951	14,106	11,818	12,037	14,030	14,946	14,935	13,017

Table A1-7 Monthly Projected of Supply Capacity for Each Regional Service Area in FY 2026 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	541	537	498	559	547	498	504	551	634	635	622	590
Tohoku	1,499	1,566	1,630	1,924	2,052	1,887	1,539	1,743	2,032	2,034	1,998	1,824
Tokyo	3,900	3,866	4,554	5,567	5,562	5,086	4,090	4,170	4,871	5,176	5,151	4,755
50Hz areas Total	5,940	5,969	6,682	8,049	8,161	7,472	6,132	6,464	7,536	7,845	7,771	7,169
Chubu	2,219	2,264	2,464	2,733	2,678	2,375	1,891	1,976	2,308	2,377	2,474	2,429
Hokuriku	561	512	519	612	653	624	528	551	607	600	581	591
Kansai	2,101	2,139	2,253	2,921	2,911	2,797	2,093	2,016	2,382	2,598	2,700	2,319
Chugoku	1,004	1,061	1,112	1,344	1,337	1,251	1,134	1,034	1,146	1,176	1,179	1,066
Shikoku	720	758	773	860	813	764	633	645	672	733	702	636
Kyushu	1,465	1,473	1,860	1,877	1,868	1,762	1,460	1,462	1,619	1,718	1,700	1,675
60Hz areas Total	8,071	8,207	8,981	10,346	10,259	9,573	7,739	7,684	8,736	9,201	9,338	8,717
Interconnected	14,011	14,176	15,663	18,395	18,420	17,045	13,871	14,148	16,271	17,046	17,109	15,886
Okinawa	173	190	198	205	208	211	198	177	164	180	168	172
Nationwide	14,184	14,366	15,862	18,600	18,629	17,255	14,069	14,325	16,435	17,226	17,277	16,058

Table A1-8 Monthly Projected Supply Capacity Recalculated with Power Exchange and submitted generators construction plans for Each Regional Service Area in FY 2026 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	477	486	488	525	512	471	472	518	594	593	581	555
Tohoku	1,246	1,335	1,434	1,469	1,598	1,427	1,193	1,353	1,568	1,575	1,565	1,520
Tokyo	4,288	4,261	4,879	6,175	6,170	5,582	4,491	4,654	5,279	5,557	5,534	5,183
50Hz areas Total	6,011	6,082	6,800	8,169	8,281	7,480	6,156	6,525	7,441	7,725	7,680	7,259
Chubu	2,400	2,358	2,477	2,767	2,746	2,616	2,124	2,191	2,431	2,630	2,660	2,512
Hokuriku	484	439	492	566	562	530	435	458	515	558	565	519
Kansai	2,349	2,439	2,649	3,195	3,171	2,983	2,361	2,231	2,693	2,828	2,862	2,617
Chugoku	939	916	1,061	1,221	1,212	1,128	913	939	1,107	1,127	1,140	1,025
Shikoku	460	498	516	575	561	537	439	408	511	511	516	465
Kyushu	1,368	1,442	1,668	1,902	1,888	1,769	1,445	1,396	1,574	1,666	1,685	1,489
60Hz areas Total	8,000	8,093	8,863	10,226	10,139	9,565	7,715	7,623	8,830	9,321	9,429	8,627
Interconnected	14,011	14,176	15,663	18,395	18,420	17,045	13,871	14,148	16,271	17,046	17,109	15,886
Okinawa	173	190	198	205	208	211	198	177	164	180	168	172
Nationwide	14,184	14,366	15,862	18,600	18,629	17,255	14,069	14,325	16,435	17,226	17,277	16,058

Table A1-9 Monthly Projected Cross-Regional Reserve Margin for Each Regional Service Area in FY 2026

(Calculated on the Supply Capacity of Table A1-8)

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Hokkaido	22.9%	38.4%	34.0%	25.7%	21.4%	21.7%	23.8%	19.0%	22.6%	17.9%	15.9%	22.0%
Tohoku	18.6%	37.5%	34.0%	14.4%	21.4%	21.7%	15.8%	16.8%	20.7%	15.7%	15.3%	22.0%
Tokyo	14.9%	16.9%	12.7%	11.8%	11.8%	18.0%	14.6%	16.8%	20.0%	15.7%	15.3%	22.0%
Chubu	36.2%	32.6%	26.7%	19.7%	18.8%	18.0%	14.6%	18.0%	14.0%	14.0%	15.3%	23.7%
Hokuriku	36.2%	32.6%	26.7%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Kansai	36.2%	32.6%	26.7%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Chugoku	36.2%	32.6%	35.1%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Shikoku	45.2%	52.3%	35.1%	21.9%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Kyushu	36.2%	32.6%	35.1%	19.7%	18.8%	27.6%	24.3%	21.1%	14.0%	14.0%	15.3%	23.7%
Okinawa	58.8%	45.0%	31.3%	28.8%	31.5%	35.7%	43.2%	56.2%	67.3%	74.8%	76.4%	77.7%

*1 Reserve margins with the same value are shown in the same background color after utilization of cross-regional interconnection line.
*2 For Okinawa area, the least reserve margin is shown

Table A1-10 Monthly Projected Supply–Demand Balance in Okinawa in FY 2026 (10^4kW at the Sending End)

[10^4kW]

	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
Peak Demand	109	131	152	161	161	155	138	113	98	103	95	97
Supply Capacity	178	195	201	210	214	213	202	182	166	182	171	176
Reserve Capacity	69	64	49	49	52	58	64	69	68	79	76	79
Reserve Margin	63.3%	48.7%	32.3%	30.2%	32.4%	37.1%	46.0%	60.6%	69.8%	76.9%	79.2%	81.6%

APPENDIX 2 Projection of demand and supply for 10 years: FY 2025–2034 (long term)

Tables A2-1 and A2-2 present a 10-year projection of the annual peak demand and annual supply capacity for each regional service area from FY 2025 to 2034, respectively. For the Okinawa area, the figures in these Tables A2-1 and A2-2 for FY 2025 and FY 2026 are at the least reserve margin. Tables A2-3 and A2-4 present a 10-year projection of the annual peak demand and annual supply capacity in January for the Hokkaido, Tohoku, and Hokuriku areas where peak demand is expected to occur in winter. Furthermore, Table A2-5 presents projected supply–demand balance (peak demand, supply capacity, supply reserve capacity, and supply reserve margin) at the designated time in the Okinawa area.

Table A2-1 Annual Peak Demand Forecast for Each Regional Service Area (in August, 10^4kW at the Sending End)

[10^4kW]

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hokkaido	419	422	428	438	449	459	464	464	464	463
Tohoku	1,314	1,317	1,325	1,326	1,335	1,340	1,339	1,338	1,338	1,337
Tokyo	5,491	5,521	5,571	5,645	5,706	5,764	5,820	5,854	5,872	5,883
50Hz areas Total	7,224	7,260	7,324	7,409	7,490	7,563	7,623	7,656	7,674	7,683
Chubu	2,313	2,311	2,303	2,306	2,298	2,305	2,298	2,298	2,291	2,283
Hokuriku	473	473	473	473	473	473	473	474	474	474
Kansai	2,669	2,668	2,677	2,687	2,695	2,700	2,705	2,707	2,707	2,701
Chugoku	1,018	1,020	1,021	1,035	1,052	1,061	1,092	1,103	1,102	1,101
Shikoku	476	472	468	464	459	455	451	447	443	439
Kyushu	1,583	1,589	1,597	1,603	1,607	1,609	1,610	1,610	1,610	1,608
60Hz areas Total	8,532	8,533	8,539	8,568	8,584	8,604	8,629	8,639	8,627	8,606
Interconnected	15,756	15,793	15,862	15,977	16,074	16,166	16,252	16,294	16,300	16,289
Okinawa	157	158	162	163	166	166	167	168	169	170
Nationwide	15,913	15,951	16,024	16,139	16,240	16,333	16,419	16,463	16,469	16,459

Table A2-2 Annual Projected Supply Capacity for Each Regional Service Area (in August, 10^4kW at the Sending End)

[10^4kW]

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hokkaido	492	512	579	599	617	639	708	709	708	709
Tohoku	1,544	1,598	1,504	1,469	1,480	1,503	1,507	1,511	1,510	1,513
Tokyo	6,454	6,170	6,259	6,257	6,326	6,465	6,552	6,611	6,630	6,660
50Hz areas Total	8,491	8,281	8,342	8,325	8,424	8,607	8,767	8,830	8,848	8,882
Chubu	2,719	2,746	2,587	2,556	2,548	2,586	2,587	2,595	2,587	2,585
Hokuriku	556	562	531	524	524	531	533	535	535	537
Kansai	3,137	3,171	3,007	2,978	2,988	3,029	3,045	3,057	3,056	3,058
Chugoku	1,197	1,212	1,147	1,147	1,166	1,190	1,229	1,246	1,244	1,246
Shikoku	653	561	526	514	509	512	513	516	517	518
Kyushu	1,861	1,888	1,794	1,777	1,782	1,805	1,813	1,818	1,818	1,820
60Hz areas Total	10,122	10,139	9,594	9,496	9,518	9,652	9,720	9,768	9,757	9,765
Interconnected	18,613	18,420	17,935	17,821	17,942	18,259	18,487	18,598	18,605	18,647
Okinawa	211	208	222	227	229	229	229	229	232	232
Nationwide	18,824	18,629	18,158	18,048	18,170	18,488	18,716	18,827	18,837	18,879

Table A2-3 Annual Peak Demand Forecast for Winter Peak Areas of Hokkaido, Tohoku, and Hokuriku
(in January, 10^4kW at the Sending End)

[10^4kW]

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hokkaido	502	503	513	517	529	539	540	539	539	538
Tohoku	1,352	1,361	1,362	1,365	1,372	1,376	1,375	1,375	1,374	1,373
Hokuriku	489	490	490	490	490	490	490	490	490	490

Table A2-4 Annual Projected Supply Capacity for Winter Peak Areas of Hokkaido, Tohoku, and Hokuriku
(in January, 10^4kW at the Sending End)

[10^4kW]

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hokkaido	580	593	645	685	691	726	781	782	782	782
Tohoku	1,562	1,575	2,059	1,950	1,982	1,907	1,989	2,036	2,030	2,041
Hokuriku	561	558	679	672	626	626	626	630	625	625

Table A2-5 Supply–Demand Balance at the Designated Time in Okinawa Area (10^4kW at the Sending End)

[10^4kW]

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Peak Demand	160	161	162	163	166	166	167	168	169	170
Supply Capacity	217	213	222	227	229	229	229	229	232	232
Reserve Capacity	56	52	60	64	63	62	62	61	63	62
Reserve Margin	35.2%	32.4%	37.3%	39.5%	38.2%	37.5%	36.9%	36.3%	37.1%	36.5%

APPENDIX 3 Projection of peak demand for 10 years: FY 2025–2034 (except isolated island)

Table A3-1 presents the projection of peak demand of each regional service area (except isolated island) for 10 years period FY 2025-2034, which will become a factor in the calculation of the target outage volume in the capacity market scheme and supply plans as supply reliability criteria.

Table A 3- 1　Projection of Peak Demand of Each Regional Service Area (except isolated island)

[10^4kW]

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Hokkaido	501	502	512	516	528	538	539	538	538	537
Tohoku	1,348	1,356	1,357	1,360	1,368	1,372	1,371	1,371	1,370	1,369
Tokyo	5,488	5,518	5,568	5,642	5,703	5,761	5,817	5,851	5,869	5,880
50Hz areas Total	7,337	7,376	7,437	7,518	7,599	7,670	7,726	7,760	7,777	7,786
Chubu	2,313	2,311	2,303	2,306	2,298	2,305	2,298	2,298	2,291	2,283
Hokuriku	489	490	490	490	490	490	490	490	490	490
Kansai	2,669	2,668	2,677	2,687	2,695	2,700	2,705	2,707	2,707	2,701
Chugoku	1,016	1,018	1,019	1,033	1,050	1,059	1,090	1,101	1,100	1,099
Shikoku	476	472	468	464	459	455	451	447	443	439
Kyushu	1,563	1,569	1,577	1,583	1,588	1,590	1,591	1,591	1,591	1,589
60Hz areas Total	8,526	8,529	8,534	8,563	8,580	8,599	8,624	8,633	8,621	8,601
Interconnected	15,863	15,905	15,971	16,081	16,179	16,270	16,351	16,393	16,398	16,387
Okinawa	143	143	144	144	146	147	148	149	149	150
Nationwide	16,006	16,048	16,115	16,225	16,325	16,417	16,499	16,542	16,547	16,537

*Figures for Hokkaido, Tohoku, and Hokuriku are in January, otherwise in August.