

Current Legal Practice Landscape of the Grid Storage Battery Business under the Long-Term Decarbonization Power Source Auction Regime

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Author:

[Amane Kawamoto](#)

a.kawamoto@nishimura.com

[Takuma Kawajiri](#)

t.kawajiri@nishimura.com

[Jiayuan Tian](#)

j.tian@nishimura.com

[Kenya Suzuki](#)

ke.suzuki@nishimura.com

[Boram Kim](#)

b.kim@nishimura.com

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I Introduction

January 30, 2024 marked bidding period closure for the Long-Term Decarbonization Power Source Auction, a support program that provides long-term revenues to developers of electric power projects to incentivize investment in power supplies that contribute to Japanese power industry decarbonization (the “Auction”), such as battery energy storage systems (the “BESS”). The Auction results will be officially announced three months after such date.¹ The Auction began in FY2023 and received significant attention. However, being the first iteration, many capacity providers participation was noncommittal. This newsletter reflects on the rules of the Auction and introduces some practical points and legal practices related to the grid storage battery business.

II Overview of the Long-Term Decarbonization Power Source Auction

1. Long-Term Decarbonization Power Source Auction

(1) Background of the Creation of the Long-Term Decarbonization Power Source Auction

Retail trade liberalization and increasing renewable energy incorporation have led to declining market prices that, coupled with the expansion of trading in Japan’s wholesale electricity market, have made investment in power sources less predictable. This trend has raised concerns about the sufficiency of establishing new power sources, replacing old ones, and the possibility of a long-term shortage of supply capacity resulting from the

¹ “Capacity Market Long-Term Decarbonization Power Source Auction Solicitation Outline (Bidding Year: FY2023)” (the “Solicitation Outline”) issued by the Organization for Cross-regional Coordination of Transmission Operators (“OCCTO”) on September 13, 2023, Chapter 3.1(1).

closure of existing power sources.² Therefore, to ensure sufficient supply capacity, the Japanese government established the “capacity market” in FY 2020, with the intent it facilitate recognition of supply capacity value and ensure appropriate capacity payment. The Auction was established as part of the capacity market to promote new investment, attract businesses, and provide predictable long-term revenues for large initial investments by setting the revenue term to “multiple years” rather than “one year.”

In light of the background mentioned above, the power sources eligible to participate in the Auction must be stable and variable power sources that require future capital investment and have not yet started supplying power at the time of bidding.³ Eligible projects include the construction or replacement of BESS as a stable power source.⁴ To participate in the Auction, the BESS, whether newly installed or replaced, must have a minimum capacity of 10,000kW and capability of continuous operation for at least three hours per day.⁵

In addition, the capacity contract related to the Auction (the “Capacity Contract”) will be interpreted and legally binding under Japanese law. Also, all documents required for registration and bidding must be prepared in Japanese.

(2) Revenue of successful bidder

The revenues of a successful bidder in the Auction system are calculated by subtracting the ex-post refund amount (which is approximately 90% of other market revenues) from the Capacity Contract’s contract amount, i.e., the estimated annual payment to capacity providers (the “Contract Amount”).⁶ This value is calculated by multiplying the annual capacity contract unit price by the contracted capacity specified in the Capacity Contract for each power source bid awarded in the Auction (for more information, please refer to Article 6 of the Long-Term Decarbonization Power Source Auction Capacity Contract Terms and Conditions (the “Capacity Contract Terms and Conditions”). By registering bid information in the Auction, applicants are deemed to express their intention to enter into a Capacity Contract. The Capacity Contract is then automatically concluded once the applicant is awarded the bid, with the announcement date of the Auction serving as the effective date.⁷ Under a Capacity Contract, while the downside risks are addressed by the payment of the Contract Amount from the Organization for Cross-regional Coordination of Transmission Operators, Japan (the “OCCTO”),⁸ the capacity providers are required to return to OCCTO approximately 90% of the additional revenue from other markets,

² "Details of the Long-Term Decarbonization Power Source Auction System (Bidding year: FY2023)" (hereinafter "Detailed System Briefing Materials"), issued by Organization for Cross-regional Coordination of Transmission Operators in September 2023, page 11.

³ "Guidelines for Auction of Long-Term Decarbonization Power Sources" ("Application Guidelines"), issued by the Agency for Natural Resources and Energy, on July 11, 2023, p. 4, Section 3.2(5)(a).

⁴ However, when "storage batteries" and "power source types other than storage batteries" are installed together in the same location (except when connected to the grid independently), both "storage batteries" and "power source types other than storage batteries" are excluded from the Long-Term Decarbonization Power Source Auction (see Application Guidelines, page 4).

⁵ Application Guidelines, Chapter 3, Section 2(5).

⁶ The payment of the Contract Amount for each month will be disbursed five months after the subject month to process assessment, penalty calculation, and objections application of the subject month (see "Request for Comments on the Capacity Market Long-Term Decarbonization Power Auction Capacity Reservation Contract Provisions" and "Agency's Response and the Agency's Response" No. 15).

⁷ Application Guidelines, Chapter 6, Section 4(1).

⁸ The regulatory agency commissioned to administer the Auction under the Ministry of Economy, Trade and Infrastructure.

such as JEPX, EPRX and non-fossil markets (see Article 28 of the Capacity Contract Terms and Conditions).⁹ Therefore, as mentioned above, capacity providers will receive revenue equal to the Contract Amount minus the ex-post refund amount. The total income of the project will be the Contract Amount and the remainder of the revenue of other markets after refund to OCCTO.

The Auction uses the multi-price method to determine the winning power sources. The basic rule is to award bids in an ascending order, starting with the power sources that submitted with the lowest bid price, until the target volume of this fiscal year is met.¹⁰

(3) Applicable Period of the Capacity Contract

The applicable period of the Capacity Contract refers to the period when capacity revenues are earned from power sources awarded the bid through the Auction. This period begins in the fiscal year following the fiscal year when supply capacity is actually provided (the “Supply Year”)¹¹ (or in FY2027 if the year in which supply capacity is provided is before FY2025) and typically lasts for 20 years. However, it also was possible to request a period longer than 20 years, in increments of one year.¹²

2. Requirement and Penalty

Capacity providers taking part in the Auction must meet the requirements specified in the Capacity Contract. OCCTO will evaluate the capacity provider's progress and impose penalties for any noncompliance. While the details will be omitted in this newsletter, the Capacity Contract provides for the requirements, assessments, and penalties in four distinct stages, namely before the start of the applicable period, before the supply year, during the supply year, and during other periods. Each requirement has established rules for assessment and penalty.

(1) Requirements

The requirements for capacity providers are as follows.¹³ For example, before the start of the applicable period, capacity providers must adhere to the “Supply Commencement Date” and the “Supply Commencement Deadline.” The Supply Commencement Date is the starting date designated by the capacity provider during bidding, while the Supply Commencement Deadline sets the deadline for the start of capacity provision for each type of power source. The Supply Commencement Deadline for storage batteries is the last day of the fiscal year four years from the effective date of the Capacity Contract. Capacity providers are required to abide by both the Supply Commencement Date and Supply Commencement Deadline.

⁹ Detailed System Briefing Materials, page 78.

¹⁰ Application Guidelines, Chapter 6, Section 1(1).

¹¹ In other words, if the supply capacity provision starts in FY2027, the applicable period will begin in FY2028.

¹² Guideline, page 6, and Section 3.2(2) of the Application Guidelines.

¹³ This table has been translated and partially modified from the graph on page 60 of the Detailed System Briefing Materials.

Period	Requirements		Applicable Power Sources		Applicable Timing	
			Stable Power Source	Variable Power Source	Normal Hours	Hours subject to the Low Reserve Factor Assessment
Before the Start of Applicable Period	Supply Commencement Date	Capacity Providers must adhere to the Supply Commencement Date it entered during the registration of power source information.	Required	Required	Not Required	Not Required
	Supply Commencement Deadline	Capacity Providers must begin to supply capacity by the established Supply Commencement Deadline for the respective power source.	Required	Required	Not Required	Not Required
Before the Supply Year	Coordination of the Capacity Suspension Plan	2 years before the Supply Year, Capacity Providers to adhere to its Capacity Suspension Plan upon adjustment work by the OCCTO or local utility companies to implement the Capacity Suspension Plan.	Required	Not Required	Not Required	Not Required
	Execution of Surplus Power Utilization Agreement	Capacity Providers operating a stable power source with adjustment function are required to execute a Surplus Power Utilization Agreement with the local utility company.	Required	Required	Not Required	Not Required
During the Supply Year	Maintaining Capacity	Capacity Providers must ensure that the contracted power sources provide supply capacity equal to or greater than the Contract Capacity under the Capacity Contract.	Required	Required	Required	Required
	Bidding at JEPX/ERPX for Available Capacity	Capacity Providers are required to participate in the bidding of the wholesale power market (JEPX) or the supply and demand adjustment market (ERPX) for the remaining capacity that the power source is able to provide after meeting the capacity demands from OCCTO and utility company.	Required	Not Required	Required	Required
	Complying with Electricity Supply Instructions	Capacity Providers are required to provide surplus power generated after "Gate Close" as supply power in response to instructions from the utility company.	Required	Not Required	Not Required	Required
	Minimum Co-firing rate	Power sources that use decarbonized fuel must pass the annual minimum co-firing rate of 70% on a calorific value basis.	Required	Not Required	Required	Required
	Annual Capacity Factor	Power sources must operate above the Annual Capacity Factor (ratio) established for each power source and power generation type.	Not Required	Required	Required	Required
	Other periods	Following the Roadmap of Decarbonization	Follow the roadmap and increase investment in mono-fuel combustion.	Required	Not Required	Required
Achieve the goal of using Biomass-fuel-only combustion by the end of 2050.			Required	Not Required	Required	Required

(2) Penalty

Capacity providers will also face penalties if they fail to meet their requirements and criteria under the Auction. For example, in the case where capacity providers wish to change the Supply Commencement Date, if the supply curve of the capacity market main auction or additional auctions will be affected, an economic penalty will be imposed by OCCTO. Additionally, if capacity providers start to supply capacity later than the established Supply Commencement Deadline, the total revenue-earning period under the Capacity Contract will be shortened by the exceeded period. However, if a force majeure event occurs and the capacity provider will not be able to meet the requirements despite reasonable efforts, OCCTO may, on a case-by-case basis, exceptionally waive the economic penalty after confirming the situation of the affected capacity provider. The market exit penalties will be discussed below in Section III.

3. Project Finance

The BESS awarded the bid in the Auction will secure a revenue projection for a period of 20 years or more. This is likely to encourage more financing for BESS projects through project finance. Project finance typically requires that all project assets be pledged as collateral. The Solicitation Guidelines state that OCCTO and capacity providers may consult with each other regarding the collateralization of power sources constructed through project finance.¹⁴ This means that, when the project finance lender seeks to obtain a written consent from OCCTO regarding the creation of security interest over the claims and status held by the capacity provider under the Capacity Contract, OCCTO is willing to attend discussions regarding such request. The public comments have identified several key points that should be confirmed by OCCTO in relation to the written consent.¹⁵ These points are:

- (1) Whether there is sufficient stipulation in the security document to ensure that the transferee of the status under the relevant security document is capable of performing its rights and obligations under the Capacity Contract.
- (2) The transfer includes not only the claims that the capacity provider has against OCCTO, but also any associated penalties and obligations.
- (3) The rights of OCCTO to terminate the Capacity Contract are not restricted.

III Legal Challenges in Light of the Long-Term Decarbonization Power Source Auction

When structuring projects for storage batteries to participate in the Auction, it is important to consider the various requirements, penalties and milestones that must be met by certain deadlines. During the bidding period, the treatment of market exit penalties is often a point of contention.

If the capacity providers are no longer able to provide the expected supply capacity represented in the Auction, it may be necessary to reduce the supply capacity under the Capacity Contract. This process is referred to as

¹⁴ Solicitation Summary, Chapter 3, Section 2(5)(d). See also Article 32.2 of the Capacity Contract Terms and Conditions.

¹⁵ Comments received on the "Capacity Market: Long-Term Decarbonization Power Source Auction Outline (Bidding Period: FY2023) and the Agency's Response" (No. 77).

“market exit,” and involves modifying or terminating the Capacity Contract. The Auction in principle prohibits power sources to exit the market, except in cases described in Article 11 of Capacity Contract Terms and Conditions. If a capacity provider exits the market, it will face economic penalties (the "Market Exit Penalty") calculated as follows:

$$\text{Market Exit Penalty} = \text{Contract Capacity} \times \text{Contract Unit Price} \times 10\%$$

Market Exit Penalty poses a potential liability risk on power sources entering into the Capacity Contract. Therefore, capacity providers who plan to bid in the Auction must select the appropriate power sources for bidding within a limited period, considering the risk of market exit and other penalties if they were to win the auction. In particular, when forming a consortium with multiple capacity providers,¹⁶ the consortium members must agree on which power sources will participate in the Auction and how to allocate Market Exit Penalties. Coordination of interests also may take time due to varying levels of involvement among members of the consortium. Capacity providers planning to bid in the next and subsequent auctions as part of a consortium should therefore reach an agreement on the allocation of such penalty risk, such as Market Exit Penalty, at an early stage.

If capacity providers bid as a consortium, it is assumed that the Capacity Contract is entered by and between the representative capacity provider and OCCTO as of the date of auction result publication. The representative capacity provider should establish a special purpose company (an “SPC”) and change the party name in the Capacity Contract within one year (in principle) from the date of auction result publication.

IV Regulatory Overview and Due Diligence in the Grid Storage Battery Business

This chapter provides a partial overview of the regulations pertaining to the grid storage battery business in general and its due diligence.

1. Position of BESS under the Electricity Business Act

(1) Classification as “Power Generation Business”

The revision of the Electricity Business Act took effect on April 1, 2023, to classify electric storage facilities, such as grid storage batteries, as "electric facilities for power generation" and to specify that businesses that discharge electricity using such facilities exceeding a certain scale will be classified as "Power Generation Business" under the Electricity Business Act. It is important to note that the Electricity Business Act mandates these regulations, including notification requirements upon entry and exit, the obligation to join OCCTO and the possibility of receiving business improvement orders from such authority.

(2) Safety Regulations

In addition, the grid storage battery business is subject to safety regulations under the Electricity Business Act. According to the Electricity Business Act, storage battery facilities that (i) store electricity transmitted from

¹⁶ The representative company participates in the bidding on behalf of consortium members. Application Guidelines, Chapter 3, Section 2(4).

outside the premises, (ii) transmit electricity to outside the premises at the same operating voltage and frequency, and (iii) not connected to power generation facilities within the same premises¹⁷ are classified as “Storage Facilities” and must comply with relevant safety regulations under the Electricity Business Act such as submission of internal safety rules and compliance with the standards for appointment of the chief electric engineer.

2. Due Diligence in the Grid Storage Battery Businesses

There are opportunities to conduct due diligence on grid storage battery businesses, for example, when acquiring grid storage battery businesses that are being developed by other operators or when participating as part of a consortium.

(1) Interconnection

In the grid storage battery business, it is essential to ensure that the rights related to connection to the grid are secured, similar to those related to renewable energy generation projects. In addition, in the Auction, it is necessary to submit a Response Letter for Connection Consideration (the “Interconnection Response”) within the validity period when registering the power source and other information on stable power sources, including BESS.^{18,19} The process from receipt of an interconnection application (the “Interconnection Application”) by the utility to the issuance of an Interconnection Response usually takes about three months. Therefore, when investing in power sources that bid in the Auction, until the announcement of the results of the Auction, it is beneficial to confirm the rights of the power sources from the perspective of whether the documents have been submitted at the appropriate timing and whether the power sources have been registered by OCCTO.²⁰ If the documents specified in the Auction Guidelines for Long-Term Decarbonization Power Supply are not submitted by the deadline specified by OCCTO, or if the submitted information is found to be insufficient or false, the entire contracted capacity may be treated as market exit.

(2) Other rights and permits

The regulation regarding the development of grid storage batteries is similar to that of solar power generation business, including adherence to the Agricultural Land Act and the Forest Act. Therefore, it is beneficial to conduct due diligence comparable to that of the solar power generation business. As such, this newsletter now

¹⁷ Article 1, Item 4 of the Ministerial Ordinance Establishing Technical Standards for Electric Facilities stipulates that a transmission facility is “a place where electric power transmitted from outside the premises is stored by electric power storage devices or other electric facilities installed on the premises and further transmitted outside the premises at the same operating voltage and frequency as the power so transmitted (excluding those electrically connected to generation facilities, substation facilities or demand facilities on the same premises).”

¹⁸ October 4, 2023, 1st edition, published by the Organization for Promotion of Wide-Area Power Operations, “Capacity Market Operations Manual, Long-Term Decarbonization Power Source Auction Participation Registration, Bidding, and Conclusion of Capacity-Securing Agreement (Bidding year: FY2023),” page 50.

¹⁹ In the initial auction in FY2023, if the Interconnection Response was not ready at the time of registration of power sources information, the bidder may substitute it with the notification of the utility companies that it received when the Interconnection Application was being processed. The bidder can then submit the Interconnection Response by January 15, 2024, after the registration period is over (Chapter 4, Section 3 (5) of the Guidelines for the Call for Proposals).

²⁰ After the results of the Auction are announced, it would be beneficial to confirm that these power sources have properly entered into the Capacity Contract.



turns to cover regulations specific to the grid storage battery business, including the requirement for development permission under the City Planning Act and the need for environmental assessment under the Environmental Impact Assessment Act or local ordinances regarding environmental impact assessment.

Under the City Planning Act, a development permit is required for any development of a certain scale in a specific area. As development includes building construction, it is important to determine whether the proposed battery storage facility falls under the category of "Architectural Structures" under the Building Standards Act. If the container that houses the BESS meets the following requirements, it is not considered an "Architectural Structure:" (i) it has only the minimum space required to fulfill its function as a storage battery, (ii) it is unmanned during operation, (iii) no one is allowed inside except in the event of a serious equipment failure, and (iv) it is not stacked on top of the same.²¹ For BESS that do not meet these requirements, whether a development permit under the City Planning Act is required should be carefully reviewed.

Regarding the environmental assessment under the Environmental Impact Assessment Act, the grid storage battery business is currently considered out of scope. However, for environmental assessments based on local ordinances, it is necessary to review the ordinances of the relevant municipality for each individual project, as the projects covered by such ordinances vary from municipality to municipality.

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Public Relations Section, Nishimura & Asahi newsletter@nishimura.com

²¹ "Handling of the Building Standard Law pertaining to a Dedicated Container for Storage Batteries", issued by Building Guidance Division, Housing Bureau, Ministry of Land, Infrastructure, Transport and Tourism, on March 29, 2013.