NAME - Comments & Suggestions on

CERC Staff Paper on Capacity Market for Electricity in India

1) **New Age Markets in Electricity Private Limited (NAME)** operates India's first Over-the-counter (OTC) platform under Hon'ble Central Electricity Regulatory Commission (Power Market) Regulations 2021.
2) Hon'ble CERC introduced OTC Platform, as a market infrastructure institution, to foster **direct interaction between buyers and sellers**, **enhance transparency in the OTC market** by **reducing the current information asymmetry** and **facilitate informed decision making**.
3) **The co-existence of OTC Platforms and Power Exchanges enables** the development of a holistic and balanced market ecosystem by providing market participants with **multiple regulated avenues for power procurement and sale.** The OTC market, facilitated through **OTC Platforms**, is a quote-driven market that **caters to the customized and specific requirements of market participants** through protocols prescribed by the Hon'ble CERC, namely mutual agreement (RfQ) and competitive bidding. In contrast, the exchange-driven market, facilitated through **Power Exchanges,** is designed to meet the **standardized procurement requirements** of market participants through collective transactions. **Together, these complementary market mechanisms contribute towards** enhancing **market depth**, fostering **competition**, and improving overall **efficiency** in the evolving Indian power markets.
4) NAME offered 1st OTC Platform for power markets and with the launch of this platform, the OTC market has started its journey towards being better organized with integrated information flow, physical flow and financial flow of every deal. **A screen-based facility is sine qua non for transparency in any marketplace. An electronic marketplace/platform enhances pricing efficiency, streamlines process improvements, and reduced processing time, and centralization of consumer interest.**

5) **The OTC market, facilitated through the OTC platform, is a quote- driven market.** The hallmark of this marketplace/venue (a neutral and regulated screen-based facility in Do-it-Yourself mode) is its ability to cater to the customized and specific requirements of it's members and run through standard protocols that leading to user- defined processes. Thus, this open, transparent and competitive platform is providing access to an alternative marketplace. The members have been/are provided with features and functionalities for broadcasting their requirements, followed by responses, which leads to acceptance followed by and then allocation. Adherence by the members to the terms and conditions of the agreement leads to and ensures accountability.

6) **NAME offered the first ever national level platform to the distribution companies to list their requirements for banking of electricity.** This ensures a pan- Indian broadcast, wider responses, acceptance and delivery of the energy through direct interaction between members. The distribution companies, previously, were forced to search for their requirements with other discoms on a one-to-one basis or within the region. Even though it was an inefficient process, the but discoms followed it to cover the risk of disputes/defaults by intermediaries. **The members have found new counterparties, and, have been able to do in addition to seasonal banking, have been able to do undertake day- ahead, week- ahead and month- ahead banking. There has been no case of delay or dispute between the members on the platform.**

7) NAME launched listing services for sale and purchase of electricity (DAMINI & SPANDAN) on November 05, 2024 & April 05, 2025 respectively. NAME has made available to the members a payment solution through one of the top three banks, in line with the Payment and Settlement Systems Act, 2007 and the RBI Guidelines on Payment Aggregators and Payment Gateways. The platform is the only regulated marketplace that offers sellers the ability to list their requirements to sell. This is a significant development for the power markets, in general, and market for renewable energy, in particular.

8) Capacity Market, as has been developed worldwide, and in the context of the Resource Adequacy Framework developed for our needs, are **OTC contracts and will have to be developed accordingly.** Bringing the generation resource to cater to **time, location and variations in demand for each distribution company will have to be done through specific and customized contracts.** Bucketing them **into standard contracts with double side bidding is not in line with the nature of the product and will lead to inefficient outcomes.** Additionally, there is variability in demand as well as generation for each discom based on its consumer mix, demand patterns, consumer mix, resource mix which are weather dependent. The suggestions have been prepared to develop the most suitable and implementable capacity market in the Indian context with **centralized market platform (OTC Platform) with decentralized implementation.**

9) Rather than Suggesting changes to the possible alternatives for India, we have proposed an implementable solution in the Indian context.

10) The proposal is enumerated under the following areas:

I. Need for the capacity market

II. Various market structures

III. Pitfalls to avoid in capacity markets

IV. Alignment of the capacity market with the Resource Adequacy Framework.

V. Proposed market structure.

11) Need for the capacity market.

I. In normal commodity markets, the financial resources required for funding for the additional capacity and storage needed to meet peak demands is signaled and provided by higher-than-normal prices during those times.

II. But in several power markets worldwide, there are separate capacity markets for electricity or other resource adequacy mechanisms to ensure that **"enough" generation capacity is built.**

III. There are several reasons for the prevalence of such capacity or resource adequacy mechanisms and all point to unique characteristics of electricity as a commodity.

IV. **Capacity is the ability to produce/generate electricity and is denominated in Watts.** It is capital intensive and takes time to build. The capital expense is recovered over the life of the project and hence, the capacity charge decreases over the life of the asset. Hence, capacity decisions are taken keeping in view the long-term viability of the capacity.

V. **Energy includes the time component and is capacity utilized multiplied by time and is denominated in Watt-hour.** It is the operational expenditure to run the plant on daily basis and includes expenditure on fuel, manpower etc. It increases over the life of the product and is dependent on cost of raw materials etc. The decision to operate the capacity is taken on a short term and spot basis.

VI. The combination of capital intensiveness and absence of storage necessitates and makes meeting peak demands that occur a few hours per year very expensive to meet and would warrant spot prices in few thousands for recovery of capital costs, depending on the type of unit and hours run.

VII. The swing of variable costs of generation during peak hours and other hours in not extreme whereas the demand remains inelastic. But high peak prices do not by themselves explain the need for capacity markets. The other consideration is inefficiencies in the demand-side of the market. One aspect of the demand-side is the presence of regulatory price caps, typically justified on the basis of market power mitigation, or other sources of price rigidity that prevent prices from climbing anywhere near that high during peak periods. A further demand-side aspect is that price fluctuations in the spot/bulk power market are not passed through to most customers. The customers pay tariff that is either constant or just seasonally adjusted. In contrast, when consumers are subject to prices that fluctuate in real time, they do respond by decreasing loads in peak periods or shifting uses to off-peak periods. This lessens the need for expensive capacity for peak but signals capacity requirement for longer duration.

VIII. As a result of these demand-side issues, generation capacity becomes a public good. That is, the benefits of adding capacity are received by all consumers in the market to whom its power **can be delivered** and are not captured by the owner of the capacity in the form of higher revenues. Economic theory says that public goods tend to be undersupplied in markets, so **therefore too little capacity would likely be built in the face of the demand-side issues.**

IX. Besides the demand-side market shortcomings, another market problem provides a rationale for capacity markets: **that of market power.** In the extreme, **unresponsive demand means that pivotal suppliers can raise prices at will.** Even if no individual supplier is pivotal, prices can be above marginal cost. However, **this will be less of a problem if there is more generation capacity, particularly in spot markets if loads forward contract the bulk of their needs.**

X. **A capacity market can serve as an insurance policy and coordination device to better optimize investments, both in time and location.**

12) Pitfalls of Capacity market

I. Capacity markets initially were poorly designed and those early markets provided a means for generators to secure some additional revenues, but offered little value to load. There were two key problems. **First, the early markets were organized as spot markets,** but capacity costs are almost entirely sunk in the short term. In a spot market the supply curve is 0 for existing capacity and then essentially vertical. On the other side of the market, demand is a fixed requirement imposed on load. **Thus, price formation is quite poor, since the market is attempting to cross a vertical demand curve with a vertical supply curve. The clearing price is either 0 or the price cap and the incentive to exercise market power is severe.**

II. Second, early markets defined the product poorly, **based primarily on nameplate capacity, rather than on something related to reliability.**

III. Because of these flaws, early capacity markets did little more than transfer a rather arbitrary amount of money from load to generation.

IV. Discussions relating to capacity markets frequently invoke the concept of supplier "withholding" behavior.

V. ***Economic withholding*** is identical to bidding above variable cost: a supplier decides to produce less than is economically feasible at a given price level, because the higher price level associated with the lower output maximizes the supplier's profits. Here, economic feasibility is based on the supplier's marginal cost, including any opportunity costs. These opportunity costs are especially important when the product is sold in a sequence of related markets, as is the case in power markets.

VI. ***Physical withholding*****,** in which firms fail to bid in their economically feasible capacity above a certain amount, is often described as a separate strategy from economic withholding. However, the two are closely related. Both result in output that is less than the quantity that could be economically generated.

13) Modern Capacity Markets

I. Modern capacity markets have corrected the two aforementioned flaws. **First, the capacity market is conducted several years in advance of delivery.** This means that the cost of new entry can set the price in growing markets. This greatly improves price formation. **Second, the product is properly defined as the ability to generate energy during scarcity.** Energy during scarcity is the product that contributes to reliability. With this approach, load is buying an option for energy during scarcity periods. The product is only physical and not financial. **Resources can only offer capacity consistent with their physical capability to provide energy during scarcity. This guarantees there are adequate resources to meet system peaks.**

II. Modern capacity markets, **based on pay-for-performance**, are closely related to the energy-only market with high scarcity pricing and **extensive forward contracting**.

III. The key feature that modern capacity markets need to add to the energy-only model is the **capacity requirement that guarantees adequate physical resources.** An annual auction can be conducted

that procures resources several years in advance to satisfy the capacity requirement. Importantly, the requirements respect transmission limits. A load pocket with too few resources can have a higher capacity price to induce entry in that location. The outcome of the capacity auction not only assures adequate resources overall, but in each load zone.

14) Alignment with the existing Resource Adequacy Framework.

The key aspects of the Resource Adequacy Framework are enumerated below:

I. The capacity which the DISCOMs tie up shall be a **judicious mix of long/medium- and short-term contracts** to ensure security of supply to their consumers at least cost.

II. The guidelines aim to establish a Resource Adequacy framework for power procurement by distribution licensees, ensuring a reliable operation of the power system across all timeframes. **The Resource Adequacy exercise will assess the required capacity to be contracted on long term, medium term, and short-term basis. A key aspect of resource adequacy planning is to ensure that adequate generation capacities are available, round-the-clock, to reliably serve demand, under various scenarios.** This translates into requirement of an adequate reserve to cater to varying levels of demand and supply conditions prevailing in the grid.

III. Procurement actions according to Resource Adequacy framework **must be taken up timely by DISCOMs** so that generation capacity becomes available well before its requirement to meet projected growth.

IV. The Resource Adequacy Plan will lay down the **quantum and type of resources** required in the portfolio of a distribution licensee to meet the demand in an optimal (least cost and secure) manner. The plan shall give the **year-on-year optimal generation (conventional plus Renewable) and storage capacities required** to meet the system demand and the planning reserve margin securely and at least cost.

V. **Distribution licensees**, through the LT-DRAP, shall also **demonstrate** to the SERC/JERC, **their plan to meet their Peak demand and energy requirement with a mix of long-term, medium-**

term and short-term contracts, including power exchanges. The composition of the contracts will depend upon the load curve of each distribution utility. **The share of long term contracts is suggested** to be **at least 75%** of the required capacities as per LT-DRAP or as specified by the respective SERC/JERC. **The medium–term contracts** are suggested to be in range of **10-20%** while **the rest** can be met through **short-term contracts.** Distribution licensees shall also demonstrate their plans to contract existing capacities and plans to build or contract future capacity for the planning horizon.

VI. The **distribution licensee shall contract the optimal portfolio of resources** to meet its future demand and Resource Adequacy Requirement (RAR) obligations, based on the output derived from the LT-NRAP study results. Long / medium / short-term firm contracts of generation resources shall be considered to contribute to the RAR. **Power procurement through the power exchanges, such as the Day-Ahead Market segment, shall not be considered to contribute to RAR.**

VII. The **Distribution Licensee can contract** power through Central Agencies / Intermediaries / Traders / Aggregators / Power Exchanges or **through bilateral agreements / Banking arrangement with other distribution licensees.**

VIII. **The distribution licensee must ensure that procurement process for the projected demand is undertaken and completed sufficiently in advance** so that the procured capacity becomes available when it is required to serve the projected load.

15) Proposed Market Structure - Possible Alternatives for India

Based on the reasons stated above, the Capacity Market in India shall be as follows: -

A. <u>Medium- Term Capacity Market</u>

I. Decentralized

II. DISCOMs – the only initiators.

III. **Auction Frequency :-** Price is paid for delivering energy in N+3 year (N being the current year, in which auction is conducted).

IV. Herein, base auctions shall be conducted for new capacities.

V. Every bid shall consist of:

- Capacity Charge
- Energy Charge
- Minimum Off-Take (%)
- Capacity in MW
- Delivery Period

VI. **Evaluation**: The bids received shall be evaluated basis on the quotes received for the above three components, following the **pay as you bid principle**.

VII. **Scheduling**

Discom will have scheduling rights but not dispatch rights over day ahead basis.

VIII. **Settlement**

- Capacity Charges shall be payable based on achievement of contracted availability obligations.
- Energy Charges shall be payable based on actual schedules and deliveries.

IX. **Contract Type –** OTC Contracts
X. **Auction Venue** - CERC Regulated OTC Platforms

B. <u>Short- Term Capacity Market</u>

I. Incremental Capacity Auctions to be run twice a year, i.e., in March (delivery from April to September) and September (delivery from October to March).

II. This shall be primarily for the existing capacities in the market.

III. Herein, off-take of 10% of the total contracted capacity shall be mandated on the initiator, i.e., the DISCOM.

IV. Every requirement to have three components: -

a. Capacity Charge

b. Energy Charge- This shall further be divided into two parts:

i. Fixed Energy Charge – Bidders to bid energy charge for the 10% mandated schedule.

ii. Variable Energy Charge – Bidders to quote for the additional capacity available.

V. **Evaluation**: The bids received shall be evaluated basis on the quotes received for the above three components, following the **pay as you bid principle**.

VI. **Schedule**: The scheduling of contracted capacity shall be based on when the buyer confirms the off-take. The same shall be as follows:

a. **If the buyer confirms the schedule -3 months prior to delivery**, it shall be eligible to off take 50% of the contracted capacity (with 10% as the base).

b. **2 months prior to delivery**, it shall be eligible to off take 25% of the contracted capacity (with 10% as the base).

c. **1 month prior to delivery**, it shall be eligible to off take only the mandatory 10% of the contracted capacity.

VII. **Settlement**: The settlement of the capacity charge and energy charge against the mandated 10% capacity shall be as per the bid. Similarly, for the additional capacity off-taken. The remaining energy shall be available in the short-term market and the residual in the day ahead market.

VIII. **Contract Type** – OTC Contract.

IX. **Auction Venue** - CERC Regulated OTC Platforms.