

# **West Bengal Electricity Regulatory Commission**

**Explanatory Memorandum**

**to**

**West Bengal Electricity Regulatory Commission (Grid  
Interactive Rooftop Solar PV System for Prosumers)  
Regulations, 2024**

**2024**

## SUMMARY

1. The Explanatory Memorandum to the West Bengal Electricity Regulatory Commission (Grid Interactive Rooftop Solar PV System for Prosumers) Regulations, 2024, delineates a comprehensive rationale for the proposed regulatory changes. These changes are essential to align with national directives, uphold consumer rights, and promote renewable energy generation, particularly through rooftop solar photovoltaic (PV) systems. Here's a logical narrative explaining the content:
2. In recent years, there has been a growing emphasis on promoting renewable energy generation across India. The Electricity (Rights of Consumers) Rules, 2020, issued under the purview of the Electricity Act, have underscored the significance of consumers' rights, empowering consumers to become producers of electricity and formulating regulations concerning Grid Interactive Rooftop Solar PV systems within a specified timeframe.
3. Furthermore, the legislative framework, as outlined in the Electricity Act, particularly sections 86(1)(e) and 86(4), emphasizes the State Commission's responsibility to promote renewable energy generation and ensure compliance with national tariff policies. Empowered by section 181(1) of the Electricity Act, the State Commission is authorized to promulgate regulations consistent with these overarching objectives.
4. The regulatory landscape in West Bengal has evolved over the years, with earlier regulations addressing cogeneration and electricity generation from renewable sources. However, the dynamic nature of energy policies, including amendments to the Electricity (Rights of Consumers) Rules in subsequent years, necessitates the formulation of updated regulations to safeguard Prosumers' rights effectively.
5. The draft regulations acknowledge the prominence of rooftop solar PV systems as a preferred choice for prosumers and seek to streamline the process by providing clarity on grid connectivity, metering arrangements, and billing mechanisms. Three distinct modes—net metering, net billing, and gross metering—have been delineated to accommodate varying consumer needs and system capacities.

6. The eligibility criteria for different metering arrangements, accounting, settlement mechanisms, licensee duties, and prosumer rights are clearly defined within the draft regulations, ensuring transparency and accountability in the implementation process.
7. Additionally, the draft regulations draw upon best practices and experiences from other State Electricity Regulatory Commissions (SERCs) and regulatory forums, providing insights into capacity limits, metering provisions, and system configurations.
8. In summary, the Explanatory Memorandum explains the proposed regulatory changes that aim to protect consumer rights and encourage the use of renewable energy by promoting rooftop solar photovoltaic (PV) systems aligning with national directives.

## Explanatory Memorandum

1. Electricity (Rights of Consumers) Rules, 2020 prescribes that the Commission shall lay down regulations on Grid-Interactive Rooftop Solar PV system and its related matters as it is the right of the prosumers. The Commission thus proposes a separate set of regulations incorporating all prescribed rules of Electricity (Rights of Consumers) Rules, 2020 as amended up to 2024 repealing relevant regulations notified earlier in West Bengal Electricity Regulatory Commission notified WBERC (Cogeneration and Generation of Electricity from Renewable Sources of Energy) Regulations, 2013 as amended up to 2020. The rationale for the changes proposed in the West Bengal Electricity Regulatory Commission (Grid Interactive Rooftop Solar PV System for Prosumers) Regulations, 2024 has been elaborated in this Explanatory Memorandum.
2. Clause (e) of subsection (1) of section 86 of the Electricity Act emphasizes the State Commission's responsibility to promote the generation of electricity from renewable sources of energy. This necessitates the implementation of measures conducive to grid connectivity and electricity sales.
3. Asian Development Bank Institute (ADBI) in 2021 in its Working Paper 1256 (Rooftop Solar Development in India: Measuring Policies and Mapping Business Models, Page-1&2) describes that "one of the priority areas within solar energy is the roof-top solar (RTS) photovoltaic (PV) segment. RTS has, in recent years, shown itself to be an attractive and promising energy venture for developers, entrepreneurs, financial institutions, consumers, and electricity distribution utilities in India. ... Studies have pointed out that DISCOMs gain significantly from RTS installations; DISCOMs gain an estimated 22 paisa for kWh of electricity generated from the roof-top system. This gain is largely due to avoided generation capacity costs, the cost of procuring power, costs related to transmission charges and distribution capacity, and buying renewable energy certificates." Solar rooftop PV therefore appears as a transition to a mechanism that balances the commercial interest of both consumer & utility.

4. Recognizing the prominence of solar rooftop systems as the prevalent form of renewable energy units chosen by prosumers and considering the prescribed rules of the Government of India on electricity consumers rights, the Commission deems it necessary to establish a separate set of regulations facilitating the exercise of prosumer rights in this regard.

5. The objective of the Regulations:

- (i) To promote rooftop solar PV installations in the State
- (ii) Facilitate the consumers intended to install roof-top solar PV systems by way of net-metering, net-billing and gross-metering
- (iii) Align the provisions of the state regulations with the Electricity Rules
- (iv) Balancing the interest of consumers and the licensees considering optimal harvesting of solar potential in the State.

6. Major principles followed in the draft Regulations:

6.1. Consumers as prosumers:

Consumers of a distribution licensee who also inject electricity into the distribution licensee's grid using the same point of supply, either under a net-metering arrangement, net-billing arrangement or gross-metering arrangement.

- (1) Prosumers will maintain consumer status and have the same rights as the general consumer,
- (2) Prosumers will also have the right to set up Renewable Energy (RE) generation units including rooftop solar photovoltaic (PV) systems – either by itself or through a service provider.
- (3) Renewable Energy (RE) generation units may also be set up on other part of the premises of the prosumers, apart from the roof, however, the total generation capacity of the RE unit shall not exceed the limit as specified by the Commission.

6.2. Net-metering, Net billing and Gross-metering arrangements:

- (1) Under net metering solar energy exported to the grid by the prosumer is adjusted with energy imported from the grid in consumer mode. The import

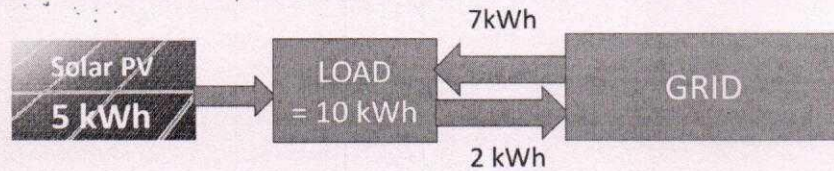
and export of energy is recorded in a bi-directional meter. At the end of the billing period in the case of net import, the prosumer has to pay the licensee at the applicable tariff. In the case of net export, energy credit is forwarded to the next billing cycle.

(2) Under the net-billing mechanism, the monetary value of solar energy exported (at feed-in-tariff) to the grid by the prosumer is adjusted with the monetary value of energy imported (at retail tariff) from the grid in consumer mode at applicable tariff. The import and export of energy is recorded in a bi-directional meter. At the end of the billing cycle, if the net amount is payable, the prosumer shall pay the licensee, and if the net receivable is not paid, it is credited to the subsequent billing cycle.

(3) Under the gross-metering mechanism generation from solar PV is the separate meter and consumption in consumer mode is recorded in consumer meter. The monetary value of solar generation (at feed-in tariff) is adjusted with the monetary value of energy consumed (at retail tariff). Two separate meters are used. At the end of the billing cycle, if the net amount is payable, the prosumer shall pay to the licensee and in case of net receivable, it is credited to the subsequent billing cycle.

### Understanding the Benefits of Three Types of Metering Arrangements

Example: Normal Tariff Rs.7/kWh, Feed-in Tariff Rs. 3/kWh



Net Metering	Net Billing	Gross Metering
<ul style="list-style-type: none"> <li>Billing will be done on net draw from grid, which is <math>(7-2) = 5</math> kWh</li> <li>Bill amount = <math>(5 \times 7)</math> = Rs. 35/-</li> <li>Saving to consumer = Rs. 70 - Rs. 35 = Rs. 35/-</li> </ul>	<ul style="list-style-type: none"> <li>Billing will be done on amount on account of total draw from grid (minus) amount on account of solar power injected into grid</li> <li>Bill amount = <math>(7 \times 7) - (2 \times 3)</math> = Rs. 43/-</li> <li>Saving to consumer = Rs. 70 - Rs. 43 = Rs. 27/-</li> </ul>	<ul style="list-style-type: none"> <li>Billing will be done on amount on account of total consumption by load (minus) amount on account of total (gross) solar power generated</li> <li>Bill amount = <math>(10 \times 7) - (5 \times 3)</math> = Rs. 55/-</li> <li>Saving to consumer = Rs. 70 - Rs. 55 = Rs. 15/-</li> </ul>

At the end of the financial year, any excess energy or credit is purchased and paid by the distribution licensee.

6.3. Eligibility of consumers to avail of net metering:

Net-metering shall be allowed to the prosumers having contract demand or sanctioned load 1 (one) kW or above to set up rooftop solar photovoltaic (PV) systems for a minimum 1 (one) kW capacity and maximum up to 500 (five hundred) kW or up to the "Contract demand" or "Sanctioned load", whichever is lower to offset the prosumer's electricity consumption from the distribution licensee.

To effectively distribute rooftop solar PV integration among different distribution licensees in the state, the Commission proposes setting a minimum net-metering capacity allowance for each licensee on a first-come-first-serve basis.

This minimum limit considers the projected energy offset requirements of West Bengal: 188 MU for 2024-25, as specified by the Central Electricity Authority (CEA) in the 20th Electric Power Survey of India (Vol-1). The required capacity of rooftop PV installation for these offsets is calculated using the CEA's formula:

Installed MW capacity of West Bengal =  $(MU * 1000) / (24 * 365 * 0.17 * 0.75)$ , resulting in 168 MW for 2024-25. Sighted to get part of the financial year 2024-25 after notification of the regulation, 50% of the target 168 MW viz. 84 MW target capacity is distributed among the licensees based on their proportion of the yearly energy requirement, 61% for WBSEDCL, 18% for CESC, 19% for DVC, and 2% for IPCL. These proportions are derived from the actual energy consumption data for 2022-23: WBSEDCL at 35,697 MU, IPCL at 911 MU, DVC at 10,997 MU, and CESC at 10,322 MU.

Accordingly, the following minimum limit for new net metering is proposed:

Year	WBSEDCL (MW)	CESC (MW)	DVC (MW)	IPCL (MW)
2024-25	51	15	16	2

+

6.4. Eligibility of consumers to avail of net-billing:

Net Billing or Net feed-in shall be allowed to prosumers having a “Contract demand” or “Sanctioned load” of 1kW or above to set up rooftop solar photovoltaic (PV) systems for a minimum 1 kW capacity and maximum up to the “Contract demand” or “Sanctioned load”:

6.5. Eligibility of consumers to avail of gross-metering:

Gross Metering shall be allowed to the prosumers having contract demand or sanctioned load of 1kW or above set up rooftop solar photovoltaic (PV) systems for a minimum 1 kW capacity and maximum up to the “Contract demand” or “Sanctioned load”:

6.6. Purchase of surplus power at feed-in tariff:

In net-billing and gross-metering arrangements, the monetary value of the solar energy exported by the prosumer is “feed-in-tariff” to be determined by the Commission.

Considering the basic purpose, adjustment mechanism and tariff offset achieved by the consumer, the Commission decided to determine the applicable “feed-in-tariff” as below:

It is observed that if DISCOMs purchase solar power at a rate (feed-in tariff) equal to its average power purchase rate allowed in the Tariff order + impact of transmission and distribution loss, the rate for 2024-25 comes as below:

	WBSEDCL	CESC	IPCL
Average PPC	3.80	4.75	4.31
Tr loss at EHV	2.70%	2.70%	2.70%
Dist loss at HV	4.00%	4%	4.00%
Dist loss at LV	15.50%	8.50%	4.50%
feed-in tariff EHV	3.91	4.88	4.43
feed-in tariff HV	4.07	5.09	4.61
Feed-in tariff LV	4.62	5.34	4.64

It may be noted that, alternately DISCOMs have to purchase power from the market to fulfil RPO obligation. The average Green Day Ahead market (G-DAM)



rate in FY 2023-24 was Rs. 5.25/kWh. DISCOM has also to bear transmission and distribution loss on that.

It is also observed that a consumer installing roof-top solar of 500 kWp to 1MWp has a capital cost of an average of 30,000/- per kWp. With a feed in tariff of 4.07 Rs. /kWh it can generate IRR of about 11.7% under gross-metering. If capacity is more than 1 MW capital cost comes around 25,000/- per kWp and with feed-in tariff of 3.91 Rs./kwh its IRR comes to about 15%.

Thus, the rate appears beneficial for both consumers and DISCOMs. DISCOMs will get additional benefits in terms of reduction in distribution loss.

The Commission therefore proposes that for net billing and Gross-Metering, the feed-in tariff shall include the average power purchase cost of the licensee and the savings from transmission and distribution losses, both calculated based on the average power purchase cost.

6.7. Recovery of other charges by the distribution licensee:

Prosumers essentially adjust the energy they generally consume in consumer mode, with the solar energy generated from its roof-top solar PV. Thus, the energy charge gets adjusted considering the energy exported by the prosumer. However, other expenditures, related to fixed charges, meter rent, electricity duty, etc have to be borne separately by the consumers.

The distribution licensee shall explicitly mention the net electricity charge, fixed charge, meter rent, and electricity duty, as applicable, separately in the bill.

6.8. Connectivity:

A detailed procedure is to be prepared by the distribution licensees for the smooth processing of the application and to provide a connection with the required metering arrangement within the due timeline.

In line with the provisions of the sub-rule (7A) of Rule 11 of Electricity (Rights of Consumers) Rules, 2020 as amended, the applications for rooftop solar photo voltaic

systems up to 10 kW capacity, complete in all respects shall be deemed to have been accepted without requiring a technical feasibility study.

Any necessary enhancement of the sanctioned load of the consumer, required by the consumer, shall be carried out by the distribution licensee.

6.9. RPO fulfilment of Distribution licensee:

(1) The quantum of electricity consumed by the Prosumer from the Rooftop Solar PV System under the Net Metering /Net Billing Arrangement shall qualify towards his compliance of RPO if such Consumer is an Obligated Entity.

(2) All surplus units of Renewable Energy purchased by the Distribution Licensee under Net Billing Arrangement shall qualify towards meeting its RPO.

(3) All units of Renewable Energy purchased by the Distribution Licensee under Gross Metering Arrangement shall qualify towards meeting its RPO.

6.10. The duties of licensees, rights of prosumers, and procedures for application are outlined in the draft WBERC (Grid Interactive Rooftop Solar PV System for Prosumers) Regulations, 2024, in line with the Electricity (Rights of Consumers) Rules, 2020 of MoP, GoI, as amended up to 22.02.2024.

6.11 Matter related to interconnection, metering, standards, and safety are addressed in the draft WBERC (Grid Interactive Rooftop Solar PV System for Prosumers) Regulations, 2024 referring to the CEA Regulations as per section 73 of the Electricity Act.

6.12. Monitoring and reporting are addressed in Regulation 7 of the draft WBERC (Grid Interactive Rooftop Solar PV System for Prosumers) Regulations, 2024, in line with the Electricity (Rights of Consumers) Rules, 2020 of MoP, GoI, as amended up to 22.02.2024.

**By order of the Commission**

**Place : Kolkata**  
**Dated:**

**Sd/-**  
**(Secretary of the Commission)**