CORRIGENDUM NO. 2

o Organization Chain	Bharat Heavy Electricals Limited‖SBD - Bangalore
o Tender ID	2024_BHEL_36906_1
o Tender Reference Number	TGPWCC0028
o Tender Title	Selection of Solar Project Developer for Setting up of Grid Connected Solar Photo Voltaic (PV) Project of 900 KWp solar Rooftop Power plant under BOOT mode at Bharat Heavy Electricals Limited, SBD, Bangalore.
o Corrigendum Type	Technical Bid
o Corrigendum Title	Technical corrigendum
o Description	1. The tender terms and conditions are revised. 2. Annexure L is revised 3. All other terms and conditions of the NIT remains the same.

389820/2024/SBD-PVE

Addendum-01

Tender Reference Number: TGPWCC0028

Tender Name: Selection of Solar Project Developer for Setting up of Grid Connected Solar Photo Voltaic (PV) Project of 900 KWp solar Rooftop Power plant under BOOT mode at Bharat Heavy Electricals Limited, SBD, Bangalore.

Addendum: 01

Clause No	Existing clause	To be read as
3.9.3.1. EXCESS GENERATION (Page 25 of 91)	As per the present guidelines of Karnataka Electricity Regulatory Commission (KERC) dated 18.07.2022 "The facility of Net Metering in respect of SRTPV plants shall not be available to the consumers availing power from the other sources/ captive sources through Open Access Mechanism. The consumers shall opt for Gross Metering arrangements or may opt for establishing Captive Plant for self-consumption." Refer Annexure-L -KERC order for net metering i.e. the energy generated by the Roof Top plant should be consumed by SBD only. The excess energy produced (Expected on Sundays/holidays) will be monitored through Zero export controller. For this, bidirectional meter shall be installed at incomer side, working with a maximum and minimum set point which can be configured through software. The zero export solution polls connected energy meters and inverters to determine the current load and help to use solar as per demanded load. This solution will throttle the power of solar inverters as per building load and there will be no Export to grid.	**ANNEXURE-L** KERC ORDER FOR NET METERING (page no 111 of 197) is withdrawn and replaced with latest KERC regulations. As per clause 7- Third party investment models of KERC latest order (Annexure- L), KERC has allowed Net metering or Gross metering for all consumers irrespective of type of investment. **Quote**: "In respect of net metering, if consumer does not use the entire energy generated from SRTPV plants, the surplus energy shall be allowed to be injected into the distribution network for which, the registered customer and the distribution licenses shall into a power purchase Agreement (PPA) in the standard format approved by the commission, at the generic tariff, prevailing at the time of commissioning of the project. In case the consumer consumes energy in excess of the energy generated from the SRTPV plants, the net energy consumed over and above the energy generated from SRTPV plants shall be billed by the distribution licensee and shall be paid by the consumer to

		the distribution licensee, as per the prevailing retail supply tariff" **Unquote**: All the connectivity activities, making PPA with BESCOM and approvals from BESCOM/KERC are in bidder's scope, including all the liaisoning charges. Accordingly, bidder shall replace the existing meters in outgoing switchgear with bi-directional meters to meet the requirements of BESCOM regarding Net metering/Gross metering.
3.5. Project scope and technology selection: Clause - 3.5.1	The SPD shall set up a Solar PV Power Project of 900 KWp Capacity including setting up of the evacuation network up to the BHEL building local switchgear panels.	The SPD shall set up a Solar PV Power Project of 900 KWp Capacity including setting up of the evacuation network up to the final interconnection point. Full capacity of the plant shall be evacuated at single point i.e. final inter connection point. All the rooftop sources shall be brought to single location and combined output power shall be terminated at 11KV voltage level. Accordingly, all necessary cables and cabling, LT junction boxes (Combiner boxes), transformer, 11KV switchgear along with necessary metering cubicle shall be considered by bidder. All civil and erection works shall be done and system completeness shall be ensured. The transmission of power up to the point of interconnection shall be the responsibility of the SPD at his own cost. Annexure-A : Indicative AC SLD document stands withdrawn.
3.6. Capacity of the project: Clause: 3.6.1	Solar power Project shall be of 900 KWp capacity at delivery point i.e. at the interconnection point of 415V system at local switchgear panel of respective SBD building.	
3.8. Connectivity with the grid Clause: 3.8.1	The plant should be designed for interconnection with the existing 415V LV switchgear system at respective building in BHEL SBD.	
4.2 Information regarding Interconnection Facilities Clause -4.2.2	The transmission of power up to the point of interconnection (up to respective building LT switchgear) shall be the responsibility of the SPD at his own cost.	

PPA format Page 5 of 44	C. Whereas, the proposed Project being setup at BHEL SBD and will be connected to designated BHEL SBD building switchgear panels at 415V voltage level.	C. Whereas, the proposed Project being setup at BHEL SBD and will be connected to designated interconnection point at 11KV voltage level.
PPA format Page 5 of 44	D. Whereas, SPD shall also complete all other assignments required for setting up, commissioning and successful operation of the Project, considering point of sale of power at the delivery point(s) at the individual switchgear of respective building Rooftops.	D. Whereas, SPD shall also complete all other assignments required for setting up, commissioning and successful operation of the Project, considering point of sale of power at the delivery point.
PPA format Page 7 of 44	Delivery/Inter connection: shall mean the point at 415V local switchgear of respective building of BHEL SBD	Delivery/Inter connection: shall mean the interconnection point.
PPA format Page 9 of 44	Metering Point: The location at which the energy meters are connected to the local switchgear through instrument transformers (voltage transformers and current transformers) and energy injected or drawn is measured.	Metering Point: The location at which the energy meters are connected and energy injected or drawn is measured. i.e. metering cubicle
PPA- 4.4.2 (Page 18 of 44)	Notwithstanding Article 4.4.1, any excess generation over and above 10% of declared annual CUF as per Annexure – J may be purchased by BHEL SBD unless refused by BHEL SBD. While the SPD should install DC solar field as per its design of required output, including its requirement of auxiliary consumption and to reconfigure and repower the Project from time to time during the term of the PPA, it will not be allowed to sell any excess power to any other entity other than BHEL SBD (unless refused by BHEL SBD). However, in case at any point of time, the peak of capacity reached is higher than the contracted capacity and causes disturbance in the system at the point where power is injected, the SPD will have to forego the excess generation and reduce the output to the rated capacity and shall also have to pay the penalty/charges (if applicable) as per applicable regulations / requirements /	Notwithstanding Article 4.4.1, any excess generation may be exported to BESCOM grid. While the SPD should install DC solar field as per its design of required output, including its requirement of auxiliary consumption and to reconfigure and repower the Project from time to time during the term of the PPA, it will not be allowed to sell any excess power to any other entity other than BHEL SBD and BESCOM (unless refused by BHEL SBD).

<table>
<tr><td></td><td>guidelines of CERC / SERC /SLDC or any other competent agency.</td><td></td></tr>
<tr><td>PPA-10.7.2 Generation Compensation in offtake constraints due to Load Unavailability (Page 27 of 44)</td><td>Generation Compensation in offtake constraints due to Load Unavailability:
During the operation of the Project, there can be some periods where the Project can
generate power but due to temporary transmission/ distribution unavailability/ low
load availability, the power is not evacuated, for reasons not attributable to the SPD.
In such cases the generation compensation shall addressed in following manner:
<table><tr><th>Duration of Grid Unavailability</th><th>Provision for Generation Compensation</th></tr><tr><td>Hours of load unavailability during a monthly bill cycle</td><td>Minimum Generation Compensation = 50% of Estimated generation based on radiation of the month measured – Actual generation) x PPA Tariff. Any outage hours of plant will not be considered for this calculation SPD shall raise
bill to BHEL SBD for such generation loss and shall be paid by BHEL SBD at the PPA tariff so as to offset this loss. In case if there is no generation in a contract year, generation in the previous contract</td></tr></table></td><td>Clause deleted.

The Grid outage hours due to temporary transmission/ distribution unavailability shall be subtracted from total number of hours in a year, for the calculation of day wise generation and CUF.</td></tr>
</table>

		year shall be considered for the purpose of calculation.	

Layout of buildings and final evacuation/ interconnection point :

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Digitally signed by VIJAY KUMAR CHOUDHARY
DN: c=IN, o=BHARAT HEAVY ELECTRICALS LIMITED SBD BANGALORE, ou=MATERIALS MANAGEMENT, postalCode=560012, l=Bangalore, st=Karnataka, street=PROF C N R RAO CIRCLE IISC POST MALLESWARAM BANGALORE KARNATAKA PIN 560012, title=0209, 2.5.4.20=92a0853bfb88f64eb03466422799d65c7c8333f552c1dedc359c92aafbbab998, serialNumber=e098519ae7110419655a7dfe5d96f6792130bdedcdac724eded64c080f30a55b, email=vijayk.choudhary@bhel.in, cn=VIJAY KUMAR CHOUDHARY
Date: 2024.06.27 10:26:53 +05'30'

389827/2024/SBD-PVE

KARNATAKA ELECTRICITY REGULATORY COMMISSION
No. 16 C-1, Miller Tank Bed Area, Vasanth Nagar, Bengaluru- 560 052

Dated:11.06.2024

Present:

Shri P. Ravi Kumar	..	Chairman
Shri H.K. Jagadeesh	..	Member (Legal)
Shri. Jawaid Akhtar	..	Member

In the matter of:

Determination of Tariff and norms in respect of Solar Power Projects (including Solar Rooftop Photovoltaic Projects) for FY25.

ORDER

a) Preamble:

1. Section 86(1)(e) of the Electricity Act, 2003 mandates State Electricity Regulatory Commissions to promote electricity generation from renewable sources. This aligns with the broader national goal of fostering renewable energy. KERC, determines feed-in tariffs periodically for different control periods, based on normative operational and financial parameters.
2. Section 61(h) empower the Commission to specify terms and conditions for tariff determination and section 62(1)(a) provides for determination of tariff for supply of electricity by a generating company to a distribution licensee.
3. Section 64 provides the procedure for determining tariff for generating companies or licensees.

4. The Commission, in its Tariff Order dated 01.06.2023, had determined specific tariff rates for solar power projects, including solar rooftop photovoltaic projects, for FY24. These rates were applicable for the entire life of the projects (25 years) and were effective from April 1, 2023 to March 31, 2024. The Commission set levelized tariff rates, such as Rs.3.66 per unit for megawatt-scale solar projects and Rs. 3.74 per unit and Rs.4.50 per unit for specific scales of solar rooftop photovoltaic projects. These rates were applicable to projects commissioned on or after April 1, 2023 as per the PPA terms.
5. In order to encourage installation of SRTPV units in the State, earlier the Commission has allowed installation of SRTPV on Government Buildings, Multiple SRTPV units on consumer premises, and various other models through third party investments by prescribing timelines to implement various activities.
6. As per Section 61(a) of the Electricity Act, 2003, the Commission is guided by the Regulations issued by the CERC in the matter of transmission and generation tariffs. In so far as tariff for solar PV or SRTPV is concerned, the CERC Regulations indicate the parameters only in respect of project specific cases. Hence, for the purpose of determining the generic tariff of solar PV/SRTPV, the Regulations issued by the CERC are not being considered and wherever necessary they are being taken as guiding factor.
7. The Commission has noted that as on 31.03.2024, the State has an installed Solar Power Generation capacity of 6145.8 MW under PPA mode both Grid Connected ground mounted solar photovoltaic and rooftop solar photovoltaic plants. That, the investments in solar rooftop installations has not been encouraging as could be seen from the fact that, out of this SRTPV plants/units of only 555.80 MW capacity have been installed and commissioned. Further, bulk

of these projects pertain to MW scale rooftop projects indicating that smaller consumers have not shown much interest in installing SRTPV units, even though the potential for installation of small capacity SRTPV units especially by domestic consumers is substantial and their installation benefits both the consumers and the distribution licensees.

8. The distribution licensees have been procuring energy from MW Solar Power Projects through a transparent process of Competitive Bidding, using the Commission determined tariff as a bench mark. The Commission is required to determine the generic tariff for solar power projects (including Solar Roof top Projects). Since, the control period of the Order dated 01.06.2023 of Generic Tariff of Solar Projects was valid upto 31.03.2024, the Commission was required to determine the Generic Tariff in respect of Solar Projects to be given effect from 1st April, 2024. Hence, the Commission issued a Discussion paper on 12.03.2024 inviting suggestions/views/objections from the stakeholders.

9. In response to the said Discussion paper issued by the Commission, various stakeholders including some of the ESCOMs have submitted their written comments/views/suggestions. The Commission has considered some of the suggestions relating to Operational and Financial Parameters, for determining the tariff and has also noted other views/suggestions submitted by the stakeholders.

10. A public hearing was also held on 30.04.2024 to enable the stakeholders to express their views/opinion in the matter. The stakeholders who participated in the hearing, made their oral submissions before the Commission. The list of stakeholders who filed their comments/suggestions and those who made oral submissions in the public hearing is given in the Annexure, to this Order. The

decisions of the Commission on the suggestions relevant to the issue, are discussed in the relevant paras of this Order.

11. After duly considering the written and oral submissions made, the Commission, in exercise of powers conferred under section 62(1)(a), read with section 64 and 86(1)(e) and other enabling provisions of the Electricity Act, 2003, hereby passes this Order.

12. Scope of the present Tariff Determination:

The tariff determined in this Order is applicable to all grid connected Solar Rooftop Photovoltaic generators (SRTPV) registered consumers who can install the rooftop upto the sanctioned load including 1kW to 10 kW SRTPV units, entering into power purchase agreements (PPA) with Distribution Licensees, on or after 01.04.2024 and would remain in force until 31.03.2025. This Order is also applicable for the procurement of energy from MW scale Solar Power Projects and also MW scale solar projects with BESS done through transparent process of competitive bidding, using the Commission determined tariff, as a bench mark. The discussion and decisions on the operational and financial parameters, for determination of tariff for the above plants are brought out in the following paragraphs.

Determination of Tariff for Solar Rooftop Photovoltaic (SRTPV) for kW scale and bench mark tariff for ground mounted MW scale projects.

i) Life of the Plant:

The Commission had proposed in the discussion paper, the useful life of Solar Power Plant as 25 years, for the purpose of determination of tariff.

Commission's Decision:

The Commission notes that as of now there are no grid connected solar Plants of MW/kW scale in India which have completed their assumed useful life of 25 years. However, considering the life assured by the manufacturers /developers and the life considered by other Commissions in the country, the Commission decides to retain that the useful life of the plant shall be 25 years.

ii) Term and Tariff design:

In order to provide certainty of cash flows to the investors, the Commission proposed in the discussion paper, the terms and levelized tariff for 25 years, to execute the PPA.

Commission's Decision:

No stakeholders have suggested the term of the PPA to be less or more than 25 years. Hence, the Commission decides to adopt levelized tariff for 25 years, to execute the PPA.

iii) Degradation Factor:

In the Discussion paper, the Commission has proposed the degradation factor as 0.5% of net generation as annual degradation factor commencing from fifth year onwards, for MW scale projects and has not considered the same for SRTPV.

BESCOM has proposed not to consider the degradation factor as 0.5% since, other ERCs/CERC have not considered the degradation factor during the determination of tariff for Solar PV Plants.

KREA has proposed to allow degradation of 1% per year subject to a maximum of 20% in 20 years.

Power Gate Energy, Mysore, has proposed the degradation factor for Rooftop and MW Scale plants as 0.5% from 1st year onwards.

Commission's Decision:

The Commission, in its earlier Orders has considered reduction of 0.5% of net generation as annual degradation factor commencing from fifth year onwards, for MW scale projects. The same has not been considered for the SRTPV projects.

The stakeholders have not furnished any document to establish the degradation factor.

The Commission notes the significance of the degradation factor affecting the various aspects of PPAs for large-scale solar projects. The Commission also notes that in the MW scale projects, the energy provider has to make the accurate estimation of energy and provide guarantee for the energy output and hence, the Commission, to ensure the said agreement remains fair and sustainable for both the parties involved, decides not to consider the degradation factor in MW scale projects.

iv) Capacity Utilisation Factor: (CUF)

In the Discussion Paper, the Commission has proposed a CUF of 19% for all the Solar Power Plants.

The PCKL has proposed to consider CUF of 21% instead of 19% for solar ground mounted projects.

The BESCOM has proposed the capacity utilization factor as 21% for solar PV plants, 23%, for solar thermal plants and 19% for solar floating plants.

Ravishankar S, Ampoct proposed to reduce the CUF below 19% for floating solar plants.

Commission's Decision:

The Commission, in its earlier tariff Orders had considered CUF of 19% for solar photovoltaic plants. The Commission notes that the CUF of Solar Plants would vary based on the irradiation profile and other parameters prevailing in the locations and not based on the energy generation of the solar plant as suggested by some stakeholders. The irradiation profile depends upon power projects that are taken up, based on studies at specific locations and their economic viability. Selection of locations with higher CUF would benefit the grid and also the investor. Commissioning of the Solar Power Plants in suboptimal locations results in a lower CUF which is not in the interest of the investors/Prosumers. In any case, while determining generic tariff, locational disadvantages of a few plants cannot be generalised and factored.

The Commission is of the view that, since the available technologies are yet to establish the exact CUF supported by adequate data, the Commission needs to consider a reasonable CUF, to balance the interest of the investors as well as the consumers. Hence, based on the earlier Orders, the Commission hereby decides to adopt a CUF of 19% for solar Plants (both ground mounted and SRTPV Plants) and directs the KREDL to conduct a study on irradiation profile and other parameters prevailing in the locations of the Karnataka, not based on the energy generation of the solar plant and to submit the report to the Commission on or before 30.09.2024.

v) Debt Equity Ratio:

For determination of Generic Tariff keeping in view, the tariff policy, industry norms and earlier orders, the Commission has proposed to continue the debt equity ratio of 70:30 for all the Solar Power Plants. Since, none of the stakeholders

have suggested any changes in the debt equity ratio, the Commission decides to continue the Debt-Equity ratio of 70:30 for determination of Generic Tariff.

vi) Capital Cost:

The Commission, in its earlier Order dated 01.06.2023 has decided to adopt the following capital cost for:

1. 1kW to 10 kW SRTPV project (domestic consumer) at Rs. 50,000 per kW
2. 1 kW to 2000 kW SRTPV project (other than SRTPV consumer covered under (1)) at Rs. 40,000 per kW.
3. MW Scale solar projects and ground mounted solar projects at Rs. 400 Lakhs per MW

In the discussion paper the Commission had proposed to consider the following capital cost based on the latest market rates. After considering the market rates, the Commission proposes the following capital cost

1. 1kW to 10 kW SRTPV project (domestic consumer) at Rs. 40,000 per kW
2. 1 kW to 2000 kW SRTPV project (other than SRTPV consumer covered under (1)) at Rs. 32,300 per kW.
3. Ground mounted solar projects at Rs. 323 Lakhs per MW.

Suggestions from the stake holders:

The BESCOM has requested to review the capital cost of Rs 323 Lakhs per MW for 5 MW to 10 MW ground mounted solar PV plants.

Ravishankar S, Ampoct has submitted to the Commission that the cost arrived of Rs. 3.23 Crores per MW will not suffice. The BOQ submitted in the written statement that all the materials are essential to construct the 1 MW solar plant with capital cost of Rs. 5.85 Crores.

Commission's Decision:

The capital cost of Rs. 323 lakhs per MW was proposed in the discussion paper based on the market prices as on 12.03.2024 available on the website-PV Insight, a network of reliable price information contributors of actual prices and sales contracts of solar PV components. The average module cost was Rs. 8.90 per watt. The average of 6 month's USD rate as per RBI has been considered. The Commission also notes that there is an increase in the cost of civil works, mounting structure, power conditioning unit, evacuation lines, equipment, general works etc., hence, the increase of 5.72% is considered from the previous tariff order.

As per the ministry of New & Renewable Energy (MNRE) Notification dated 09.03.2021 and 27.09.2022, the applicable rate of basic customs duty is 40% for solar modules and 25% for cells with effect from 01.04.2022. The imposition of Basic Customs Duty (BCD) as per above rates shall not be considered as change in law and RE implementing Agencies, stakeholders are required to take these BCD rates into account while quoting the tariff in the bidding process.

Considering the increase in the costs as discussed above, the Commission has considered capital cost of Rs.323 Lakhs per MW for determination of tariff, by considering the Basic Customs Duty at the rate of 40% wherein GST of 70% of the goods value shall be deemed to be the value of supply of said goods attracting 12% rate effective from 1st October 2021. The remaining portion (30%) of the aggregate value of such EPC contract shall be deemed to be the value of supply of taxable service attracting standard GST rate of 18%, which needs to be considered for computation

of GST for service by way of construction or engineering or installation or other technical services, provided in relation to setting up of solar power generating system.

The Commission has proposed in the discussion paper that the solar roof top consumers may install Solar Capacity upto their sanctioned load and has proposed to remove the capacity cap of 2000 kW. Hence, in respect of SRTPV plants of 1 kW capacity upto sanctioned load other than domestic consumers has been computed as Rs. 32,300 per kW considering the capital cost of MW scale projects on a prorate basis.

The Commission further notes that the payment of the BCD amount if any, for the above SRTPV consumers will be determined by the concerned ESCOMs on production of documents thereon for actual payment of BCD made to the competent authority by the Generators/Developers. This amount will be paid to the Generator/developer by the concerned ESCOMs by spreading the actual BCD incurred, over the Tariff period as per the PPA, every year by cash, without carrying cost, on annuity basis during the month of April of the subsequent financial year.

The Commission further notes that the smaller consumers have not shown much interest in installing SRTPV units on their rooftops, even though the potential for installation of smaller capacity SRTPV units, especially by the domestic consumers, is substantial, since the installation of SRTPV plants benefits both the consumers and the distribution licensees. Hence, to encourage the domestic consumers for 1kW to 10KW to put up SRTPV projects, the Commission has considered capital cost of Rs. 40,000 per kW, which is inclusive of all taxes, Duties and GST and extra premia.

The Commission, therefore, decides to adopt the capital cost per MW, for ground mounted solar projects, as follows:

Capital Cost for Solar Power Plants		
Sl.No	Particulars	FY25
1	Average Module cost-USD/Watt peak	0.108
2	Average of 6 months USD in Rs. as per RBI	82.45
3	Cost of Solar Module in Rs./watt	8.90
4	Cost of Solar Module in Rs. Lakhs/MW	89.05
5	As per MNRF official Memorandum dated 9th March, 2021the imposition of Basic Custom Duty (BCD) for solar module w.e.f.01.04.2022 of 40% in Rs lakh	35.62
6	Cost in Rs Lakhs/MW (before GST)	124.66
7	Civil and General Works, Mounting Structure, Power Conditioning Unit, Evacuation Lines & Equipment preliminary and preoperative expenses IDC etc., Rs Lakhs/MW	172.49
8	Total Capital Cost in Rs Lakhs/MW	297.15
9	GST of 12% for 70% of the total cost (supply of solar modules and its accessories, as per clarification issued by Ministry of Finance (MoF) Government of India dated 22.12.2018/01.10.2021 in Rs. Lakhs per MW	24.96
10	GST of 18% for 30% of the total cost of the project as per clarification issued by Ministry of Finance (MoF) Government of India dated 22.12.2018 in Rs. Lakhs per MW	16.05
11	Total cost of the project Rs Lakhs per MW	338.16
12	Land cost of the project Rs Lakhs per MW	25
13	Total Cost of the Project including land cost in Rs Lakhs	363.16
14	Less: The BCD and GST on the capital cost, to be reimbursed on production of proof of payment of the BCD by the generators/developers in Rs Lakhs per MW.	40.53
15	Total Capital cost considered for determination in of Tariff in Rs. Lakhs per MW	322.63 rounded off to 323.00

Accordingly, the Commission hereby decides to adopt the following capital cost for:

1. 1kW to 10kW SRTPV project (domestic consumer) at Rs. 40,000 per kW.
2. 1 kW to upto the consumer's sanctioned load, SRTPV project (other than SRTPV consumer covered under (1)) at Rs. 32300 per kW.
3. Ground mounted solar projects at Rs. 323 Lakhs per MW.

vii) Operation & Maintenance Cost:

In the discussion paper the Commission had proposed O&M expenses at Rs.748.50/kW for SRTPV units and at Rs. 5.624 lakh/MW for ground mounted Megawatt Scale solar plants duly considering the inflation in the O&M costs.

The BESCOM has suggested to consider O&M cost as Rs 3 lakhs per MW for first year with an annual escalation of 3.84% per annum.

Commission's Decision:

The Commission notes that the stakeholders have submitted the proposal for O&M expenses without substantiating the reasons and without submitting document for consideration. The operation and maintenance cost consists of employee cost, administrative & general expenses and Repairs & Maintenance expenses (R&M). The Commission, in its earlier Orders, had considered O&M expenses at Rs.670/kW for SRTPV units and at Rs.5.03 lakh/MW for ground mounted Megawatt Scale solar plants, with an annual escalation of 5.72%. The Commission, after considering the inflation factor, decides to allow O&M expenses at Rs.748.50/kW for SRTPV units and at Rs.5.624 lakh/MW for ground mounted Megawatt Scale solar plants, with an annual escalation of 5.72%.

viii) Interest and Tenure of Debt:

In the discussion paper the Commission had proposed the normative tenure of long term debt/loans as 13 years and to allow the interest on loan at 10.85% per annum.

The PCKL has proposed to consider the interest rate on loan as 10% p.a. and tenure of long term debt/loans as 15 years.

The BESCOM has proposed to consider the interest rate on loan as 9% p.a

Commission's Decision:

Considering the prevalent lending rate being the Marginal Cost of Funds-Based Lending Rate (MCLR) at which the bank charges interest for all its loans, the Commission proposes to adopt the latest MCLR of 3 years of 8.85% per annum notified by the State Bank of India plus 200 basis points, which works out to 10.85% per annum.

Therefore, the Commission decides to adopt interest rate of 10.85% per annum for 13 years' loan period.

ix) Working Capital and Interest on Working Capital:

In the discussion paper the Commission had proposed one month's receivables for SRTPV Projects and Two Months' receivables for MW scales Ground Mounted Solar Projects and to allow interest on working capital at the rate of 11.15% p.a. the stakeholders have not suggested any change in the proposed interest rate for working capital.

Commission's Decision:

The Marginal Cost of Funds-Based Lending Rate(MCLR) is the rate at which the bank prices all its loans. The Commission, in view of the massive reduction in the interest rates being charged on the loans by the banking sector, decides to adopt the latest MCLR of 1 year of 8.65% notified by the State Bank of India plus 250 points which will be 11.15% per annum.

The Commission therefore decides to allow 11.15% per annum as the interest rate for calculating the Interest on Working Capital, equal to one

month's receivables for SRTPV Projects and Two Months' receivables for MW scale Ground Mounted Solar Projects.

x) Depreciation:

In the discussion paper the Commission had proposed to adopt the depreciation on 90% of the capital cost (excluding land cost) at a rate of 5.836% per annum for the ground mounted project and 5.38% per annum for the SRTPV Projects for the first 13 years, and the remaining depreciation spread equally over the remaining useful life of the ground mounted projects and SRTPV Plants.

The PCKL has suggested to consider the depreciation for the solar project as 4.67% p.a. for the first 15 years and 6.50% for the remaining period of 12 years.

The BESCOM has suggested to consider the depreciation for the solar project as 5.38% per annum for ground mounted projects.

Commission's Decision:

The Commission has decided the depreciation amount equal to an amount of loan repayment over a period of 13 years. The amount of the said depreciation is divided by the capital cost (excluding land cost) to arrive at a rate of depreciation of 5.836% per annum for the ground mounted projects and 5.38% per annum for the SRTPV Projects. The depreciation has been allowed on 90% of the capital cost recoverable in first 13 years and the balance of 10% to be recovered over the remaining useful life of the project of 12 years.

xi) Return on Equity:

The Commission in the discussion paper had proposed ROE at 14%. The CERC, in its Regulations has also allowed normative ROE of 14%.

The BESCOM has proposed to consider the ROE at 12% p.a.

Commission's Decision:

The Commission notes that the prevailing CERC Regulations specify RoE of 14% per annum and this Commission has also adopted such rates in other Generic Tariff Orders. The Commission, therefore, decides to allow RoE of 14% per annum.

xii) Discount Rate:

The Commission, earlier had considered a discount factor of 11.62%. Since the financing of capital cost is based on 70% debt and 30% equity, it would be appropriate to reckon weighted average cost of capital (WACC) as the discount factor to arrive at the levelized tariff. The Commission, therefore, proposes to consider Discount Rate of 11.795%, based on WACC.

xiii) Auxiliary consumption:

The Commission notes that, there is no substantial documentary evidence to consider the maximum percentage of auxiliary consumption and hence, decides to allow the auxiliary consumption of 0.25% for MW scale Solar PV Plants in line with the earlier decisions and not to allow any auxiliary consumption for SRTPV units.

xiv) Other Issues for kW projects (SRTPV plants):

The Commission proposes to continue the following principles based on the earlier Order:

a) To install SRTPV units with capacity equivalent to 100% of the sanctioned load of the respective consumer's installation for the purpose of gross or net-metering with their own investments/third party investment.

b) To allow installation of SRTPV on Government buildings, as per the Commission's Order dated 11.11.2016, with the tariff for any surplus energy injected as determined by the Commission.

c) To continue the Timelines for various activities involved in implementation of SRTPV projects, as detailed in the Order dated 18.08.2021.

d) To allow only gross metering arrangement and not to allow the facility of net metering for SRTPV plants to the consumers purchasing power from other sources/ captive sources under open access mechanism as per the Commission's Order dated 18.07.2022.

e) The consumers are allowed to install Solar panels and other equipment conforming to standards specified by IEEE / BIS, without insisting on procurement from the ESCOMs' empanelled vendors.

f) The Commission permits SRTPV installations above 5KW and upto 150 KW at LT level, 3 phase, 400 volts and above 150 KW and up to 2000 KW at 11KV HT. For above 2000kW capacity, the SRTPV installations shall be connected to the system as decided in the KERC Regulations on Conditions of Supply of Electricity of Distribution Licensees (COS).

g) The PPAs/SPPAs of SRTPV plants with an installed capacity up to and inclusive of 1000 kW, executed as per the approved standard

PPA/SPPA format, shall be considered as deemed to have been approved by the Commission and the ESCOMs are not required to obtain a separate approval thereon.

xv) Others:

1. **Grid integrated Solar roof top plant with Generators especially during periods of low sunlight or grid outages:**

In the discussion paper the Commission has expressed that many SRTPV consumers are approaching the Commission to accord approval to set up a solar rooftop system with a generator to provide a reliable and continuous power supply, especially during the periods of low sunlight or grid outages. In this regard, the Commission had requested the stakeholders and the SRTPV consumers to provide the Technical, operational, wiring diagram for connecting the SRTPV units with generator and the settings of the inverter for net metering arrangements, to the Commission to take further action in the matter.

KREA has submitted that the Solar Inverters can be controlled/regulated to supply power within the capacity of production by monitoring the Power consumed by the loads, the System should ensure that the Solar Power is prevented from damaging the Generator through Reverse Power Protection System and has also submitted the schematic diagram.

BESCOM has submitted that the consumer shall obtain safety approval from CEIG, GoI for connecting the SRTPV units with Diesel Generator to generate Solar energy during non-availability of grid to ensure

no-feedback of supply to BESCOM grid and applicability of tax on self-consumed energy for the Generated units.

Commission's Decision:

Considering the views /suggestions/comments from the stakeholders, the Commission has decided to allow the consumers to use on grid tied inverters to take a reference voltage from the diesel generator(DG) in the absence of the grid. There are some stipulations that unlike grid, the surplus solar energy cannot be added into the generator because it is not built to receive power. Back feeding energy in a generator cannot only damage the device but also pose a fire risk. The consumer can make arrangements for optimum functioning and maximum fuel saving by running a generator at least 30% of its capacity by using any smart device which communicates to both with the Diesel generator and solar inverter to power the PV system and shall be a zero export device. The smart device/synchroniser will make sure that the generator runs upto 30% of its capacity to start generation from the PV system. If the solar system produces excess power, the device will limit its generation and ensure that no electricity is being fed to the DG/back fed to the grid.

Before commissioning of the plant with DG, the consumer shall get safety approval from CEIG, irrespective of the capacity.

2. **Hybrid Grid Tie Solar rooftop system:**

In the discussion paper, the Commission has expressed that the SRTPV consumers have submitted that during solar hours if there is no grid supply, then SRTPV plant with string inverter stops generation of power

and the investment made for the generation and utilisation of green energy is non-fruitful in such cases. Hence, for the self-consumption during no grid supply, the SRTPV consumer may utilise the energy generated by SRTPV plant. In this regard, the Commission has proposed to use the hybrid grid tied inverter with the battery to the SRTPV plant for net metering arrangements to make use of the green energy during no grid supply by the SRTPV consumers duly executing the PPA with the distribution licensees.

The stakeholder's views /comments/suggestions are as detailed below:

KREA has submitted that several consumers have installed the Hybrid units under net meter scheme. There is no need for the Commission to issue separate tariff due to following reasons:

a. Except of Storage batteries used to support loads, there is no change in architecture of the net meter system.
b. Many consumers have already availed Net Meter for Hybrid systems.
c. Inverters used shall comply with the safety, anti-islanding and grid code requirements.

The Commission need not classify the Hybrid Grid Tie System until such option of Export during Non-Solar Hours is featured in the Hybrid Inverters.

Joseph, Solar Evangelist & prosumer has submitted that to allow "Hybrid" Solar Power systems but the related aspects like Electrical schematic/SLD, Tariff and Solar Generation metering method need to be defined/clarified.

BESCOM has submitted as detailed below:

1. In BESCOM 360 numbers of Solar RTPV plants having Hybrid inverters with battery systems were commissioned since 2016.
2. In Hybrid system, BESCOM cannot insist Solar Generation meter since the Generation meter records both the Solar Generation during sunny hours and battery energy discharged during grid failure.
3. Direct current (DC) meters have to be installed to record the solar energy generation which are not available in the market.

Vineeti Technologies has requested to remove the restriction of storage capacity to one hour and to be allowed to at least approximately a day production from solar power plant of the facility. There are a couple of small technical issues with respect to metering/measuring exclusive solar energy output from such plants.

Hinren Engineering informed the Commission that the Rooftop Hybrid Solar plants with battery integration has already come into the market, with falling prices, the future looks good for energy storage system. There are a couple of small technical issues with respect to metering/measuring exclusive to solar energy output from such plants. The field officers have to be made aware of these technical differences. Hybrid plants with ESS cannot be treated like a conventional On grid system.

Commission's Decision:

After considering the views/suggestions and comments from the stakeholders, the Commission decides to allow the consumers to use the hybrid grid tied inverter with the battery to the SRTPV plant for net metering arrangements to make use of the green energy during no grid supply by the SRTPV consumers and ensure zero export to the grid duly executing the PPA with the distribution licensees as per the tariff determined in this order for SRTPV.

The Commission directs the BESCOM to highlight the difficulties in the metering/measuring the energy, if any and address the same.

3. **Solar MW scale with battery energy storage system:**

Solar PV system (MW scale) with Battery Energy Storage Systems(BESS) offer a promising solution for enhancing the reliability, resilience, and sustainability of electricity generation. Despite some challenges, ongoing technological advancements and supportive policies are driving widespread adoption of these systems, paving the way for a cleaner and more resilient energy in future.

The Karnataka Renewable Energy Policy 2022-2027 has emphasised the need to integrate the battery energy storage system with renewable energy sources.

For enabling to determine the generic tariff for solar PV system with BESS, the Commission had proposed the operational and financial parameters as per the prevailing market rate obtained from the tender finalised by KREDL and other Electricity Regulatory Commissions. The

tariff for solar PV system with BESS determined by the Commission will be the benchmark for the Distribution licensees for calling tender.

The stakeholder's views /comments/suggestions are as detailed below:

PCKL has suggested that the Commission has considered the CUF of 19% for the MW scale project with BESS. However, for the charge and discharge of the battery one hour has been considered. The balance quantum of energy needs to be considered for MW scale projects. Cycle loss and Input Energy should not be considered in the tariff calculation. CUF shall be considered separately for Solar and BESS.

BESCOM has suggested as detailed below:

The tariff suggested in the discussion paper of Rs.6.19 per unit is too high to purchase the solar with BESS energy during peak hours.

In the discussion paper the Commission has considered the Battery replacement cost for 12 years as Rs.155.20 Lakhs. There will be reduction in the Battery cost year on year and after 12 years, there might be very low cost as compared to Rs.155.20 Lakhs. As the Battery has to be replaced after 12 years, tariff to the extent of 12 years only for energy towards Battery has to be taken for levelized tariff and for the energy from Solar project for 25 years.

Gujarat Urja Vikas Nigam Ltd (GUVNL) has concluded its 250 MW/500 MWh standalone battery energy storage tender at a tariff of INR 4.49 lakh (around $5,429)/MW/month with BESS available for two operational cycles per day, i.e., two complete charge-discharge cycles per day, 58% lower than INR 10.8 lakh/MW/month tariff discovered in SECI's 500 MW/1000 MWh auction in 2022.

Further, the Union Cabinet approves the Scheme titled Viability Gap Funding for development of Battery Energy Storage Systems (BESS) with a financial support of up to 40% of the Capital cost. Further, the cost of BESS is anticipated to be in the range of Rs.2.20-2.40 crore per megawatt-hour (MWh) during 2023-26 for the development of the BESS capacity of 4,000 MWh, with Viability Gap Funding (VGF), as reported by Hon'ble Power Ministry-Hence, if any incentives from Central/ State, have been provided for BESS projects, the same has to be considered and passed through Tariff.

BESCOM has also requested to determine the Tariff for standalone battery energy storage to connect the BESS with the existing Solar power projects having PPAs with ESCOMs, to meet peak demand and also to reduce the cost towards Transmission infrastructure and cost reduction by utilizing the energy generated from higher cost Solar Power Projects during peak periods and also to install BESS at KPTCL sub-stations to cater to the load during peak hours.

Commission's Decision:

After considering the views/suggestions and comments from the stakeholders, the Commission has determined the tariff by considering all the aspects, as the solar power plant with the BESS is not yet implemented in the state of Karnataka. This determined tariff is for the Distribution licensees for calling tender by considering the following operational and financial parameters.

Assumptions for Financial parameters	
Cost/MW- Rs. Lakhs	563.00
Debt: Equity	70:30:00
Debt-Rs. Lakhs	394.1
Interest charges on Debt-%	10.85%
Debt Repayment in Yrs.	13
CUF	19%
Equity- Rs. lakhs	168.9
ROE-%	14%
Auxiliary consumption for solar	0.25%
O & M expenses in Rs. Lakhs for solar	5.624
O & M Escalation p.a.	5.72%
O & M expenses in Rs. Lakhs for battery	4.34
O & M Escalation p.a.	1.04%
WC interest @11.15% on 2 months bill	11.15
Depreciation @ 5.635% p.a.for first 13yrs	5.635%
WACC	11.795%
Tariff Rs. Per unit	5.66

4. **Service Provider transaction charges for Peer to Peer Solar Energy Transaction through block-chain based platform:**

In the discussion paper, the Commission expressed that it has issued the draft KERC (Implementation of Peer to Peer Solar Energy Transaction through block-chain based platform) Regulations, 2024 and is available on the KERC website, wherein Service Provider transaction charges has to be determined by the Commission where the charges have to be paid to Service Provider after settlement with P2P participants. In this regard, it was also requested that the Service providers and the distribution licensees to provide suggestions and methodology to determine the Service Provider transaction charges.

Commission's Decision:

No stakeholder has submitted any suggestions and methodology to determine the Service Provider transaction charges. Hence, the

Commission is of the view that once KERC (Implementation of Peer to Peer Solar Energy Transaction through block-chain based platform) Regulations, 2024 are finalised, the Commission will issue a separate Order in the matter.

5. Energy Accounting during faulty Meter/ meters not recording:

In the discussion paper the Commission has proposed the guidelines for the billing procedure to be adopted in case of SRTPV meter is not recording/defective.

BESCOM has proposed to consider average of previous one year imported and exported energy respectively.

Commission's Decision:

After considering the suggestion, the Commission has directed to follow the guidelines for the billing procedure to be adopted in case of SRTPV meter is not recording/defective as detailed below:

In case of defective/not recording of net meter/gross meter, the rooftop solar system owner shall report the failure to the distribution licensee in the format prescribed by distribution licensee. The distribution licensee shall undertake necessary action and replace the meter as specified in the Conditions of Supply of Electricity of Distribution Licensees (CoS) and amendments thereof.

During the above period, the distribution licensee shall calculate the energy generated on the basis of SRTPV installed capacity for extending the solar energy generation benefits by considering 19% CUF or if available, analyse historical energy generation/consumption

data/excess energy exported to the grid, trends and patterns in energy generation to estimate current energy generation levels.

Provided such meter shall be replaced within the prescribed time period as mandated under Conditions of Supply of Electricity of Distribution Licensees (CoS)as amended from time to time.

6. **Proposal for implementation of solar panels on roof of the building and on the ground upto the sanctioned load limit within the premises:**

The Commission in the discussion paper had proposed to allow the SRTPV plants implemented on rooftop and ground within the sanctioned load limit, as SRTPV plants and tariff will be as per KW scale. The stakeholders have submitted their views/comments/suggestions as detailed below:

KREA has suggested that the provision to setup Solar for rooftop on ground without fencing and access to be restricted.

Joseph, Solar Evangelist & prosumer has suggested to allow to install roof top facades, open ground, car-ports & water-bodies within the same premises.

BESCOM has suggested to allow installation of Solar Panels on the ground subject to the condition that the consumer shall not reduce the sanctioned load after commissioning of the Solar RTPV plants else the consumer shall limit the Solar capacity upto the reduced capacity of the sanctioned load.

Commission's Decision:

The Commission notes the views, suggestions and comments from the stakeholder for allowing solar rooftop systems connected to ground-

mounted solar plants within the premises can offer several advantages, such as improved energy efficiency and better utilization of space. However, it also comes with certain disadvantages as it may increase the Infrastructure Costs, Coordination and Control Issues, Technical and Safety Concerns. It may also introduce complexities in management of the plant. Hence, the Commission decides to not to allow the SRTPV plants implemented on rooftop and ground within the sanctioned load limit.

7. Third party investments models:

The Commission in the discussion paper had proposed to allow net metering arrangements/Gross metering arrangements for SRTPV consumers on third party investment mode.

The stakeholders have submitted their views/suggestions/comments as detailed below:

KREA has suggested that this can bring in significant investments and capacity addition in the state. While the commission has allowed third party investments, it is not clear about which of the models of the earlier order is allowed. The tariff for excess energy exported in the third-party investment model is also not determined. It has requested the commission to allow Third Party Investment model by determining tariff for the Excess Exported Energy.

Joseph, Solar Evangelist & prosumer has suggested to allow Solar PV Panels to be installed by third-party investments for Net-metering.

Solispark Energy Pvt Ltd suggested to allow for Triparty Escrow Agreement between ESCOM, Energy Producer and Consumer for Solar Energy under Net Metering under third party investment mode.

BESCOM has proposed for applicability of Cross subsidy charges and Surcharges for net-metering arrangement under third party investment mode.

Vineeti Technologies has suggested that in order to promote installations, under third party models, Net metering should be allowed for all type of consumers (Residential, Industrial, Commercial, Educational institutions, hospitals).

Powergate Energy has suggested that Third Party investment should be allowed for Solar capacities over 500 kW.

Commission's Decision:

The Commission vide its order dated 09.12.2019 had allowed Third Party Investment Model where, third party investor/Developer invests capital to install a rooftop solar plant on the rooftop of a consumer and owns and operates the plant, for a mutually agreed period. The following metering schemes were approved by the Commission for implementing the third party investment scheme:

1. Net metering or Gross metering shall be allowed for all the Low Tension (LT) Domestic(residential) consumers.
2. For all the other Low Tension (LT) & High Tension (HT) categories of consumers, only gross metering shall be allowed.

The Commission after hearing the public and taking note of the views/suggestions/comments from the stakeholders, decides to allow

Net metering or Gross metering to all consumers irrespective of type of investment.

In respect of Net metering, if the consumer does not use the entire energy generated from the SRTPV plants, the surplus energy shall be allowed to be injected into the distribution network for which, the registered consumer and the Distribution Licensees shall enter into a Power Purchase Agreement(PPA) in the standard format approved by the Commission, at the generic tariff, prevailing at the time of commissioning of the project. In case the consumer consumes energy in excess of the energy generated from the SRTPV plants. the net energy consumed over and above the energy generated from SRTPV plants shall be billed by the Distribution Licensee and shall be paid by the consumer to the Distribution Licensee, as per the prevailing retail supply tariff.

8. **Implementation the SRTPV plants on their rooftops of the building and also on the roof of the carport:**

The Commission in its Order dated 01.06.2023, has allowed Non-Residential consumers such as Educational Institutes, Hospitals, IT parks, Industries to implement the SRTPV plants on their rooftops of the building and also on the roof of the carport, duly limiting the capacity of the SRTPV plant to the sanctioned load of the consumer.

Commission's Decision:

Many Consumers have requested the Commission to allow to Implement the SRTPV plants on their rooftops of the building and also on the roof of the carport to all Non-Residential consumers. The Commission

notes that allowing this to Educational Institutes, Hospitals, IT parks, Industries will only make discrimination to other non-residential consumers and hence decides to allow to all non-residential consumers including Apartment Owners Associations to implement the SRTPV plants on their rooftops of the building and also on the roof of the carport.

9. **Facilities for submission of online application/time lines for 1kW to 150kW and 1kW to upto sanctioned load, for implementation of SRTPV:**

Earlier the Commission had approved for submission of online application for1kW to 10kW for implementation of SRTPV. For enabling easy process of application, the Commission proposes to allow for submission of online application/timelines for1kW to 150kW and 1kW to upto sanctioned load for implementation of SRTPV as detailed below:

Activity	Responsibility	Timeline
For 1kW-150kW		
Submission of Application which includes PPA. No separate PPA is required to be executed. The submission of application is deemed to be the approval to commence the work.	Consumer/ Distribution Licensee	Zero Date
Directions: Distribution Licensees are directed to provide facilities for submission of online application. The PPA and letter of approval to execute the work shall form part of the application. The application format shall be submitted to the Commission for approval within 7 days, from the date of this Order. The consumer will upload the work completion report within the timelines.		
Online uploading of Work Completion Report by the Consumer.	Consumer	150 (one hundred and fifty) days from the date of uploading/ submission of application.
Inspection by Distribution Licensee officials for commissioning the project, after receipt of work completion report from the consumer.	Distribution Licensee	Within 5 (five) working days from the receipt of work completion report, after ensuring satisfactory completion of work. **If the plant is not commissioned within 5 days from the date of work completion report, the concerned officer shall be liable to pay penalty of Rs.1000 per day, till the date of commissioning, to the applicant.** **After five days of work completion, in case the plant is not commissioned, the consumers are entitled to deemed generation benefit.**

Commissioning of Rooftop Solar System in case work completion is delayed by the Consumer	Consumer/ Distribution Licensee	In case of delay of more than six months, the tariff payable will be as per the terms of PPA.
Billing Process	Distribution Licensee	30 days from the date of commissioning of the Solar plant.
For 1kW-upto the sanctioned load (All other consumers excluding 1kW to 150kW consumers)		
Submission of Application online	Consumer	Zero Date
Acknowledgment of Application by distribution licensee (ESCOM)	ESCOM	Within 03 (three) working days from zero date
Site verification / Technical Feasibility & issuance of Letter of Approval / Rejection of application.	ESCOM	Within 10 (ten) working days from the date of acknowledging the application
Execution of PPA (including countersignature by the controlling officer, up to and inclusive of 1000 kW SRTPV projects)	ESCOM & Consumer	Within 5 (five) working days from the date of issuance of Letter of Approval
Submission for approval of the PPA to the ESCOM, less than 1000kW and to the Commission, for more than 1000 kW.	ESCOM	Within 07 (Seven) working days from the date of execution of PPA
Submission of Work Completion Report by the Consumer	Consumer	150 (one hundred and fifty) days from the date of execution of PPA.
Inspection by ESCOM officials for commissioning the project, after receipt of work completion report from the consumer.	ESCOM	Within 5 (five) working days from the receipt of work completion report, after ensuring satisfactory completion of work. **If the plant is not commissioned within 5 days from the date of work completion report, the concerned officer shall be liable to pay penalty of Rs.1000 per day, till the date of commissioning, to the applicant.** **After five days of work completion, in case the plant is not commissioned, the consumers are entitled to deemed generation benefit.**
Commissioning of Rooftop Solar System in case of delay in submission of work completion report by the consumer.	Consumer/ ESCOM	In case of delay of more than 6 months, the tariff payable will be as per the terms of PPA.
Billing Process	ESCOM	30 days from the date of commissioning of the Solar plant.

10. Removal of capacity restriction of 2000kW:

The Commission in the discussion paper had proposed to remove the capacity restriction of 2000kW for installing the SRTPV plant by the consumer and to allow them to install the plant upto their sanctioned load.

Commission's Decision:

The Commission notes that removing capacity restrictions align with the objective of reaching the national renewable energy targets, demonstrating a commitment to increasing the renewable energy capacity. By focusing on these advantages and promotional strategies, the change can drive significant growth in solar energy adoption, contributing to a sustainable and energy-secure future. Hence, the Commission decides to remove the capacity restriction of 2000kW for installing the SRTPV plant and to allow the consumers to install the plant upto their sanctioned load.

For above 2000kW capacity, the SRTPV installations shall be connected to the system as specified by the KERC in the Conditions of Supply of Electricity of Distribution Licensees (COS).

11. **Tariff and other operational procedures applicable in respect of Multiple / combined SRTPV installations in a single premise.**

The Commission in the Order dated 15.09.2017 has allowed installation of multiple SRTPV units or a single SRTPV unit with the combined installed capacity in a premise not exceeding the total sanctioned load of all the consumers in that premises at a tariff of 90% of the tariff as determined by the Commission. And also in the Order dated 01.06.2023 the Commission had allowed net metering arrangement for the multiple registered consumers/single registered consumer in the same premises having an existing SRTPV plant and willing to enhance the capacity of the plant within the sanctioned load or increase the sanctioned load to enhance the capacity of SRTPV plant, by executing a separate PPA

and connected to the same load. The tariff for the enhanced capacity will be the prevailing tariff as on the date of execution of the second PPA. The billing arrangement will be on prorata basis with reference to the generated energy and tariff as per the respective PPAs.

The stakeholders and the Consumers have approached the Commission to issue clarification on the Oder dated 15.09.2017 in a table form to understand the metering arrangements for the consumers.

The table shall be read with Order dated 15.09.2017 and 01.06.2023

Clause number as per the Order dated 15.09.2017	Registered Consumer	Details of SRTPV units		Metering Arrangements(Net/Gross)
i	Single or multiple registered consumer	No existing SRTPV unit	Wants to install multiple SRTPV units	Net
ii	Registered consumer with multiple installations	No existing SRTPV unit	Wants to install Single SRTPV unit	Gross
iii	Multiple Registered consumer with multiple installations	No existing SRTPV unit	Wants to install Single SRTPV unit.	Gross
iv	Multiple Registered consumer with multiple installations	Having existing SRTPV unit of a single consumer	Wants to install multiple SRTPV units	Net
v	Multiple Registered consumer with multiple installations	Having existing SRTPV unit of a single consumer	Wants to install additional SRTPV unit	Gross

The Commission has also decided to allow to the Single or multiple registered consumers to opt for installing SRTPV plant/plants with respect to each RR no separately, under net metering or gross metering as per the Commission's Order dated 19.09.2016.

xvi) The summary of the parameters for determining the Tariff is as under:

a. MW scale Solar Power Projects (Ground mounted):

Parameters for Megawatt scale solar projects	
Cost/MW- Rs. Lakhs	323
Useful life of the plant in years	25
Debt: Equity Ratio	70:30
Debt-Rs. Lakhs	226.1
Interest Rate on Debt-%	10.85
Debt Repayment in Yrs.	13
CUF	19%
Equity- Rs. lakhs	96.9
ROE-%	14
Auxiliary consumption	0.25%
O & M expenses in Rs. Lakhs/MW	5.624
O & M Escalation p.a. (%)	5.72
WC interest (two months' receivables)	11.15
Depreciation in %	5.836
Tariff Rs per unit	**3.04**

(b)kW scale SRTPV projects (1kW to upto the sanctioned load and 1kW to 10kW) along with Subsidy tariff for schemes covered under GoI:

Parameters for Kilowatt scale		
Cost/kW in Rs.	1kW to 10 kW – Rs. 40,000 per kW	1kW to upto the sanctioned load kW- Rs.32,300 per kW
Useful life of the plant in years	25	25
Debt: Equity Ratio	70:30	70:30
Debt- in Rs.	28,000	22,610
Interest Rate on Debt-%	10.85	10.85
Debt Repayment in Yrs.	13	13
CUF in %	19	19
Equity- in Rs.	12,000	9,690
ROE-%	14	14
Auxiliary consumption	0.00%	0.00%
O & M expenses in Rs. /kW	748.5	748.5
O & M Escalation p.a. (%)	5.72	5.72
WC interest (one month's receivables) in %	11.15	11.15
Depreciation in %	5.38	5.38
Tariff Rs per unit(without subsidy)	**3.79**	**3.20**
Tariff Rs per unit(with subsidy) for schemes covered under PM Surya Ghar: Muft Bijli Yojana	**For 1 kW up to 2 kW- Rs 2.25per unit**	
	For above 2 kW up to 3 kW – Rs2.43 per unit	-
	For above 3 kW- Rs 2.62 per unit	

Considering the above parameters and norms, the Commission hereby pass the following

ORDER

(i) The determination and approval of the generic tariff is as follows:

a. For grid connected megawatt scale solar power projects the approved benchmark tariff is Rs.3.04 per unit;

b. For grid connected megawatt scale solar power projects with BESS the approved benchmark tariff is Rs.5.66 per unit

c. For grid connected solar Rooftop Photovoltaic projects of 1 kW upto the sanctioned load (excluding domestic 1 kW to 10 kW) the approved tariff is Rs.3.20 per unit, without capital subsidy.

d. For grid connected Solar Rooftop photovoltaic projects of 1 kW to 10 kW for domestic consumers, the approved tariff is Rs. 3.79 per unit, without capital subsidy.

e. For the grid connected Solar Rooftop photovoltaic projects under PM Surya Ghar: Muft Bijli Yojana for the Capacity 1 kW up to 2 kW the approved tariff is Rs. 2.25 per unit, with capital subsidy and for the capacity above 2 kW up to 3 kW, the approved tariff is Rs. 2.43 per unit, with capital subsidy and for above 3kW the approved tariff is Rs. 2.62 per unit, with capital subsidy.

(ii) The above tariff shall be applicable to all the new solar power projects for which PPAs are entered into on or after 01.04.2024.

(iii) The tenure of the PPA, shall be for twenty-five (25) years;

(iv) All the other issues not covered under this order, shall be governed by the respective Regulations and Orders issued by the Commission and PPAs/ other Agreements executed with the parties; and

(v) This Order shall be in force with effect from 1st of April, 2024 and applicable to the control period FY 25.

This Order is signed and issued by the Karnataka Electricity Regulatory Commission on this 11th day of June,2024

(P. RAVI KUMAR)
CHAIRMAN

(H.K. JAGADEESH)
MEMBER (LEGAL)

(JAWAID AKHTAR)
MEMBER

Annexure

List of stakeholders who have submitted their written Comments/Suggestions:

Sl no	List of stakeholders who have submitted their written Comments/Suggestions
1	Karnataka renewable Energy Association (KREA)
2	Kanara Chamber of commerce & Industry (KCCI)
3	Joseph, Solar Evangelist & prosumer
4	Big Bags International Pvt Ltd.,
5	Solisp Ark Energy Pvt Ltd.,
6	Power Corporation Karnataka Limited BESCOM
7	Vineeti Technologies

Participants made oral submission in the Public Hearing held on 30th April 2024

Sl. No.	Name and Designation
1	Raghunandan, President-KREA
2	C.S. Gopinath, Secretary-KREA / GTSS Infra
3	M.T. Kesari, Powergate Energy – Mysuru
4	Ravishankar S, Ampoct
5	Sesha Prasanna, Espee Solar
6	Lakshminarasimaiah, Beestone Solar
7	Harsha Kuntur, Ecoscoh Solar
8	Sunil Mysore, Hinren Engineering
9	Pruthvik, Solispark Energy
10	Madhur Shetty, Power Rays
11	Satish Chandra, KPTCL
12	BESCOM
13	P. Subramnanya Adgis
14	Solar Square
15	ORB Solutions

Participants present in the Public Hearing held on 30th April 2024

Sl. No.	Name and Designation
1	Raghunandan, President-KREA
2	Sesha Prasanna, Espee Solar
3	G. Shashidhar, Espee Solar
4	C.S. Gopinath, Secretary / GTSS
5	Sharath, Treasurer-KREA/IRO
6	M T Kesari, Powergate Energy Mysuru
7	Lata Patil, AGM-KREDL
8	Murthy Sobanalli, SMM Bot
9	B Venkatesh, GM-DSM, BESCOM
10	M Lohith, DGM-DSM, BESCOM
11	K Rajeshwari, AGM-DSM, BESCOM
12	Soundarya P S, Consumer
13	Raveendra H K, KREDL
14	Srinivas Reddy, RNS Solar Power
15	Rajeev, KVPR Infra
16	Tabish Attar, Tata Power
17	K Gururaja, Diwakar Soltek Pvt. Ltd.,
18	N Sathish Chandra, SEE, RA
19	Ravishankar S, MD, Ampoct
20	Amit S Shenoy, MD, Siddvin Enterprises
21	Kiran S, Tata Power
22	Lakshminarasimahan K, Advisor, Beestone Solar
23	Paresh N R, ORB Energy Pvt. Ltd.,
24	Harsha Kuntur, EscScoh Solar Pvt. Ltd.,
25	Giridhar, EMM
26	Sunil Mysuru, Hinren Engineering
27	Vedajna V, Sr. GM
28	Pruthvik N H, Solispark
29	Ranveer, Solispark
30	Dhatri Joshi, BESCOM
31	Madhur Shetty, Power Rays
32	Prashanth B, Regional Head
33	Suhas N, Helios Solar

34	Sunil Kumar, Helios Solar
35	Sagar R K, Tech Sales Engineer
36	Dhaval S M, Solar Square Energy
37	Sachin Z, Solar Square Energy
38	Dundappa, Urja Solutions
39	P Subrahmanya Adiks, Apsaram Technologies
40	Anup, Watt Golf (MD)
41	Pradeep K Shetty, Canara Solar System
42	Sourya Teja, KVPR Info
43	Karthik GM, Tata Power
44	Manjunatha, Navitis Solar
45	Gopal, Navitis Solar