

**JOINT ELECTRICITY REGULATORY COMMISSION  
FOR THE STATE OF GOA AND UNION TERRITORIES  
GURUGRAM**

**CORAM**

Shri Alok Tandon (Chairperson)  
Smt. Jyoti Prasad, Member (Law)

**Petition No. 104/2023**

**Date of Hearing: 21.06.2023**

**Date of Order: 23.08.2023**

**In the matter of:**

Petition filed under Section 86(1)(b) & 86(1)(e) of the Electricity Act, 2003 for Determination of Levelized Generic Tariff in terms of Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyaan (PM-KUSUM) Scheme for setting up of grid connected solar power plants of individual capacity ranging between 500 kW to 2 MW in the State of Goa under Component–A of the scheme for sale of solar power generated thereof to the Electricity Department Goa in the State of Goa.

**And in the matter of:**

Electricity Department,  
Government of Goa,  
Vidyut Bhavan,  
Panaji, Goa

.....**Petitioner**

**Present for the Petitioner**

1. Sh. Stephen Fernandes, Chief Engineer, Electricity Department, Govt. of Goa.
2. Sh. Rajeev Naik, Executive Engineer, Electricity Department, Govt. of Goa.
3. Sh. Inian Sri Malan, Consultant, Electricity Department, Govt. of Goa.

## ORDER

1. The Commission heard the petitioner at length.
2. The petitioner's submissions in brief are as under:
  - (a) That the Ministry of New and Renewable Energy (MNRE) has launched the guidelines for implementation of PM-KUSUM Scheme on 22<sup>nd</sup> July, 2019, which covers the following components:
    - (i) Component A: Setting up of 10,000 MW of Decentralized Ground Mounted Grid Connected Solar Power plants of individual plant size up to 2 MW;
    - (ii) Component-B: Installation of 17.50 Lakh Standalone Solar Powered Agriculture Pumps of individual capacity up to 7.5 HP; and
    - (iii) Component-C: Solarisation of 10 Lakh Grid-Connected Agriculture Pumps of individual pump capacity up to 7.5 HP.
  - (b) That MNRE has designated Goa Energy Development Agency (GEDA) as the State Implementing Agency (SIA) vide letter No: F.No. 32/54/2018 - SPV Division, dated 05/03/2021 for implementation of Component A of PM-KUSUM Scheme in the state of Goa.
  - (c) That the GEDA is responsible for coordinating with DISCOMS and farmers for implementation of the scheme and will ensure publicity of the scheme among farmers and create awareness through advertisements. Further, GEDA will monitor the execution of setting up the Solar Power Plant and the Grid connectivity aspect will be looked after by the Electricity Department.
  - (d) That for the State of Goa, MNRE vide letter No: 32/54/2018 - SPV Division, dated 05/03/2021 has given the target of hundred (50) MW for FY 2022-23 for installation of Decentralized Renewable Energy Power Plant (REPP) of capacity five hundred (500) kW to two (2) MW. The REPP under the scheme would be implemented primarily on barren land. Further, the MNRE has allocated new capacity of 100 MW for the year 2022-23 vide Order No. 32/54/2018-SPV Division-Part (1) dated 28.06.2023. So, the target for Goa is to install 100 MW of Solar Capacity through PM KUSUM Scheme (Component-A).
  - (e) That such REPP will be setup by individual farmers/group of farmers/ cooperatives/ panchayats/ Farmer Producer Organizations (FPO)/ Water User associations (WUA) or project or project developer hereinafter called Renewable Power Generator (RPG).
  - (f) That REPP will preferably be installed within five (5) km radius of the sub-stations identified by the DISCOMs in order to avoid high cost of sub-transmission lines and to reduce transmission losses. The identified list of sub-stations will be notified on the website of SIA/DISCOM.

- (g) That in case the farmers/ group of farmers/ cooperatives/ panchayats/ FPO/ WUA etc are not able to arrange equity required for setting up the REPP, they can opt for developing the REPP through project developer.
- (h) That in such a case, the landowner will get lease rent as mutually agreed between the parties. The lease rent may be in terms of Rs per year per acre of land or in terms of Rs per unit energy generated.
- (i) That GEDA (SIA) had floated tender for Expression of interest (EOI) on 5<sup>th</sup> September 2021 inviting applications from farmers/land owners to setup solar plants in their land under PM-KUSUM scheme. A total of 26 farmers/land owners submitted their applications. Feasibility study has been carried out in respect of 24 nos. of farmers for a total estimated capacity of 33.67 MWp. Two applicants did not further respond for site inspection.
- (j) That for successful implementation of the PM-KUSUM scheme, a feed-in-tariff needs to be determined. Hence, the Discom of Goa i.e., the Electricity Department Goa (EDG) (hereinafter referred to as “Petitioner or “EDG”) is filing a petition for the determination of Feed-in-tariff for sale of power from decentralized Solar Power Plants having capacity of five hundred (500) kW to two (2) MW to be set up under Component-A of the PM KUSUM Scheme in the State of Goa based on the norms specified in the JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019.
- (k) That JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 provides norms including Capital Cost, CUF, Auxiliary Energy consumption, O&M expenses shall be determined on the basis of prevalent market trend. The broad guidelines of the relevant regulations have been perused by the Petitioner, and the same are reproduced below:

### **Project Specific Principles**

1. Useful Life of Renewable Energy Power Plant (REPP):
  - a. Life of a REPP including evacuation system till substation is considered as 25 years, as per JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019.
2. Capacity Utilization Factor:
  - a. The Capacity utilisation factor for Solar PV project is considered as 18% in accordance with the provisions of JERC RE Tariff Regulations, 2019.
3. Auxiliary Consumption
  - a. Regarding Auxiliary Power Consumption Regulation 38 of JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 specifies as follows:

*“38.1 The auxiliary consumption factor shall be 0.25% of the gross generation: Provided that the Commission may deviate from the above norm*

*in case of project specific tariff determination in accordance with Regulation 9.”*

- b. Accordingly, the auxiliary consumption factor is considered as per the normative i.e., 0.25% of the gross generation.

4. Debt Equity Ratio:

- a. Based on the JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 Debt Equity ratio is considered as 70:30.

5. Capital Cost:

- a. The capital cost of a solar PV power project primarily consists of the cost of Photo Voltaic modules, balance of plant equipment, power conditioning equipment, taxes and duties, cost of inter-connection, civil works, land including leasehold lands and erection & commissioning.
- b. The normative capital cost for Solar PV projects as per the Regulations is Rs 5.00 Crore/MW for FY 2019-20 but considering the prevailing market scenario the Capital cost is considered as Rs 4.10 Crore/MW.
- c. On analysis of the Order of most of the States, the Capital Cost of the project is considered at the range of Rs. 3.35 Crores/MW to Rs. 3.60 Crores/MW. However, most of the Order was released during the years 2020 and 2021. Considering present scenario, the Cost of the Panel has increased due to import duty. Further levy of Basic Custom Duty (BCD) has increased the cost of Panel in the market. Hence, the Capital Cost is considered as Rs 4.10 Crore/MW.
- d. The Breakup of the Component-wise Capital Cost of Rs. 4.1 Crore for a 1 MWp Solar Plant:

Sr. No.	Particulars	Cost (in Cr.)
1	Solar Photovoltaic Module	2.40
2	Inverter	0.20
3	Module Mounting Structure	0.30
4	Building & Civil Work	0.40
5	Balance of Electrical System including Metering Bay	0.40
6	Installation, Land preparation and other activities	0.40
7	Total	4.10

6. Interest on Loan:

- a. Interest Rates have considered as per provisions of the JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019.
- b. The regulations 15.2 provides that interest rate shall be SBI MCLR (One-year tenor) prevalent during the last available six months + 200 basis points.

Interest Rate		
1 Year MCLR (15.09.2022)		7.72%
Interest on Working Capital	300 Basis Points equivalent to 3%	3%
Interest on Loan	200 Basis Points equivalent to 2%	2%

c. SBI MCLR working:

SBI MCLR Working					
From	To	Base MCLR %	Days	Equivalent to weightage	Average
15-06-2022	15-07-2022	7.40%	31	2.29	7.72%
15-07-2022	15-08-2022	7.50%	32	2.40	
15-08-2022	15-09-2022	7.70%	32	2.46	
15-09-2022	15-10-2022	7.70%	31	2.39	
15-10-2022	15-11-2022	7.95%	32	2.54	
15-11-2022	15-12-2022	8.05%	31	2.50	
<b>Avg. SBI MCLR</b>		<b>7.72%</b>	<b>189</b>	<b>14.58</b>	

- d. Hence, the interest on long term loan is considered as 9.72% (7.72% + 2.00%) per annum.
- e. The Tenure of the loan is considered to be 12 years as per the Regulations 15.1 of the JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019.

7. Return on Equity:

- a. The value base for the equity is considered as 30% of the capital cost and return on equity is considered as 14% in accordance with the provisions of JERC RE Tariff Regulations, 2019.
- b. Further the Return on Equity is to be grossed up by prevailing Minimum Alternate Tax (MAT) rate as on 1st April of available year at the time of determination of tariff for the entire useful life of the project. The Latest available MAT rate is 15% plus applicable surcharge (12%) and Health and Education Cess (4%).
- c. Latest Corporate Tax applicable is 25% for domestic company, plus applicable surcharge (12%) and Health and Education Cess (4%).

ROE Will Gross up with MAT			
Details	FORMULA	INCOME TAX	MAT
Corporate Tax	A	25.00%	15.00%
Surcharge @12%	B=A*12%	3.00%	1.80%

ROE Will Gross up with MAT			
Details	FORMULA	INCOME TAX	MAT
Corporate Tax + Surcharge	$C=A+B$	28.00%	16.80%
Health & Education Cess @ 4%	$D=C*4\%$	1.12%	0.67%
Total Tax Rate	$E=C+D$	29.12%	17.47%

- d. Accordingly, the resultant Return on Equity computed is 16.96% per annum for the first 10 years and 19.75% per annum 11th years onwards.
8. Operation and Maintenance Expenses and escalation:
- The Operation and Maintenance expenses comprise of manpower expenses, insurance expenses, spares and repairs, consumables, and other expenses. Moreover, the expense of manpower keeps on increasing and O&M of a REPP is more of services related work.
  - As per JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 the O&M Cost is 1.5% of the Capital Cost and is Rs.0.0675 Crores i.e., Rs. 6.75 Lakh/MW. However, on consideration of the other states Punjab, Telangana the O&M Cost considered is Rs. 0.045 Crores/MW i.e., Rs.4.50 Lakh/MW.
  - As per JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019, average WPI and CPI escalation rate for FY 2019-20 to FY 2021-22 is considered. Further, to calculate the precise impact, escalation rate has been calculated based on three years average CPI and WPI indices by considering the weightage of 40% CPI and 60% WPI. The escalation arrived is of 5.64% per annum on O&M expense.
  - The normative O&M expenses is considered as per the JERC Regulations for the first year of the Control Period as 1.5% of Capital Cost. The normative O&M Expenses escalation is arrived at 5.64% and the same is considered for O&M escalation factor Y-o-Y for 25 years.
9. Depreciation:
- As per the JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019, the salvage value if the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.
  - Hence, 70% of the capital cost of asset is depreciated up to the loan tenure and 20% of the capital cost of asset is depreciated over the remaining Useful life of the Project.
  - So, Depreciation up to the loan tenure is considered as 5.83% per annum and depreciation after the loan repayment tenure is considered as 1.54% per annum.

10. Interest on Working Capital:

- a. As per the JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019, “State Bank of India MCLR (One-Year Tenor) prevalent during the last available six months + 300 basis points”
- b. As mentioned in the table above under the section of Interest on Loan, Average of SBI MCLR (one-year tenor) of last six month (from July 2022 to December 2022) is 7.72%.
- c. So, the computation of Feed-in-tariff, the Petition has considered the Interest on working capital as 10.72% (7.72% + 3.00%) per annum.

11. Working Capital:

- a. As per JERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 the working capital is comprised of following components:

Assumption Head	Sub-head	Sub-head (2)	Unit	As per Regulations	EDG Assumptions
Working Capital	O&M Expenses	% of O&M Expenses	Month	1	1
	Maintenance Spares		%	15% of O&M Expenses	15% of O&M Expenses
	Receivables		Month of Energy Charges for sale of electricity, Calculative on the normative CUF	2	2
	Interest on Working Capital		%	10.72%	10.72%

12. Discount Factor:

- a. Regulations 10 (2) of the CERC specify methodology to calculate discount factor for the purpose of levelized tariff computation as under:
- b. Accordingly, the discount factor considered for this exercise is equal to the post tax weighted average cost of capital based on normative debt: equity ratio (70:30) proposed in the Regulations.
- c. Accordingly, the discount factor considered for this exercise is equal to the post tax weighted average cost of capital based on normative debt: equity ratio (70:30) proposed in the Regulations. Considering the normative debt equity ratio and weighted average of the post-tax rates for debt and equity

component, the discount factor is calculated. Interest Rate considered for the loan component (i.e., 70 %) of capital cost is 9.72 %. For equity component (i.e., 30 %) rate of Return on Equity (ROE) is considered at post tax rate of 14 %. The discount factor derived by this method for all technologies is 9.02 %  $(9.72\% \times 0.70 \times (1 - 29.12\%))$   $(14.0\% \times 0.30)$  (income tax rate 29.12% (25% IT rate 12% surcharge + 4% Health and Education cess)).

13. The summary of various parameters and assumptions considered by the Petitioner for computing the tariff is as given below:

Sl. No .	Assumption Head	Sub-head (1)	Sub-head (2)	Unit	As per JERC RE Tariff Regulations , 2019	EDG Assumption	Basis for Assumption
1	Power Generation	Capacity	Installed Power Generation	MW	1	1	
			Degradation Factor	%	Not Available	0.50%	To be considered once in 3 years
			Capacity Utilization Factor (CUF)	%	18%	18%	Normative
			Useful Life	Years	25	25	Normative
			Auxiliary Consumption	%	0.25%	0.25%	Normative
2	Project Cost	Capital Cost/MW	Normative Capital Cost	Rs. Crore	5	4.1	As per the Prevailing market scenario
			Capital Cost	Rs. Crore /MW	5	4.1	
			Capital Subsidy, if any	Rs. Crore		no subsidy component defined in the Guidelines of the PM KUSUM Component-A. So, the same is not applicable.	
			Net Capital Cost	Rs. Crore	5	4.1	
3	Financial	Debt	Tariff Period	Years	25	25	Normative



Sl. No .	Assumption Head	Sub-head (1)	Sub-head (2)	Unit	As per JERC RE Tariff Regulations , 2019	EDG Assumption	Basis for Assumption
	Assumption	Equity	Debt	%	70%	70%	Normative
			Equity	%	30%	30%	Normative
		Debt Component	Total debt amount	Rs. Crore	3.5	2.87	Normative
			Total equity amount	Rs. Crore	1.5	1.23	Normative
			Loan Amount	Rs. Crore	3.5	2.87	Normative
			Moratorium Period	Years	0	0	
			Repayment Period (incl moratorium )	Years	12	12	Normative
			Interest Rate	%	9.72%	9.72%	Normative
		Equity Component	Equity Amount	Rs. Crore	1.5	1.23	Normative
			RoE for 1st 10 years	% p.a.	14%	14%	Normative
			RoE 11 <sup>th</sup> year onwards	% p.a.	14%	14%	Normative
			Discount Rate	%	9.02%	9.02%	Normative (CERC)
		Others	MAT Rate (for 10 years)	%	17.47%	17.47%	(MAT-15%, surcharge @12% and Health and Education Cess @4%)
			Income Tax	%	29.12%	29.12%	Normative
		Depreciation	Dep Rate for 1st 12 years	%	5.83%	5.83%	Normative
			Dep rate 13th year onwards	%	1.54%	1.54%	Normative
		4	O& M Expenses	Normative O&M Expenses p.a.		Rs. Crore	0.075

Sl. No .	Assumption Head	Sub-head (1)	Sub-head (2)	Unit	As per JERC RE Tariff Regulations , 2019	EDG Assumption	Basis for Assumption
		O&M Expenses p.a.		Rs. Crore	0.075	0.045	Normative
		Escalation Factor		%	5.64%	5.64%	Normative
5	Working Capital	O&M Expenses	% of O&M Expenses	Month	1	1	Normative
		Maintenance Spares		%	15%	15%	Normative
		Receivables		Month	2	2	Normative
		Interest on WC		%	10.72%	10.72%	Normative

(l) That EDG is proposing a Levelized fixed Cost tariff of Rs. 3.97/kWh. Considering the, Accelerated Depreciation benefit of Rs. 0.48/kWh, the Levelized fixed Cost tariff with Accelerated Depreciation works out to be Rs.3.48/kWh.

3. The Commission has considered the submissions of the Petitioner. The Commission has also examined the petition along with the additional information placed on record by the Petitioner. Further, the Commission has examined the relevant provisions of the Electricity Act, 2003, Rules, and Regulations made there under.
4. The Commission is relying on Section 62 of the Electricity Act, 2003 for the determination of Generic levelized tariff which is as under.

*“Section 62. (Determination of tariff): --- (1) The Appropriate Commission shall determine the tariff in accordance with the provisions of this Act for –*

*(a) supply of electricity by a generating company to a distribution licensee:*

*Provided that the Appropriate Commission may, in case of shortage of supply of electricity, fix the minimum and maximum ceiling of tariff for sale or purchase of electricity in pursuance of an agreement, entered into between a generating company and a licensee or between licensees, for a period not exceeding one year to ensure reasonable prices of electricity;*

*(b) transmission of electricity;*

*(c) wheeling of electricity;*

*(d) retail sale of electricity:*

*Provided that in case of distribution of electricity in the same area by two or more distribution licensees, the Appropriate Commission may, for promoting competition among distribution licensees, fix only maximum ceiling of tariff for retail sale of electricity.*

*(2) The Appropriate Commission may require a licensee or a generating company to furnish separate details, as may be specified in respect of generation, transmission and distribution for determination of tariff.  
.....”*

5. The Commission in accordance with the JERC (Terms and Conditions for Tariffdetermination from Renewable Energy Sources) Regulations, 2019 (hereinafter referred to as “RE Tariff Regulations, 2019”) as extended vide notification dated 3<sup>rd</sup> July, 2023 has computed the individual elements constituting the Generic levelized tariff based on the submissions made by the Petitioner, prevailing inflation factors (WPI & CPI) and market trends etc.

**a. Useful Life of Renewable Energy Power Plant (REPP):** The Commission has considered the useful life for SPV based projects as per Regulation 2.4 (44) of the RE Tariff Regulations, 2019 i.e., 25 Years from the commercial date of operation (COD).

**b. Capital Cost:** The Petitioner has submitted that no capital subsidy is granted under Component-A of the PM KUSUM Scheme to ED, Goa. Accordingly, the Commission has not considered any capital subsidy towards the Capital cost, and has taken Rs. 4.10 Crore/MW as the Capital cost as per the Petitioner’s submission.

**c. Debt Equity Ratio:** In accordance with Regulation 14.1 of RE Tariff Regulations, 2019, the Commission has computed the debt and equity components for Solar PV Power Projects as Rs. 2.87 Crore per MW and Rs. 1.23 Crore per MW (i.e., 70% and 30% of the Capital Cost), respectively.

**d. Capacity Utilization Factor (CUF):** The Commission has considered CUF for Solar PV Power Projects as per Regulation 36 of the RE Tariff Regulations, 2019 i.e., 18%.

**e. Auxiliary Consumption:** The Commission has considered the Auxiliary Power Consumption as per Regulation 38 of the RE Tariff Regulations, 2019 i.e., 0.25%.

**f. Depreciation:** Regulation 16.3 of the RE Tariff Regulations, 2019 specifies as follows:

*“16.3 Depreciation rate of 5.83% per annum shall be considered for first 12 years and remaining depreciation shall be spread during remaining useful life of the RE projects considering the salvage value of the project as 10% of project cost. “*

In view of the above, the depreciation for Solar PV Power Projects has been worked out at the rate of 5.83% for the first 12 years and at the rate of 1.54% thereafter for the remaining Useful Life of 13 years.

**g. Return on Equity (RoE):** Regulation 17.2 of the RE Tariff Regulations, 2019 specifies as follows:

*“17.2 The normative Return on Equity shall be:*

- a) 14% for Renewable Energy Projects in Mainland areas;*
- b) 16% for Renewable Energy Projects in Island areas;*

*to be grossed up by prevailing Minimum Alternate Tax (MAT) rate as on 1st April of available year at the time of determination of tariff for the entire useful life of the project.”*

The Effective MAT rate as on 1<sup>st</sup> April of 2023 is 17.47%, as shown in the Table below:

Particulars	FORMULA	INCOME TAX	MAT
Corporate Tax	A	25.00%	15.00%
Surcharge @12%	B=A*12%	3.00%	1.80%
Corporate Tax + Surcharge	C=A+B	28.00%	16.80%
Health & Education Cess @ 4%	D=C*4%	1.12%	0.67%
Effective Tax Rate	E=C+D	29.12%	17.47%

Accordingly, the Commission has computed the RoE by grossing up the normative RoE with the effective MAT (rate of 17.47%) which comes out to be 16.96% i.e.  $[14\%/(100-17.47\%)]$ .

- h. Interest on Loan:** The commission has noted that for the purpose of computation of tariff for Renewable Energy Projects in Mainland Areas, the Petitioner has considered the normative interest rate as mentioned in the Table below:

Table: Normative Interest Rate

Interest Rate		
1 Year MCLR (15.09.2022)		7.72%
Interest on Working Capital	300 Basis Points equivalent to 3%	3%
Interest on Loan	200 Basis Points equivalent to 2%	2%

Further, the Commission has also noted that the Petitioner has taken the average of June 2022 to December 2022 for the computation of Avg. SBI MCLR as shown below and accordingly computed the interest on long term loan as 9.72% (7.72% + 2.00%) per annum.

SBI MCLR Working					
From	To	Base MCLR %	Days	Equivalent to weightage	Average
15-06-2022	15-07-2022	7.40%	31	2.29	7.72%
15-07-2022	15-08-2022	7.50%	32	2.40	
15-08-2022	15-09-2022	7.70%	32	2.46	
15-09-2022	15-10-2022	7.70%	31	2.39	
15-10-2022	15-11-2022	7.95%	32	2.54	

15-11-2022	15-12-2022	8.05%	31	2.50	
<b>Avg. SBI MCLR</b>		<b>7.72%</b>	<b>189</b>	<b>14.58</b>	

Regulation 15.1 of the RE tariff Regulations, 2019 stipulates as follows:

*“Loan Tenure*

*For the purpose of determination of tariff, a loan tenure of 12 years shall be considered”.*

Further, as per Regulation 15.2 (c) of the RE tariff Regulations, 2019 the Interest rate for mainland is computed by considering SBI MCLR (One-year tenor) prevalent during the last available six months + 200 basis points.

As the Petition has been filed in January 2023, the Commission has considered the average of July 2022 to January 2023 for the computation of Avg. SBI MCLR as shown below and accordingly computed the interest on long term loan as 9.87% (7.87% + 2.00%) per annum.

<b>SBI MCLR Working</b>					
<b>From</b>	<b>To</b>	<b>Base MCLR %</b>	<b>Days</b>	<b>Equivalent to weightage</b>	<b>Average</b>
15-07-2022	15-08-2022	7.50%	31	2.33	<b>7.87%</b>
15-08-2022	15-09-2022	7.70%	31	2.39	
15-09-2022	15-10-2022	7.70%	30	2.31	
15-10-2022	15-11-2022	7.95%	31	2.46	
15-11-2022	15-12-2022	8.05%	30	2.42	
15-12-2022	15-01-2023	8.30%	31	2.57	
<b>Avg. SBI MCLR</b>		<b>7.87%</b>	<b>184</b>	<b>14.47</b>	

**i. Interest on Working Capital:** Regulation 18.3 of the RE Tariff Regulations, 2019 stipulates as under:

*“18.3 Normative Rate of Interest on Working Capital shall be considered as follows:*

***Normative Working Capital Interest Rate***

<b><i>Particulars</i></b>	<b><i>Interest Rates</i></b>
<i>Mainland</i>	<i>State Bank of India MCLR (One-Year Tenor) prevalent during the last available six months + 300 basis points</i>
<i>Island</i>	<i>State Bank of India MCLR (One-Year Tenor) prevalent during the last available six months + 400 basis points</i>

Since the Avg. SBI MCLR worked out is 7.87%, the Commission has computed the Interest on Working Capital as 10.87% (7.87% + 3.00%) per annum.

- j. Discount Factor:** The Commission has noted that the Petitioner has referred to Regulation 10.2 of the extant CERC Regulations for the calculation of discount factor. However, the Commission has considered JERC RE Tariff Regulations for the computation of the discount factor as the same is applicable under jurisdiction of JERC.

Further, the Commission has also noted that the Petitioner has considered the discount factor equal to the post tax weighted average cost of capital based on normative debt equity ratio (70:30). The Interest rate considered by the Petitioner for the loan component (i.e., 70%) of the capital cost is 9.72%. For Equity component (i.e., 30%) ROE considered by the Petitioner at post tax rate is 14%. Accordingly, the discount factor derived by the Petitioner is 9.02 % i.e.,  $(9.72\% \times 0.70 \times (1 - 29.12\%)) + (14.0\% \times 0.30)$  (income tax rate 29.12% (25% IT rate 12% surcharge + 4% Health and Education cess)).

Regulation 12.2 of the JERC RE Tariff Regulations, 2019 provides as under:

*“12.2 For the purpose of levelized tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered”.*

Accordingly, the Commission has computed the Discount Factor using the formula as provided below:

Discount Factor = (Normative Debt i.e., 70%) × (Interest on Loan i.e., 9.87 % %) × (1-MAT i.e., 17.47%) + (Normative Equity i.e., 30%) × Normative RoE i.e., 14%).

The Discount Factor using the above-cited formula works out to be 9.90%.

- k. Operation & Maintenance Expenses and Escalation:** The Commission has noted that the Petitioner, despite considering the O&M Cost at 1.5% of the Capital Cost which comes to Rs. 6.75 Lakh/MW as per RE Tariff Regulations, 2019, has considered Rs.4.50 Lakh/MW based on O&M cost considered by the other States like Punjab, Telangana.

The Commission has also noted that the Petitioner has considered average WPI and CPI escalation rate for 3 years i.e., FY 2019-20 to FY 2021-22. Further, to calculate the precise impact, escalation rate has been calculated by the Petitioner based on three years average CPI and WPI by considering the weightage of 40% CPI and 60% WPI which is as per the RE Tariff Regulations, 2019. Accordingly, the Petitioner has computed the normative O&M Expenses escalation as 5.64% per annum on Y-o-Y for 25 years.

Regulation 20.3 of the RE Tariff Regulations, 2019 provides the Escalation Rate for O&M Expense as under:

*“20.3 Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2019-20) under these Regulations shall be escalated at average inflation factor of previous three years considering 60% weightage for the actual point to point inflation over Wholesale Price Index numbers as per Office of Economic Advisor, Ministry of Commerce and Industry, Government of India and 40% weightage for the actual Consumer Price Index for Industrial Workers (all India) as per Labour Bureau, Government of India in the previous three years.”*

Further, Regulation 37 of the RE Tariff Regulations, 2019 provides the norms for O&M Expenses as under:

*“37.1 The normative O&M expenses for the first year of the Control Period, i.e., FY 2019-20, shall be:*

- a) 1.5% of Capital Cost for first year, for Solar PV Projects in Mainland Areas;*
- b) 2.0% of Capital Cost for first year, for Solar PV Projects in Island Areas.*

*37.2 The normative O&M expenses for subsequent years shall be derived in accordance with the escalation mechanism specified at Regulation 20.3”.*

Accordingly, the Commission has computed the escalation rate considering the WPI and CPI inflation for FY 2019-20, FY 2020-21 and FY 2021-22 in the ratio of 60:40, which works out to be 5.64%.

- l. Degradation Factor:** The Commission has noted that the Petitioner has considered a Degradation factor of 0.50% once in 3 years for the computation of Generic levelized tariff, however, the RE Tariff Regulations does not specify any provision for the Degradation factor.

The Commission is of the view that the Petitioner’s prayer for the approval of Degradation factor is unwarranted and is legally untenable. Hence disallowed.

- m. Accelerated Depreciation:** The Commission has noted that the Petitioner has proposed a Generic levelized tariff of Rs. 3.97/kWh for 25 years. Further, the Petitioner has considered the Accelerated Depreciation of Rs. 0.48/kWh. Accordingly, upon adjustment of the Accelerated Depreciation of Rs. 0.48/kWh, the Petitioner has proposed a levelized tariff of Rs. 3.48/kWh.

Regulation 24.1 of the RE Tariff Regulations, 2019 provides as under:

*“The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants while determining the tariff under these Regulations:*

*Provided that the following principles shall be considered for ascertaining Income Tax benefit on account of accelerated depreciation, if availed, for the purpose of tariff determination:*

- i Assessment of benefit shall be based on normative Capital Cost, accelerated*

- depreciation rate as per relevant provisions under Income Tax Act and corporate Income Tax rate;*
- ii Capitalization of RE project during second half of the fiscal year;*
- iii Per unit benefit shall be derived on levelized basis at discount factor equivalent to weighted average cost of capital."*

Accordingly, for Projects availing the benefit of accelerated depreciation, the applicable MAT rate of 17.47% (15% Income Tax rate + 12% surcharge + 1.80% Health & Education Cess @ 4%) has been considered by the Commission. As per the Circular dated 7 November, 2016 of the Income Tax Department, the accelerated depreciation rates have been revised to 40% from FY 2017-18. Moreover, additional 20% depreciation in the initial year is proposed to be extended to new assets acquired by Generation Companies vide the amendment to Section 32 (1) (ii)(a) of the Income Tax Act.

Accordingly, the Commission has computed the per unit benefit of Accelerated Depreciation (if availed) as Rs. 0.49/kWh.

- n. Considering the above-mentioned parameters (para 5 of this Order), the Commission has determined the following Generic Levelized Tariff in terms of PM-KUSUM Scheme for setting up of Solar PV power plants of individual capacity ranging between 500 kW to 2 MW in the State of Goa under Component– A of the said scheme for sale of solar power generated thereof to the Electricity Department Goa in the State of Goa. Further, the details of the said computation of Generic Levelized Tariff is enclosed at Annexure-I & Annexure-II.

**Generic Tariff for Solar PV Power Projects (Rs/kWh)**

Tariff Period (Years)	Levelized Tariff (Rs/kWh)	Benefit of Accelerated Depreciation (if availed) (Rs/kWh)	Net Levelized Tariff (upon adjusting the benefit of Accelerated Depreciation, if availed) (Rs/kWh)
25	4.08	0.49	3.59

Ordered accordingly.

Sd/-  
(Jyoti Prasad)  
Member (Law)

Sd/-  
(Alok Tandon)  
Chairperson

Certified True Copy



(S.D. Sharma)  
Secretary (I/c), JERC



**Annexure-I**

**Solar PV – Assumptions and Parameters for Tariff Determination**

Sl. No.	Assumption Head	Sub-head(1)	Sub-head (2)	Unit	Allowed as per JERC Regulations
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor (CUF)	%	18%
			Useful Life	Years	25
			Auxiliary Consumption	%	0.25%
2	Project Cost	Capital Cost/ MW	Capital Cost	Rs. Crore /MW	4.1
			Capital Subsidy, if any	Rs. Crore/MW	NIL
			Net Capital Cost	Rs. Crore/MW	4.1
3	Sources of Fund and Financial Assumption	Debt-Equity	Tariff Period	years	25
			Debt	%	70%
			Equity	%	30%
		Debt Component	Total debt amount	Rs. Crore	2.87
			Total equity amount	Rs. Crore	1.23
			Loan Amount	Rs. Crore	2.87
			Moratorium Period	Years	0
			Repayment Period (incl. moratorium)	Years	12
			Interest Rate	%	9.87%
		Equity Component	Equity Amount	Rs. Crore	1.23
			Normative Return on Equity	% p.a.	14%
			Return on Equity (gross up by MAT)	% p.a.	16.96%
			Discount Rate	%	9.90%
		Others	MAT Rate	%	17.47%
			Income Tax	%	29.12%
Depreciation	Dep Rate for first 12 years	%	5.83%		
	Dep rate 13 <sup>th</sup> year onwards	%	1.54%		
4	O&M Expenses	Normative O&M		Rs. Crore	0.06

		Expenses p.a.			
		O&M Expenses	O&M rate for 1 <sup>st</sup> year	%	1.50%
		Escalation Factor	2 <sup>nd</sup> Year Onwards	%	5.64%
5	Working Capital	O&M Expenses		Months	1
		Maintenance Spares	% of O&M Expenses	%	15%
		Receivables		Months	2
		Interest on WC		%	10.87%

