



ASSAM ELECTRICITY REGULATORY COMMISSION

FILE NO. AERC. 614/2017

PETITION NO. 03/2017

ORDER SHEET

29.11.2017

Before the Assam Electricity Regulatory Commission

ASEB Campus, Dwarandhar,
G. S. Road, Sixth Mile, Guwahati – 781 022

Petition No. 03/2017

Suryataap Energies and Infrastructure Pvt. Ltd. (SEIPL)

----- Petitioner

Assam Power Distribution Co. Ltd. (APDCL)

----- Respondent

In the matter of

Determination of final levellized tariff for 5 MW
Grid Connected Solar PV Power Plant of SEIPL
at IGC, Balipara, Sonitpur district, Assam.

ORDER

1. **BACKGROUND:**

A provisional tariff was allowed to Suryataap Energies and Infrastructure Pvt. Ltd. (SEIPL), New Delhi, a subsidiary of Hindustan Power, vide order dated 09.04.2015 against their petition no. 10/2013 & 22/2014. In the provisional tariff order, under clause 8.6, the Commission directed the Petitioner to file petition for determination of final tariff immediately after the commercial operation of the plant.

In accordance with the direction of the Commission in the provisional Tariff order SEIPL filed a tariff petition on 30.01.2017 before the Commission along with copy of PPA, allotment letters from State Govt. intimating charges, communications from AIDC on land, audited accounts as on 30.11.2016, calculation of levellised project specific tariff etc, for determination of final levellised tariff of its 5 MW Grid connected PV Solar Power Plant at IGC, Balipara, Sonitpur district, Assam.

2. **Procedural History:**

2.1 The salient points of the Petition (03/2017) are:

- a. The Petitioner has set up 5 MW Solar PV project at IGC, Balipara, Sonitpur district, Assam the salient features of the project are:
 - Capital cost -Rs.7.45 Cr/MW
 - Capacity Utilization Factor (CUF)-16.21%
 - Tariff Proposed-Rs 10.76/kWh.
 - The plant is in commercial operation from 20-08-2016
- b. The power generated from the plant is sold to APDCL. A copy of power Purchase Agreement (PPA), signed with APDCL was submitted.
- c. The Petitioner Stated that 101175 m² of land is used for the project. However, no land related documents were submitted.

- 2.2** After preliminary scrutiny of the Petition, the following submissions were sought for vide Letter dated 28/04/2017:
- a. Detail break-up of components of Project Cost with documentary proof.
 - b. The date wise & month wise total energy injected to the Grid and the total revenue generated is to be provided.
 - c. The documentary proof of loan taken for the project and the rate of interest, along with the repayment period, monthly repayment amount etc.
- 2.3** Thereafter, queries were raised and replies received from the Petitioner. Comments from APDCL (Respondent) were also asked and a date for preliminary hearing was fixed on 18.05.2017. the following points were raised during the hearing:
- a. The Respondent (APDCL) submitted that, as the project is already commissioned all actual data/ information along with copies of bills, invoices etc has to be furnished for submission of comments on the petition.
 - b. The Commission directed the Petitioner to submit the details and the necessary documents as sought for the project on or before 25.05.2017 with a copy to APDCL. The Commission also directed APDCL to submit their comments on the above on or before 10.06.2017.
 - c. The next date of hearing was fixed on 05.07.2017.
- 2.4** Thereafter, the Petitioner submitted the sales invoice, credit note, debit note, sales return and project cost breakup asset wise raised by the EPC contractor (M/s Hindustan EPC-Co Pvt Ltd) to SEIPL, along with the land details and corresponds from AIDC.
- 2.5** On the hearing held on 05.07.2017, the Commission directed SEIPL to submit the following:
- a. To submit all actual data/ information along with copies of original bills, invoices etc with reply on APDCLs comments on or before 15.07.2017 with a copy to APDCL. The Commission also directed the Petitioner to submit the documents for selection of EPC contract with terms and conditions of quotes.
 - b. The Commission directed both Petitioner and respondent to have one technical document validation with officials of AERC on 20.07.2017 in the conference hall of AERC.
 - c. The Commission also directed the Petitioner to submit the latest generation details, loan repayment Statement etc.
 - d. The next date of hearing was fixed on 31.07.2017 in the court room of the Commission.
- 2.6** A joint Technical Validation Session (TVS) was held on 20.07.2017 with officers from APDCL, SEIPL and AERC. In the TVS, the respondent asked SEIPL to provide the detailed cost breakup for PV modules, Rfs/Rfp for selection of EPC contractor and allocation of cost during construction. The Petitioner vide email dated 26.07.2017 submitted the following informations.
- 2.7** In the preliminary hearing dated 31.07.2017, the Commission in the absence of original invoices and bills from the suppliers directed the Petitioner to provide the date of procurement of items, name of the suppliers from where items were procured within 10 days. However, the Petitioner couldn't provide the requisite information. The Commission also directed the Petitioner to submit full details of the constructed building & others with floor area, approach road, fencing, land site grading, leveling, civil costs etc. for which the informations were provided.
- The Commission directed the Petitioner to publish the abridged form of the petition in six local daily newspapers and fixed the public hearing on 15.09.2017 in the court room of AERC.
- 2.8** As directed, the Petitioner Vide News Paper Notification dated 19.08.2017, public views & comments were sought. However, no comments from Public/Public representative were received.
- 2.9** As scheduled, a public hearing was held on 15.09.2017. During the Hearing, only Petitioner & Respondent (APDCL) was present. No participant from the Public was present.

3. Legal and Regulatory framework:

- 3.1** Section 86(1)(e) of the Electricity Act 2003, mandates the State Electricity Regulatory Commissions to promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person.
- 3.2** The Electricity Act, 2003 also requires that the State Electricity Regulatory Commissions (SERCs) shall be guided by the tariff policy in specifying the terms and conditions for determination of tariff under section 61 and determination of tariff under section 62 of the Act.
- 3.3** Section 61 of the Act also provides that State Regulatory Commissions shall be guided by the principles and methodologies specified by the Central Commission for determination of tariff applicable to generating companies and transmission licensees.
- 3.4** The AERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 was notified on 07.11.2012 which is in line with CERC (Terms and Conditions for tariff determination from Renewable Energy Sources) Regulations, 2012.

4. Hearing on the Petition:

After careful scrutiny and consideration of the submissions of the Petitioner the Commission admitted the petition and registered as petition no.03/2017.

After the preliminary hearings, the Commission issued public notice inviting comments/suggestions from various stakeholders. The notice was published in six (6) local daily newspapers. The Commission fixed the hearing on 15.09.2017 on the above petition and issued notices to the parties accordingly.

The Respondent filed an oral submission on their petition with comments on the tariff petition. No other stake holders submitted any objections/suggestions on the tariff petition. The detailed observations of the Petitioner on the comments of the respondent were received by the Commission on the date of hearing.

The Commission held the hearing on 15.09.2017 as scheduled in the conference hall of the Commission's premises at Guwahati. Representatives from both the Petitioner and Respondent attended the hearing.

Initiating the hearing, Chairperson asked the Petitioner SEIPL to make oral submission, if any on the tariff petition filed before the Commission for their 5 MW solar PV plant at Industrial Growth Centre, Balipara.

The Petitioner during the oral submission, prayed before the Commission for determination of project specific tariff as per the provision of AERC Regulations seeking approval of final tariff at Rs. 10.76/kWh (without subsidy) as per their petition for the proposed project. The Petitioner also requested the Commission for consideration of CUF of 15.13% as the actual energy generation figures arrived till the date of public hearing.

The Petitioner submitted their justification for seeking higher tariff in terms of capital cost, CUF, revised land cost of AIDC etc. They stated that the land cost considered is higher than that of CERC as the cost of the land is determined by the GOA as industrial land. Whereas, CERC has fixed the norms for the land cost which is considered to be mostly barren or of no commercial use.

The Respondent in their submission pleaded before the Commission to fix the tariff at a reasonable rate safeguarding the consumer's interest. They further submitted before the Commission that, the Petitioner had installed polycrystalline module but has submitted the

information's on mono crystalline modules. Also, the total civil cost figures didn't reconcile with the balance sheet provided by SEIPL and the warranty certificates for panels and inverters along with test certificates were not provided. The Petitioner acknowledged the miscommunication and subsequently submitted the relevant documents on 07.10.2017.

The Commission heard both the parties. The Commission Stated that in absence of original invoices and bills both the capital cost (including land cost) and CUF interalia need to be scrutinized in detail before taking any decision on fixation of the tariff as per the provisions of AERC Regulations, 2012 and CERC Generic Tariff Regulations, 2015 and accordingly requested the Petitioner to submit the details of Non Modular Cost (Including Civil Works) with relevant supporting documents, within a week's time. However, the Petitioner failed to submit the required information within the timeline.

5. **Determination of tariff:**

The Petitioner has prayed before the Commission for determination of final tariff seeking a levellised tariff of Rs.10.76/kWh (without subsidy). The detailed tariff calculations are submitted in the specified formats along with the tariff petition.

After scrutiny and analysis of the technical and financial data and information submitted by the Petitioner and the material and information available on record, the Commission decided for determination of final levellized tariff as per the terms and conditions of the AERC (Terms and Conditions for Tariff determination from Renewable Energy Source) Regulations, 2012, Determination of generic levellised generation tariff for the FY 2015 - 16 under Regulation 8 of the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 and Determination of Benchmark Capital Cost Norm for Solar PV power projects and Solar Thermal power projects applicable during FY 2015-16 dated 31.03.2015.

In absence of the original documents/ invoices submitted by the Petitioner, the Commission deems it appropriate to adopt relevant operating and financial norms of CERC regulations for FY 2015-16 for determination of tariff for the reasons that the Commission has so far not issued any generic tariff order for RE projects and secondly the AERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources), 2012, is in line with CERC (Renewable Energy) Regulations, 2012 based on which the above CERC generic tariff order is notified.

5.1 **Tariff structure:**

A single part tariff shall be determined as per Regulation 10 of AERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources), 2012.

5.2 **Tariff design:**

As per Regulations 7, 8 and 9.3 of the AERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources), 2012 read with Regulation 11 of the same Regulations, a levellised discounted tariff shall be determined for a tariff period of 25 years from the date of Commissioning of the project.

5.3 **Operational and financial norms and parameters:**

Operational norms:

I. **Capacity Utilization Factor (CUF):**

a) Submission of the Petitioner:

i) The Petitioner in the petition mentioned that, the CUF as allowed in the order dated 09.04.2015 has been determined by this Hon'ble Commission after due deliberation, consideration of data and being mindful of the fact that the expected solar isolation at the project site would be lower as against the norms prescribed by the Hon'ble CERC

which is on a pan-India basis. The Petitioner proposes to adopt this CUF of 16.21% as per the provisional Tariff Order and has, therefore, considered the same for computation of levelled tariff.

During the public hearing dated 15.09.2017 the Petitioner submitted that during the first year of operation the plant has achieved a CUF of 15.13%.

b) Commission's analysis & decision:

The CUF of a solar PV project mainly depends on solar radiation measured in kWh/m²/day and no. of clear sunny days. The Regulation 59 of the AERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources), 2012 specifies that the Capacity Utilization factor for Solar PV projects will be 19% and the Commission may deviate from the norms in case of project specific tariff determination.

The Commission further noted that in the order dated 09.04.2015, the CUF of 16.21% was arrived at considering informations from various agencies i.e. NASA, NREL, Meteonorm, Solar GIS and TERI. The plant performance ratio as agreed by the developer and the contractor is 76.27%. Therefore, the Commission after due consideration deems it proper to consider a CUF of 16.21% for calculation of final tariff.

The Petitioner has submitted one year generation data reflecting a CUF of 15.13%. However, generation data for a period of only one year is not sufficient for determination of final CUF for the solar plant and feels that a minimum 3 years data is required to understand the variance in CUF. It is made open to the Petitioner to approach the Commission with 3 years of actual generation data.

II. Annual Module Degradation:

a) Submission of the Petitioner:

The Petitioner submitted that although Hon'ble Commission had allowed 0.5% degradation after 4th year of useful life and reduced the generation thereafter, the levelled tariff was not computed in accordance with the correct formula as directed by Hon'ble Tribunal in Judgment dated 17.04.2013 in Appeal No. 75 of 2012, which was subsequently implemented by Hon'ble GERC in its Order dated 07.07.2014. The Petitioner submitted the judgment copies of the APTEL, GERC and RERC.

b) Commission's analysis & decision:

Hon'ble Central Electricity Regulatory Commission (CERC) in its order No. SM/005/2015 (Suo-Motu) dated 31.03.2015 under clause 7 (1) (c) mentioned that, "*Considering the Exchange Rate at ` 62.05/US\$ & module cost at US\$ 0.52/Wp, the Commission hereby determines the module cost at ` 322.66 Lakh/MW for FY 2015-16. Since the RE Tariff Regulations do not provide norms for degradation, the Commission decided to consider module degradation as allowed in the past on notional basis based on the study carried out by the Commission as ` 9.69 Lakh/MW . Accordingly, the Commission determines the total module cost at ` 332.35 Lakh/MW.*

It is noted from the above that, the total module cost considered by Hon'ble CERC is inclusive of impact pertaining to module degradation as well. Further, as the Commission has considered the CERC benchmark for module cost, as detailed in subsequent Paras, consideration of separate impact pertaining to module degradation doesn't arise.

Accordingly, the Commission decided to determine the tariff with module degradation inclusive in total module cost method which is in line with CERC order mentioned above.

III. **Auxiliary Energy Consumption (AEC):**

a) Submission of the Petitioner:

The Petitioner mentioned that, as approved by Hon'ble Commission in its Order dated 09.04.2015, the Petitioner has considered normative auxiliary consumption at 0.25% of gross normative generation, which may kindly be approved although actual auxiliary consumption is expected to be on higher side (0.5% transformation loss+0.25% other auxiliaries).

b) Commission's analysis & decision:

The Commission has noted that the auxiliary consumption of 0.25% was provided in its order dated 09.04.2015.

Considering the facts mentioned above carefully, the Commission has decided to allow AEC of 0.25% in computation of tariff as proposed by the Petitioner.

IV. **Interest on term Loan:**

a) Submission of the Petitioner:

The Petitioner has considered the interest on loan as 12.7% as provided in the order dated 09.04.2015 and submitted the loan documents accordingly.

b) Commission's analysis & decision:

The Commission has noted that the interest on loan as per documents submitted by SEIPL is 11.5% which is lower than the interest on loan considered in provisional Tariff order. Accordingly, a rate of interest of 11.5% is considered for tariff determination.

Financial norms and parameter:

V. **Capital cost:**

The Petitioner submitted that based on detailed scrutiny and analysis, Hon'ble Commission had approved the Capital Cost of the Project as Rs. 3786.32 Lakh against claimed Capital Cost of Rs. 4740 Lakh in its Order dated 09.04.2015.

The Petitioner submitted that, the Capital Cost actually incurred by is Rs. 3727.71 Lakh.

I) **Land cost:**

a) Submission of the Petitioner:

The land for the project is in Industrial Growth Centre, Balipara in Sonitpur District. The total land area for the said Project is 101175 m² (~25 Acres) which is sufficient for setting up 5 MW project based on Crystalline

Technology. This is Government land and has been allotted to the Petitioner by Assam Industrial Development Corporation (AIDC).

The Petitioner submitted that, the Commission had, in its Order dated 09.04.2015, approved cost of land for Petitioner's Project at IGC, Balipara at Rs. 266.75 lakh. The break-up of Land Cost Approved and the actual cost incurred is as follows:

Sl. No.	Project Cost in INR	Approved		Actual
		Lakh/MW	Lakh	Lakh
2a	Land AIDC One time Payment	31.57	157.86	304.53
2b	Land Registration Charges	5.58	27.91	@
2c	Land Expenses Capitalised	0.00	0	0
2d	Land Development Cost	16.20	80.98	*
2	Total Land Cost	53.35	266.75	304.53

@ Rs. 19,460/- included in preliminary and Pre-operative Expenses subsequently.

* Included in Civil Cost subsequently.

In addition to above, the Petitioner informed that vide the decision taken on 273rd AIDC Board Meeting dated 29.08.2015, AIDC increased the Land development Cost from Rs. 150/sq. m to Rs. 300/sq.m. Although the Petitioner requested AIDC to charge the old rates as prevalent at the time of provisional allotment of land, their request was not acceded by AIDC. As such, the Petitioner herein actually incurred Rs. 304.53 lakh (Rs. 303.53 as Land Cost and Rs. 1 lakh as processing fee) as against Rs. 157.86 approved by this Hon'ble Commission.

In addition to the one-time land cost, the Petitioner is required to pay annual lease rent and other charges to AIDC, which are subject to revision from time to time.

The cost towards one time development charge and annual rent components before and after revision is shown in table below:

Charges paid/to be paid as per allotment letter of AIDC				
Particulars	Unit	Rate		Remarks
		Before Revision	After Revision	
Development Fees	Rs per m ²	150.00	300.00	to be paid before taking possession
Service Charges (administrative charges)	of development charges per annum	3%	Rs. 12/m ² or 3%, whichever is higher	to be revised every 2 yrs.
Ground Rent (annual lease rent)	Rs. for every 1000 m ² per year	1000.00	2000.00	to be revised every 3 yrs.
Special Maintenance Charges (Estate)	Rs. per m ² per month	0.18	2.80	to be revised

Charges paid/to be paid as per allotment letter of AIDC				
Charges)				every 2 yrs.
Security Money	Rs. for every 1000 m ²	5000.00	5000.00	
Processing Fees	Rs.	100000.00	100000.00	As per Investment Proposal

b) Commission's analysis & decision:

The Commission examined in details all the relevant documents and information related to land cost as submitted by the Petitioner.

Commission noted that, the Petitioner has got allotment of land from AIDC which is a Govt. organization and charges have been fixed by AIDC itself. Therefore, the Commission decided to adopt the actual charges as proposed by the Petitioner and the details are mentioned below:

- 1) Land development cost Rs. 304.525 Lakh i.e. Rs. 60.91 lakh/MW including the 1 lakh processing fees, which is included as part of total project cost for tariff computation.
- 2) The Commission observed that, there are certain components of land which are to be paid annually. Accordingly, the Commission has considered these components as part of annual fixed cost. Furthermore, the Petitioner submitted that, the service tax is revised and now GST @ 18% will be payable from FY2017. Accordingly, the Commission has decided to allow service tax @ 15% for first year and GST @ 18% from 2nd year onwards. The approved Annual Rent/Recurring Cost is shown in the following table:

SI No.	Components of Annual Rent/charges		for 1st year	from 2nd year
		Rs	Rs in lakh	Rs in lakh
1	Service Charge @ 3% on Development Charge/Year or Rs 12/m ² (whichever is higher)	12,14,100	12.141	12.141
2	Ground Rent @ Rs 2000/1000 Sq Mt	2,02,350	2.024	2.024
3	Sp Maint Charges @Rs 2.8 per Sq Mt per Month	33,99,480	33.995	33.995
4	Service tax @ 15% & GST @ 18% from 2 nd year.		7.224	8.669 (GST @ 18%)
	Total		55.383	56.828

However in future in case of revision of Service Tax/GST the developer will have to adjust the charges in the monthly bill of DISCOM on actual basis.

II) Module cost:

a) Submission of the Petitioner:

The Petitioner submitted that in Commissions Order dated 09.04.2015, the Commission had considered a Module Cost of USD 0.584/Watt with exchange rate of Rs. 62.08645/USD and accordingly as total Module Cost of Rs. 1812.92 Lakh (0.584x62.08645x10x5) was approved. Since

Hon'ble Commission had approved the cost of Modules only, its transportation/shipping and allied services cost of Rs. 121.73 Lakh was incurred in addition to the Module Cost to arrive at total Module Cost of Rs. 1934.65 Lakh on CIF basis (i.e. Rs. 121.73 Lakh higher than Rs. 1812.92 Lakh approved by Hon'ble Commission). It is submitted that the increase in cost of Modules is due to genuine additional expense on transportation charges, which were not considered by Hon'ble Commission. The Petitioner therefore pleaded to the Commission that the actual cost of Modules as claimed herein may kindly be approved by Hon'ble Commission.

b) Commission's analysis & decision:

During the course of hearing the respondent objected to the cost of module and PCU and Stated that, the Petitioner has failed to establish the cost under this heads by submitting substantial documents. The Commission after scrutiny of all the documents submitted by the Petitioner has observed that the Petitioner has not submitted the original invoices pertaining to purchase of module and cost incurred for PCU. Therefore, considering that the Hon'ble CERC has already considered the market rate of module, the Commission deems it fit to adopt the same at Rs 332.35/MW, which is inclusive of impact pertaining to module degradation as well.

III) **Civil & General Works**

a) Submission of the Petitioner:

The Petitioner submitted that they have incurred Rs. 431.71 Lakh under this heads with the following breakup:

- (i) Rs. 26.79 Lakh under Land Leveling Cost
- (ii) Rs. 188.92 Lakh under Civil Works (including Roads) and
- (iii) Rs. 216 under General Services of Installation and Commissioning.

b) Commission's analysis & decision:

After scrutiny of the documents submitted by the Petitioner and the submissions made by the Petitioner, it is observed that the Petitioner has not followed the proper competitive bidding for selection of the EPC contractor for procurement of items. Further, even after providing repeated opportunity to the Petitioner to produce original bills & invoices, the Petitioner did not submit the same. The Respondent also raised the issue during various stages of the proceeding.

Furthermore, it is observed that the Hon'ble CERC vide the order dated 31.03.2015 has reduced the normative cost of non-module components for FY 2015-16 in comparison to that of previous years (FY2014-15) after considering views of few stake holders.

In view of the above and taking into consideration the increased cost of cables, transformers and other equipments, specially high transportation and labor cost in the State of Assam, the Commission decided to allow 15% increase over the CERC normative cost for FY 2015-16 accordingly, the Commission has approved Rs 57.5 lakh/MW for Civil & general works.

IV) Mounting Structure:

a) Submission of the Petitioner:

The Petitioner submitted that they have incurred Rs. 48.21 Lakh/MW under this head

b) Commission's analysis & decision:

On scrutiny of the submission made by the Petitioner it is observed that the actual cost is within the limit of CERC benchmark norms for FY 2015-16. Therefore, the Commission deems it fit to allow the cost incurred by the Petitioner. Accordingly, the Commission has approved Rs 48.21 Lakh/MW under this head.

V) Power Conditioning Unit:

a) Submission of the Petitioner:

The Petitioner submitted that, the cost of Power Conditioning Unit (Inverters) was approved at Rs. 287.50 Lakh. Further, the actual cost of Inverters (CIF basis) was Rs. 290.18 lakh. It is submitted that the increase in cost of Inverters is due to genuine additional expense on transportation charges, which were not considered by Hon'ble Commission. The Petitioner therefore pleaded to the Commission that the actual cost of Inverters as claimed herein may kindly be approved by Hon'ble Commission.

b) Commission's analysis & decision:

After scrutiny of the documents submitted by the Petitioner and the submissions made by the Petitioner, it is observed that the increased cost of cables, transformers and other equipments, specially high transportation and labor cost in the State of Assam, the Commission decided to allow 15% increase over the CERC normative cost for FY 2015-16. Accordingly, the Commission has approved Rs 51.75 lakh/MW for PCU.

VI) Evacuation Infrastructure upto Interconnection (I/C) Point:

a) Submission of the Petitioner:

The Petitioner claimed that the actual cost of Evacuation Infrastructure upto I/C point is Rs 80.95lakh/MW .

b) Commission's analysis & decision:

After scrutiny of the documents submitted by the Petitioner and the submissions made by the Petitioner, it is observed that though the Petitioner has claimed Rs 80.95lakh/MW towards evacuation cost they have not substantiated it by proper documentary evidence.

The Commission therefore, considered CERC norms of Rs 55 Lakh/MW allowing a 15% increase totaling Rs 63.25 lakh/MW.

VII) Preliminary and Pre-Operative Expenses including IDC and Contingency:

a) Submission of the Petitioner:

The Petitioner submitted that the actual expenditure incurred against Preliminary and Pre-Operative Expenses was Rs 24.03Lakh/MW, though the Commission allowed Rs 76.84Lakh/MW in the provisional Tariff Order.:

b) Commission's analysis & decision:

As proposed by the Petitioner, the Commission decided to allow the cost of Preliminary & Pre-Operative Expenses incl. IDC & contingency on actual basis i.e. Rs 24.03 Lakh/MW.

VIII) Total Project Cost

On the basis of above discussions and decision, the Commission has approved the total project cost at Rs 3189.97 lakh for determination of tariff as under:

	Items	Cost proposed by the Petitioner (Rs Lakh/MW)	AERC Capital Cost norm based on CERC
1	PV module	386.93	332.35
2	Land Cost	60.906	60.906
3	Civil & General works	86.342	57.5
4	Mounting structure	48.21	48.21
5	Power Conditioning Unit	58.036	51.75
6	Evacuation cost	80.95	63.25
7	Preliminary ,Pre operation, expenses including IDC & Contingency	24.028	24.028
8	Total Project cost upto I/C point	745.402	637.994
9	Evacuation cost beyond I/C pint		0
10	Total Project Cost (Lakh/MW)	745.402	637.99
11	Total Project Cost for 5MW (Lakh)	3727.01	3189.97

6. Treatment of subsidy and incentive:

a) Submission of the Petitioner:

The Petitioner submitted that as of now, it has not availed any subsidy or incentive of any type from any State/Central government/body for its proposed project. Accordingly, the Petitioner is seeking tariff determination without considering any subsidy.

b) Commission's analysis & decision:

Regulation 23 of the AERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources), 2012 specifies that 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.

Considering that the Petitioner is not availing any subsidy at present as per their submission, the Commission decided to calculate the tariff without considering any subsidy. However, the Commission shall review the tariff considering the subsidy benefit, if availed by the project developer in future.

7. Other Financial norms:

The Commission after due consideration adopted norms for other financial parameters such as O&M, interest on term loan, depreciation, interest on working capital, R.O.E. , discount rate etc., as per the AERC RE tariff regulations 2012 and CERC generic tariff order dated 31.03.2015.

The various parameters considered by the Commission for determination of the project Specific Tariff for the 5 MW grid connected solar PV project of the Petitioner are given in the table below:

Parameters	Unit	Proposed	Approved
A. Project cost:			
Capital cost including IDC and evacuation cost beyond I/C point.	Rs. Lakh/MW	3,727.71	3,189.97
Less subsidy at present	-do-	NIL	NIL
Total capital cost	-do-	3,727.71	3,189.97
B. Operational and Financial norms:			
CUF	%	16.21	16.21
Aux. energy consumption	%	0.25	0.25
Annual module degradation after 4 th yr	%	0.5	0.00
Debt : Equity ratio	%	70:30	70:30
Interest on loan (tenure of 12 years)	%	12.7	11.5 (on actual)
Normative O&M Expenditure	Rs. Lakh/ MW	12.30	12.30
Annual escalation on normative O&M expenditure	%	5.72	5.72
Annual average escalation on Annual Rent/Recurring Cost	%	NIL	NIL
Depreciation	%	5.83% upto 12 th yr. 1.54% from 13 th yr.	5.83% upto 12 th yr and the remaining Depreciation is spread over the life
Interest on Working capital	%	13.20	12.80 (recent SBI base rate for 2015-16 plus 350 basis point)
ROE (Pre-tax)	%	20% 1 st 10 yrs. 24% from 11 th yr.	20% 1 st 10yrs and 24% from 11 th yr.
Discount rate as per CERC		10.67	10.81 (for 2015-16)
Project useful life	years	25	25

8. Other applicable conditions:

8.1 Sharing of CDM benefit:

The Petitioner should share the Clean Development Mechanism (CDM) benefits as per the provision of AERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (Regulation 22)

8.2 Scheduling:

The 5 MW solar PV plant of the Petitioner shall be subjected to the scheduling and dispatched code shall be governed by the related rules and regulations framed by the CERC and AERC.

8.3 Determination of final tariff:

Considering the approved parameters in this order, **the Commission has determined and approved the final levelized tariff of Rs. 8.78/kWh for a period of 25 years from the date of commercial operation (COD)** of the 5MW Solar PV plant of the Petitioner. This tariff will be effective from the date of Commercial operation of the plant. The excess amount realized by the Petitioner based on provisional tariff is to be refunded to APDCL in Twelve (12) equal monthly installments from January, 2018 onwards alongwith interest equivalent to prevailing SBI MCLR rate.

Details of tariff computation are furnished in **Annexure-I** enclosed.

With the above observations and decisions, the tariff petition (No. 03/2017) stands disposed of.

Sd/-
(Mr. Subhash Ch. Das)
Member, AERC

Sd/-
(Mr. Dipak Chakravarty)
Member, AERC

Sd/-
(Mr. Naba Kr. Das)
Chairperson, AERC

ANNEXURE-1

FY 2016-17 2017-18 2018-19 2019-20 2020-21 2021-22 2022-23 2023-24 2024-25 2025-26 2026-27 2027-28 2028-29 2029-30 2030-31 2031-32 2032-33 2033-34 2034-35 2035-36 2036-37 2037-38 2038-39 2039-40 2040-41

A)	Technical Parameters	Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	Installed Capacity	MW	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
2	Gross Generation	MU	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10	7.10
3	Auxiliary Consumption	MU	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
4	Net Generation	MU	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08	7.08
B) Fixed Cost																											
1	O&M Normative O & M cost	Rs. Lakh	62	65	69	73	77	81	86	91	96	101	107	113	120	127	134	142	150	158	167	177	187	198	209	221	234
2	Annual rent	Rs. Lakh	55.38	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83	56.83
3	Depreciation	Rs. Lakh	151	151	151	151	151	151	151	151	151	151	151	151	60	60	60	60	60	60	60	60	60	60	60	60	60
4	Interest on term loan	Rs. Lakh	246	225	203	182	160	139	118	96	75	53	32	11	-	-	-	-	-	-	-	-	-	-	-	-	-
5	Interest on Working Capital	Rs. Lakh	17	17	17	16	16	16	16	16	15	15	16	16	14	14	15	15	15	16	16	17	17	18	18	19	20
6	Return on Equity	Rs. Lakh	191	191	191	191	191	191	191	191	191	191	230	230	230	230	230	230	230	230	230	230	230	230	230	230	230
	Total fixed cost	Rs. Lakh	723	706	688	671	653	636	619	602	586	570	593	578	480	487	495	503	512	521	530	540	551	562	574	587	600
7	Nominal Fixed cost	Rs. /KWH	10.21	9.97	9.72	9.47	9.22	8.98	8.74	8.50	8.27	8.05	8.37	8.16	6.78	6.88	6.99	7.10	7.22	7.35	7.49	7.63	7.78	7.94	8.11	8.28	8.47
	Fixed cost with Discount factor	Rs. /KWH	10	9	8	7	6	5	5	4	4	3	3	3	2	2	2	2	1	1	1	1	1	1	1	1	
C) Levellized tariff																											
1	O & M expn	Rs. /KWH	1.65	1.72	1.77	1.83	1.89	1.95	2.01	2.08	2.16	2.23	2.32	2.40	2.50	2.59	2.69	2.80	2.92	3.04	3.17	3.30	3.44	3.59	3.75	3.92	4.10
2	Depreciation	Rs. /KWH	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	2.14	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
3	Interest on term loan	Rs. /KWH	3.47	3.17	2.87	2.57	2.27	1.96	1.66	1.36	1.06	0.76	0.45	0.15	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Interest on Working Capital	Rs. /KWH	0.24	0.24	0.24	0.23	0.23	0.23	0.22	0.22	0.22	0.21	0.22	0.22	0.20	0.20	0.21	0.21	0.22	0.22	0.23	0.24	0.24	0.25	0.26	0.27	0.28
5	Return on Equity	Rs. /KWH	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24	3.24
	Total Cost of Generation	Rs. /KWH	10.21	9.97	9.72	9.47	9.22	8.98	8.74	8.50	8.27	8.05	8.37	8.16	6.78	6.88	6.99	7.10	7.22	7.35	7.49	7.63	7.78	7.94	8.11	8.28	8.47
	Discounted Levellized tariff	Rs. /KWH	8.78																								
D) Interest on Working Capital																											
1	O & M Expenses for one month	Rs. Lakh	5.13	5.42	5.73	6.06	6.40	6.77	7.16	7.56	8.00	8.45	8.94	9.45	9.99	10.56	11.17	11.80	12.48	13.19	13.95	14.75	15.59	16.48	17.42	18.42	19.47
2	Receivables equivalent to 2 months of Fixed charges	Rs. Lakh	120.51	117.72	114.73	111.78	108.86	105.99	103.16	100.38	97.64	94.96	98.85	96.29	80.04	81.24	82.51	83.86	85.28	86.78	88.37	90.05	91.82	93.70	95.68	97.78	100.00
3	Maintenance spares @ 15% of O & M expenses	Rs. Lakh	9.23	9.75	10.31	10.90	11.52	12.18	12.88	13.62	14.40	15.22	16.09	17.01	17.98	19.01	20.10	21.25	22.46	23.75	25.11	26.54	28.06	29.67	31.36	33.16	35.05
	Working Capital	Rs. Lakh	134.86	132.90	130.77	128.73	126.79	124.94	123.19	121.56	120.04	118.63	123.88	122.75	108.01	110.81	113.78	116.91	120.22	123.72	127.42	131.34	135.47	139.85	144.47	149.36	154.53
4	Interest on Working Capital	Rs. Lakh	17.26	17.01	16.74	16.48	16.23	15.99	15.77	15.56	15.36	15.19	15.86	15.71	13.83	14.18	14.56	14.96	15.39	15.84	16.31	16.81	17.34	17.90	18.49	19.12	19.78
	Discount Factor		1.000	0.902	0.814	0.735	0.663	0.599	0.540	0.487	0.440	0.397	0.358	0.323	0.292	0.263	0.238	0.214	0.194	0.175	0.158	0.142	0.128	0.116	0.105	0.094	0.085