

**Kerala State Electricity Regulatory Commission**  
**Thiruvananthapuram**

Present : **Shri Preman Dinaraj, Chairman**  
**Shri K.Vikraman Nair, Member**  
**Shri S.Venugopal, Member**

**OP 9/2017**

In the matter of : Petition filed IREDA for the approval of Power Sale Agreement for 50 MW Solar PV project at Kasargod Solar Park, Kerala

Petitioner: (1) Indian Renewable Energy Development Agency Limited (IREDA)  
(2) Solar Energy Corporation of India Ltd.

Respondent: (1) Kerala State Electricity Board Limited  
Vydyuthi Bhavanam, Pattom  
(2) Renewable Power Corporation of Kerala Limited

Petitioner represented by: Sri. Abhinav Kumar, Manager, SECI  
Sri. Abhilash Singh, General Manager, IREDA

Respondent represented by: Sri Joseph V K, Chief Engineer, KSEB Ltd  
Sri. Bipin Sankar P, Deputy CE, KSEB Ltd  
Sri KGP Nampoothiri, EE, TRAC, KSEB Ltd  
Sri. Alex Varghese, EE, REES, KSEB Ltd  
Smt. Cini John, AEE, REES, KSEB Ltd  
Smt. Latha S V AEE, KSEB Ltd  
Sri. Baby John, AEE, KSEB Ltd

**Order dated 6.2.2019**

1. M/s Indian Renewable Energy Development Agency Ltd (herein after referred to as the petitioner or IREDA) had filed a petition on 16<sup>th</sup> June 2017, for the approval of Power Sale Agreement for 50 MW Solar PV project at Kasargode Solar Park, entered with KSEB Ltd on 31<sup>st</sup> March 2017. The summary of the petition filed by IREDA is give below.

- (i) IREDA is developing a 50 MW Solar PV project at Kasargod Solar Park, Kerala pursuant to the tripartite agreement executed among KSEB Ltd, IREDA and Solar Energy Corporation Ltd. The power generated from the project shall be supplied to KSEB Ltd. A power sale agreement was executed between KSEB and IREDA on 31.03.2017. The present petition is for the approval of the Power Sale Agreement of the 50 MW Solar PV project for 25 years.
  - (ii) Out of the 50MW, 36 MW was commissioned on 31.03.2017. It is submitted that, the balance capacity is expected to commission by 30.06.2017.
  - (iii) A tariff rate of Rs 4.95/unit or the rate as approved by the KSERC, whichever is lower is mutually agreed upon and it is incorporated in Article 7 of the power sale agreement dated 31.03.2017.
  - (iv) IREDA also reported that, there is no Central Financial Assistance for the project. The tariff arrived is the levelised tariff. The project cost has been examined, analysed and recommended by a committee constituted by KSEB Ltd with representatives from IREDA, KSEBL and SECI and Renewable Power Corporation of Kerala Limited (RPCKL). The project cost was accepted by KSEB Ltd. The tariff was arrived based on CERC guidelines, and it was further negotiated to Rs 4.95/unit. The petitioner further submitted that, the negotiated tariff of Rs 4.95/unit is with the consideration of the benefits of Accelerated Depreciation.
2. Along with the petition, IREDA has also submitted a copy of the tripartite agreement executed on 31<sup>st</sup> March 2015, among KSEB Ltd, IREDA and Solar Energy Corporation of India Ltd (SECI). The role of SECI, IREDA and KSEB Ltd in developing the 50MW Solar Park at Kasargod was detailed in the tripartite agreement. The summary of the terms and conditions in the tripartite agreement is given below.
- (i) The agreement is effective from 31-03-2015, till the term of the Power Sale Agreement with KSEB Ltd.
  - (ii) The Government provide authority to IREDA/SECI to 'develop, design, finance, own, operate, maintain and manage the project and, to sell all capacity and energy from the project to KSEB Ltd.
  - (iii) The project shall be designed and developed by SECI on behalf of IREDA through EPC Agency. The project shall be handed over to IREDA by SECI after successful commissioning of the project for the Operation and Maintenance of the project to the fulfillment of the payment obligations of IREDA including SECI charges.
  - (iv) IREDA may hand over the project to SECI for O&M of the project on mutually agreed terms and conditions, through O&M agency.

- (v) IREDA shall use its reasonable endeavors in good faith to achieve tieup for funds for the project.

#### **Obligation of KSEB Ltd**

- (vi) Facilitate in making available land for the Solar park on right to use basis or lease basis.
- (vii) Arrange for transmission, connectivity agreement and RoW to IRED/SECI for erection of transmission line connecting the project to the STU substation.
- (viii) Support in getting statutory clearances.
- (ix) Purchase of power on long term basis (25 years from the date of commissioning ) at the tariff determined by appropriate regulator at CERC approved norms.
- (x) Provide appropriate payment security mechanism.
- (xi) Facilitate IREDA and SECI in availing incentives as provided by the State policies.

#### **Obligation of SECI/IREDA**

- (xii) Entered into right to use or lease agreement with the relevant state agency for use of the land for the project.
- (xiii) Enter into Power Sale Agreement with KSEB Ltd for long term basis for the sale of power from the project.
- (xiv) Own and fund the project.
- (xv) Authorise SECI to make and get all statutory approvals necessary for the project.
- (xvi) A coordination committee having representatives from KSEB Ltd, IREDA and SECI at appropriate level shall be constituted.
- (xvii) A suitable mechanism shall be worked out through mutual consultation of the parties, regarding the treatment of Contractual Obligations like settlement of disputes, Force Majeure, liabilities of parties, etc.

3. The petition was admitted as OP No.9/2017. KSEB Ltd submitted their Comments on the petition vide its letter dated 24.8.2017.
4. The first hearing on the petition held on 29.08.2017. Shri. Abhilakh Singh, General Manager, IREDA appeared on behalf of IREDA before the Commission and Sri V K Joseph Chief Engineer represented the respondent KSEB Ltd. Based on the deliberations, the Commission, vide the daily order dated 30.08.2017, directed the petitioner to file a revised petition with complete details including the technical and financial parameters to determine the project specific tariff for the electricity generated from the project.
5. The petitioner submitted the revised petition vide letter dated 11.12.2017. M/s Solar Energy Corporation of India (SECI) is included as the second petitioner. The summary of the details provided in the revised petition is as below.
  - (1) Land Cost: The land for the project was provided by KSEBL/RPCKL. For initial five years, there is no lease rent and for the remaining terms it shall be 2% of the market value.

(2) EPC contract and O&M packages

- (i) M/s SECI, the petitioner-2, has selected M/s Jackson Engineers Ltd, NOIDA through competitive bidding, as the contractor for the work of design, engineering, supply, construction, erection, testing and commissioning. The Operation and Maintenance Contract for 10 years from the CoD was also awarded to them.
- (ii) The petitioner has produced a copy of the Lol dated 29.12.2015, issued to the EPC contractor M/s Jackson Engineers Ltd, NOIDA, for design, engineering, supply, construction, erection, testing and commissioning of the project, for a total amount of Rs 269.29 crore. The contract amount as per the Lol is extracted below.

SI No	Particulars	Amount (Rs.Cr)	Rs. Cr/MW
1	Part-A. Supply works packages	239.8	4.8
	Part-B Erection works package	8.56	0.17
	Part-C Civil and Allied works package	20.94	0.42
	Total EPC price	269.29	5.39
2	O&M price@Rs 2.5762 crore/year for 10 years	25.76	

- (iii) Further, as per the LOI, the entire project shall be completed by 26.07.2016 and is also specified therein that, non compliance of the time lines and deficiency in service will attract penalty as per the terms of the agreement.
- (iv) The petitioners has claimed that, the EPC cost is the lumpsum price without any quantification of different cost for plant, equipment etc. The O&M expenditure is also lumpsum price levelised for each of the 10 years of operation.
- (v) The petitioners has claimed an additional overall charges @ 5.5% of the hard cost (EPC cost + solar park charges) amounts to Rs 16.21 crore as part of the capital cost as per the order dated 23.3.2016 of the CERC in petition 17/SM/2015 dated 23.3.2015.

(3) Total capital cost of the project, claimed by the petitioners for the purpose of tariff determination is given below.

SI No	Particulars	Amount (Rs.Cr)	Rs. Cr/MW
1	EPC cost	269.29	5.39
2	Power evacuation cost		
	Paid - Rs 17.25 crore		
	Additional to be paid Rs 8.13 crore	25.38	0.51
3	Other charges (5.5% of (1)&(2))	16.21	0.32
	Total	310.88	6.22

- (4) The petitioners has produced the summary of the tariff computation based on the above capital claimed by them. The petitioner further stated that, they had not availed the Central Financial Assistance for the project.
6. The respondent KSEB Ltd submitted its counter vide letter dated 5.2.2018 and the summary of the issues raised by KSEB Ltd is given below.
- (i) The petitioner has not provided spilt up details of the EPC cost. The O&M charges for 10 years are included in the EPC cost and therefore the EPC cost taken for finalizing capital cost may be reduced to that extent.
- (ii) No supporting documents are provided for the capital cost of Rs 310.88 crore.
- (iii) The EPC price is inclusive of the O&M price for 10 years from the date of CoD. Since the O&M cost is claimed by the petitioner additionally, the O&M cost may be excluded from EPC price while determining the tariff.
- (iv) The date of commercial operation of the project as a whole can be considered only the CoD of the last unit, which is 14.9.2017. accordingly the entire capacity is under CoD in the financial year 2017-18. KSEB Ltd therefore submitted that the normative parameters for determining the tariff of the project shall be that applicable for the year 2017-18.
- (v) The petitioner claimed that, they would be required to pay an additional one time charge of Rs 8.13 crore to M/s RPCKL, however the demand was withdrawn.
7. The second hearing of the petition was held on 06.02.2018. Shri. M G Ramachandran, Senior Advocate, represented the petitioners and submitted that, EPC contractor is selected through competitive bidding. The tariff for the electricity generated from the project is arrived at Rs 4.95/unit through negotiations, which is less than the generic tariff determined by CERC for solar plants for the financial year 2016-17 @Rs 5.08/unit. The petitioners prayed before the Commission to approve the tariff at Rs 4.95/unit.
8. Adv. Mr. M G Ramachandran, further submitted that, till date about 40 MU of energy has been pumped to the KSEB Ltd system, but no payments were made sofar for want of approval of the Commission. This is affecting financials of the petitioners and hence requested before the Commission to approve an interim tariff for the electricity generated from the project and supplied to KSEB Ltd.
9. The Commission vide the daily order dated 14.02.2018 approved interim tariff @ Rs 3.90/unit for making interim payments to the electricity generated and

supplied from date of synchronization of the 1<sup>st</sup> unit . The Commission also directed the petitioners and respondent to submit the following clarifications with supporting documents.

- (1) The date of commercial operation of the project as a whole
- (2) The technical and other parameters to be adopted for determination of project specific tariff of the project.
- (3) The details of the bidders who participated in the competitive bidding initiated for EPC contract, including the financial bid details, with supporting documents of the successful bidders.
- (4) Cost of electromechanical equipments erected at the site, including excise duty challans remitted etc.
- (5) Cost incurred for erection and commissioning, cost of civil works including the work contract tax paid.
- (6) The copy of the contract agreement signed between the petitioner and the contractor for supply, erection and civil works.
- (7) Clarify whether the EPC contract amount of Rs 269.29 crore is inclusive of the amount for O&M contract for 10 years from the CoD, with supporting documents.
- (8) Central Finance Assistance available for constructing the evacuation facilities and the reason for not availing the same.
- (9) The rational for claiming additional overall charges @ 5.50% of the EPC contract amount and solar power charges.
- (10) Financing pattern of the project with details of loan taken with interest rate and other conditions of loan
- (11) The high solar park cost to be substantiated with proof.
- (12) Any other relevant matters, so as to enable the Commission to arrive at a project specific tariff.

10. In compliance of the direction of the Commission, the petitioners submitted the additional details vide the letter dated 27.03.2018. The summary of the details submitted by the petitioner is given below.

**(1) The date of commercial operation of the project as a whole.**

*IREDA submitted that, the capacity of the 50 MW Solar Power Project was commissioned in phased manner as per the following dated.*

- 4 MW: 15.12.2016
- 16 MW: 04.01.2017
- 8 MW: 17.02.2017
- 8 MW: 30.03.2017
- 14 MW: 14.09.2017

As above, 36 MW out of the 50MW was commissioned during the Financial Year 2016-17 and the balance capacity was commissioned during the Financial Year 2017-18.

The petitioner further submitted therein that, the Article-6 of the Power Sale Agreement dated 31.03.2017 provides for commissioning of the part capacity and payment of tariff for the partly commissioned units.

According to the petitioner, the delay in commissioning of the generating unit was due to the non availability of the power evacuation system.

**(2) The technical and other parameters to be adopted for determination of project specific tariff of the project**

(i) *Technical Parameters:*

- *Project Capacity: 50 MW*
- *Auxiliary Consumption: 0%*
- *Capacity Utilization Factor : 19.0%*
- *Useful Life : 25 Years*

(ii) *Other Parameters to be considered:*

- *Project Cost : Rs 310.88 Cr*
- *Debt / Equity: 70:30*
- *Rate of Interest on term loan : 8.00%*
- *Other parameters as per order dated 30.03.2015 of CERC.*

**(3) The details of the bidders who participated in the competitive bidding initiated for EPC contract, including the financial bid details, with supporting documents of the successful bidders**

The bidding was carried out through e-bidding process followed by the e-reverse auction. The following bidders participated in the bidding process initiated by SECI.

- (i) Mahindra Susten Private Limited
- (ii) Vikram Solar Private Limited
- (iii) Sterling and Wilson Privated Limited
- (iv) Jackson Engineers Limited
- (v) Bosch Limited

The following bidders found eligible for opening financial bids.

- (i) Mahindra Susten Private Limited
- (ii) Vikram Solar Private Limited
- (iii) Sterling and Wilson Privated Limited
- (iv) Jackson Engineers Limited

The following bidders participated in the e-reverse auction (e-RA)

- (i) Vikram Solar Private Limited
- (ii) Sterling and Wilson Privated Limited
- (iii) Jackson Engineers Limited

On conclusion of the e-RA, M/s Jakson Engineers Limited was found to be the L1 and awarded the work to them.

**(4) Cost of electromechanical equipments erected at the site, including excise duty challans remitted etc**

*The award of work to M/s. Jakson Engineers Limited (JEL) was on the Lumsum turnkey basis under three packages i.e Supply, Erection Works and Civil and Allied works, as detailed below.*

Part A: Supply Works Package	Rs 239,79,66,626/-
Part B: Erection Works Package	Rs 85568159/-
Part C: Civil and allied Works Package	Rs 209390214/-
TOTAL EPC Price	Rs 2692925000/-

Price is inclusive of taxes and duties.

**(5) Cost incurred for erection and commissioning, cost of civil works including the work contract tax paid.**

As per (4) above, the cost of erection works package is Rs 85568159/- and the cost of Civil and allied Works Package is Rs 209390214/-.

**(6) The copy of the contract agreement signed between the petitioner and the contractor for supply, erection and civil works.**

The petitioner had submitted a copy of the Lol dated 29.12.2015, issued to the contractor for supply, erection, civil allied works packages.

The petitioner had produced a copy of the 'supply agreement, 'erection works contract' and 'Civil & Allied works contract' dated 23.03.2016, signed between SECI (on behalf of IREDA) and M/s Jakson Engineers Limited (the contractor).

**(7) Clarify whether the EPC contract amount of Rs. 269.29 crore is inclusive of the amount of O&M contract for 10 years from the CoD, with supporting documents.**

IREDA clarified that, the EPC contract amount Rs 269.29 crore, does not include O&M cost for 10 years. As per the Lol dated 29.12.2015, the O&M cost per annum is Rs 2.576 crore per annum for 10 years.

**(8) Central Finance Assistance available for constructing the evacuation facilities and the reason for not availing the same**

IREDA reported that the project does not fall under any of the scheme for any assistance of the Government of India. Therefore the project is not eligible for any CFA.

**(9) The rational for claiming additional overall charges @ 5.50% of the EPC contract amount as other charges**

The IREDA submitted that as per the agreement reached among the Parties (i.e. KSEBL, SECI & IREDA) by way of TPA dated 31.03.2015 and subsequent PSA signed between KSEBL and IREDA, the soft cost has been capped to 5.5% of the Hard cost in line with the CERC order dated 23.03.2016.

**(10) Financing pattern of the project with details of loan taken with interest rate and other conditions of loan**



The Project cost is entirely funded by IREDA through its resources. Hence, normative Debt Equity ratio of 70:30 has been considered. The rate of interest proposed is 8%

**(11) The high solar park cost to be substantiated with proof**

IREDA has made payment of Rs 17.25 Cr to Renewable Power Corporation of Kerala Limited (RPCKL), for constructing the evacuation facilities. (An additional demand of Rs. 08.13 Cr raised, but withdrawn by the RPCKL.) .

RPCKL is a joint venture company of KSEB Ltd and SECI.

**(12) Any other relevant matters, so as to enable the Commission to arrive at a project specific tariff**

The petitioner submitted that, the tariff of Rs 4.95/kWh as agreed in the Power Sale Agreement executed between KSEBL & IREDA is less than the generic tariff approved by the CERC for the FY 2016-17.

The project cost of Rs. 6.22 crore/MW includes EPC cost, solar park cost and soft cost. Even though the capital cost agreed is Rs 6.22 crore/MW as against the normative capital cost of Rs 5.30 crore/MW approved by CERC for the FY 2016-17, the tariff of Rs 4.95/unit agreed between the parties less than the generic tariff of Rs 5.09/unit, approved by CERC for the FY 2016-17.

11. The Commission conducted third hearing on the petition 11.06.2018 at 11 AM in the Court Hall of the Commission. The Commission expressed serious concern on the laxity from the part of the KSEB Ltd for not submitting the comments on the additional documents submitted by the petitioner. During the hearing, the Commission clarified that, in the absence of the written comments with supporting documents, the Commission may decide on the matter based on the details submitted by the petitioners.

12. During the hearing, Sri. M. G. Ramachandran, Senior Advocate, presented the details on behalf of the petitioner, and Sri. Bipin Sankar presented the matter on behalf of the respondent KSEB Ltd. The summary of the deliberations during the hearing is given below.

(1) The Commission sought clarification on the date of commercial operation of the project. As per the additional submission of the petitioner, first 4 MW commissioned on 15.12.2016, the next 16 MW on 04.01.2017, next 8 MW on 17.02.2017, next 8 MW on 30.03.2017 and the last 14 MW on 14.09.2017.

KSEB Ltd submitted that, the date of commissioning of the last unit, i.e., 14.09.2017 may be taken as the date of commercial operation of the project.

The Commission invited attention of the KSEB Ltd on Article 1.2 (xv) and Article 6.0 of the power sale agreement signed by KSEB Ltd with M/s IREDA on 31.03.2017, where in it is clearly stipulated that, the date of commercial operation of the capacity commissioned till 31.03.2017 shall be treated as first part and remaining capacity (if any) within 30.06.2017. The Commission clarified that, KSEB Ltd cannot take a different stand from the agreement signed by them with IREDA.

The Commission sought clarification regarding the documents on declaring the CoD of the project. The petitioner clarified that the copies of the minutes of the meetings of the 'Commissioning Committee' constituted with representatives of KSEBL, RPCKL, IREDA and SECI, declaring each block of the solar plant capacity. However, the petitioner had not produced documents/ minutes of the meeting of the Commissioning capacity regarding the commissioning of the last 14 MW capacity of the plant.

As per the power sale agreement signed by the petitioner with KSEB Ltd, the last 14 MW of the plant shall be commissioned by 30.06.2017, instead of the actual date of commissioning on 14.09.2017. The petitioner pointed out that, as per the PSA, the remaining 14 MW capacity to be commissioned after 31.03.2017, be commissioned within 30.06.2017 or as mutually agreed by the parties. The Commission directed the petitioner to produce the copies of the documentary evidences on the CoD of the last 14 MW of the plant.

- (2) The Commission sought clarification on whether Central Financial Assistance (CFA) is available for the project. The petitioner clarified that, they had not availed any CFA. The cost of evacuation system upto the interconnection point is to be included in the project cost of the 50MW solar plant. The Commission has pointed out that, as per the information available in the public domain, MNRE has released Rs 2.25 crore under CFA to SECI for the power evacuation system of the solar park. The Commission has also pointed out the minutes of the discussion between KSEB Ltd, SECI and IREDA, wherein it is recorded as follows.

*“Cost of External Transmission System*

*KSEBL stated that it has incurred an expense of Rs 37.35 Cr towards power evacuation expenses on 220 kV Ambalathara Substation and Ambalathara 33 kV line. SECI in its letter dated 28.09.2015 stated that the expenditure for the construction of 33/220 kV Sub-station at Ambalathara to evacuate 100 MW solar power from IREDA and THDC will be covered under project cost of Solar Park. KSEBL requested for the funding of total amount incurred for development of Transmission infrastructure at Ambalathara. M/s RPCKL in its letter dated 07.09.2016 has assured that the work for the development of transmission system for the 200 MW Kasargod solar park has been entrusted with KSEBL on deposit work basis.*

*SECI informed that the transmission infrastructure development cost for 50MW shall be recovered from the Solar Power Park Developer (SPPD). An amount of Rs 15Cr to be received from IREDA (Rs 30 lakh/MW chargeable to IREDA for 50MW solar PV Project) shall be accounted for the transmission evacuation charges. The balance amount shall be apportioned from the CFA (20 lakhs/MW) available for the Solar Park from MNRE.*

*As per clarification given by MNRE in its office memorandum dated 09.02.2017, 40% of CFA or 30% of the cost for development of transmission system whichever is higher will be provided to the STU towards development of external transmission system.*

*Decision – the committee decided to place the proposal of recovery of portion of transmission costs before the Board of KSEBL. Balance to be recovered from the Solar Power Park Developer (RPCKL) on implementation of balance capacity at Ambalathara.”*

- (3) The Commission has also directed the petitioner to clarify the reason for the high capital cost to the tune of Rs 6.22 crore / MW, against the normative capital cost of Rs 5.31 crore/MW approved by CERC for the year 2016-17. The normative capital cost approved by the CERC includes Rs 0.25 crore/MW towards land cost.

The petitioner clarified that, the capacity utilization factor (CUF) at 19% is fixed as a bid parameter. However, in the State of Kerala, the solar intensity is very low compared to the State of Gujarat, Rajasthan etc and hence the per panel conversion rate is less for Kerala compared to other states having higher intensity solar. Hence in order to ensure the CUF of 19%, EPC contractor has to install more number of solar panels at Kasargod and this has resulted in high EPC cost.

The Commission has directed the petitioner to provide the reasons through an affidavit with supporting documents.

- (4) The Commission has also sought clarification on the basis of providing 5.50% of the capital cost as soft cost. The petitioner submitted that, the claim is in line with the CERC norms as project management charges. Further, the 5.1.4 of the Tripartite agreement provides for the same.
- (5) As per the Article 3.2 of the supply contract between the SECI and the contractor M/s Jackson Engineers Limited, the noncompliance of the time lines and deficiency in services attract liquidated damages up to 5% of the EPC contract value as penalty as per the paragraph 34 of the notice inviting tender. The Commission has directed the petitioner

to clarify whether the petitioner levied any liquidated damages as per the above provisions.

- (6) The Commission has also directed the petitioners to clarify the role of RPCKL and how their administrative expenses are being met.
13. Based on the deliberations during the hearing, the Commission, vide daily order dated 20.6.2018 directed the petitioners IREDA & SECI and the respondent KSEB Ltd submit the following additional details, with supporting documents:
- (1) KSEB Ltd shall submit the detailed comments on the additional details submitted by the petitioner vide its letter dated 22.03.2018.
  - (2) The petitioner shall submit a copy of the O&M contract signed between the EPC contractor and SECI.
  - (3) The petitioner and respondent shall submit the following regarding the evacuation system of the solar park through an affidavit.
    - (a) What is the total cost of the evacuation system constructed by KSEB Ltd for the 50 MW solar park? Provide the details with supporting documents.
    - (b) What amount is deposited by SECI/IREDA to KSEB Ltd through the Renewable Power Corporation of Kerala Power Limited (RPCKL).
    - (c) The details of the CFA availed by RPCKL through SECI for the construction of the evacuation system.
    - (d) Whether the SECI and IREDA had done any prudency check of the amount claimed by KSEB Ltd through RPCKL for the construction of the evacuation system for the project.
      - (i) The reason for not availing the CFA for the transmission evacuation system.
  - (4) The petitioner shall submit the reason for the excessive increase in capital cost of the project compared to the normative capital cost approved by CERC for the FY 2016-17.
  - (5) The petitioner shall also submit the details of the liquidated damages claimed from the contractor M/s Jackson Engineers Limited as per the Article 3.2 of the supply contract between SECI and the contractor, read along with the paragraph 34 of the notice inviting tender.
  - (6) The petitioner and KSEB Ltd shall clarify the role of RPCKL and how their administrative expenses are being met.

- (7) Copy of the minutes of the meeting on mutual acceptance on the date of commissioning of the balance capacity after 31.3.2017 as per clause 6.0 of the agreement.
  - (8) Any other relevant information.
14. KSEB Ltd, vide letter dated 28.06.2018, submitted the remarks on the details submitted by IREDA on 27.3.2018 and the additional details as directed by the Commission and its summary are given below;
- (i) The date of commercial operation of the project as a whole: Article 6 of the PSA dated 31.3.2017 provides for commissioning of part capacity commissioned till 31.3.2017 and the remaining part within 30.6.2017 or mutually agreed basis. However, PPA provides for only one tariff, under Article 7 of PPA. As per the regulations in force the commissioning date of the project is the 'Date of Commercial Operation' of the project. The financial parameters for the year 2017-18, which is the year commissioning of the entire project, may be considered for determining tariff.
  - (ii) On petitioners contention that the delay in commissioning of the project is due to non availability of the evacuation system, KSEB Ltd submitted that;
    - (a) The evacuation system for evacuating 26MW from the solar park were ready through two 33KV feeders from 110KV Substation, Kanhangad on 5.12.2016, even before the commissioning of the 1<sup>st</sup> unit of Kasargode solar project. The 1<sup>st</sup> block of solar panels (Block C-14MW) were energized only on 15.12.2016, nearly two weeks after the readiness of evacuation facility. Even with the commissioning of 14MW unit, the maximum generation that could be achieved was only 3.78MW.
    - (b) Further, on 31.5.2017, KSEBL had commissioned 220KV Substation, Ambalathara with one 220/33KV 100MVA Transformer and 5 numbers of 33KV feeder bays for evacuating 100MW from the project, but the maximum generation from the plant as on 31.5.2017 was only 22.19MW. The project was commissioned in full only on 14.9.2017, i.e. four months later.
    - (c) It is worth mentioning that the maximum power output from the park as on date is 45.56MW only, recorded on 13.6.2018
  - (iii) KSEB Ltd requested that CFA, if any, available may be deducted while determining the tariff of the project. As per the DPR of the project, the provision for CFA is Rs. 9.38 Cr. Out of which Rs 2.25Cr is released to SECI, and out of the same Rs. 2.00 Cr is credited to RPCKL on 21.7.2016 and 25 Lakhs to SECI for the preparation of DPR.

- (iv) The argument of the petitioner that they have installed more panels to compensate low intensity solar insolation to achieve the specified CUF needs substantiation as the maximum output from the park so far is only 45.56MW (on 13.6.2018) even after the elapse of one season.
- (v) The total expenditure for the development of evacuation facilities from Solar Park is Rs. 318,152,944/- (Rupees Thirty One Crore Eighty One Lakhs Fifty Two Thousand Nine Hundred and Forty Four only). Out of this total, KSEBL has received an amount of Rs. 10 Crore (including TDS) from M/s. RPCKL. Decision on the balance amount to be demanded from RPCKL is pending as there are proposals for utilizing the 220KV substation for strengthening the network by KSEBL.

15. The he petitioners M/s IREDA and SECI submitted the additional details on 01.09.2018, and its summary is given below.

- (i) SECI is a Government of India Undertaking established under the administrative control of the Ministry of New and Renewable Energy (**MNRE**). SECI also acts as the nodal agency of the Government of India for development of solar power projects at different places in India. SECI has been vested with the functions as the nodal agency to implement number of schemes of MNRE, Government of India and these include Viability Gap Fund (**VGF**) Scheme for large scale grid connected projects under Jawaharlal Nehru National Solar Mission (**JNNSM**), Solar Park Scheme and grid connected solar roof top scheme and also host of other specialized Schemes, such as Defence Scheme, canal top scheme, Indo-Pak Border Scheme etc. SECI is also the disbursing agency for the Government of India to route the Viability Gap Fund {VGF} provided by the Government of India.
- (ii) With respect to the Kasargode solar park, the role of IREDA is that IREDA has established and owns the 50 MW Solar PV Project at Kasargod in the State of Kerala. SECI has provided the project management services for the development of the said 50 MW Solar Power Project at Kasargod.
- (iii) RPCKL is the Solar Power Park Developer establishing the solar park and facilities in the solar park at Kasargode. The management of the solar park is the responsibility of RPCKL and the Government of India provides grant to this agency only.
- (iv) SECI has commissioned in the 50 MW solar park in a phased manner and as follows;

Capacity	Date of Commissioning
4 MW	15-12-2016
16 MW	04-01-2017
8 MW	17-02-2017
8 MW	30-03-2017
14 MW	14-09-2017

These dates are decided by the Commissioning committee constituted on this behalf by KSEB Ltd , IREDA, RPCKL and SECI

- (v) As per the provisions of the tender document for the selection of the EPC Contractor, the EPC contractor is required to install at least 55 MW of Solar PV modules for achieving the required performance guarantee.
- (vi) The agreed CoD for the entire 50MW solar power project was agreed to be on 30.6.2017, but the actual CoD was achieved only on 14.9.2017, with a time overrun of 2 ½ months. The reason is non availability of evacuation system.
- (vii) The EPC price as well as the O&M Charges being in pursuance of a transparent Competitive Bidding process, the best possible price, terms and conditions in regard to the capital cost of the solar project was ensured. Considering the time at which the Competitive Bid was held, the price discovered through the bid process was most competitive and economical for the parties to finalise the arrangement, award the contract for the EPC and O & M and finalise the PSA between IREDA and the Kerala State Electricity Board Limited.
- (viii) The capital cost of the project, broadly include the following three components.
  - (a) EPC contract amount of Rs 269.29 Cr derived through competitive bidding
  - (b) The evacuation cost of Rs 25.38 Cr. If there is any reduction, this will be passed on to the benefit of KSEB Ltd
  - (c) The other miscellaneous charges including the cost of fund and PMC Charges which have been reduced and settled at Rs 16.21 Crores as against the actual cost of Rs 36.60 Crores.
- (ix) As per the tender condition, the EPC Contractor is required to install minimum 55 MW of panels to achieve required performance. The capital cost will necessarily be higher in the State of Kerala because of the number of panels required for achieving the same CUF of 19% as compared to other States like Gujarat, Rajasthan, Madhya Pradesh etc.
- (x) IREDA submitted that, the parties had mutually agreed to extend the Scheduled Commissioning Date of the power project beyond 30.6.2017.
- (xi) The Project handing over is under process. Subsequently, the O & M Contract will be executed in line with the provisions of the NIT document for the selection of the EPC Contractor.
- (xii) No liquidated damages has been claimed from M/s Jackson Engineers Limited till this date.

16. The Commission conducted the fourth hearing on the petition on 26.09.2018. During the deliberations of the subject matter, Sri. Abhinav Kumar, representing the petitioners submitted the following.

- (i) The Renewable Power Corporation of Kerala Limited (RPCKL) is the Solar Power Park Developer (SPPD) of the 200MW solar plant proposed by the State Government at Kasaragod.
- (ii) IREDA has not yet signed the O&M contract with the EPC contractor due to the delay in taking over of the project. As per the bid document, the EPC contractor has to operate the plant for 10 years from CoD.
- (iii) MNRE has released Central Financial Assistance (CFA) of 2.0 Cr to SECI and SECI transferred the amount to RPCKL, the SPPD.
- (iv) As documentary evidence on the prudence of the capital cost incurred for the project, the petitioners has produced a certificate of the Chartered Accountants.

However, the Commission has clarified that, the actual cost expended by the petitioner along with tax invoices and other supporting documents shall be produced before the Commission.

- (v) The petitioners reiterated its claim that, to achieve the CUF of 19% in Kerala, the petitioners has to install more number of solar panels compared to that required in Gujarat or Rajasthan. Accordingly, the petitioners have installed solar panels for 55 MW solar capacity in the state of Kerala to achieve the 50 MW capacity in the State of Kerala. Hence the EPC cost is slightly higher than the bench mark capital cost fixed by CERC.
- (vi) The total capital cost claimed is 310.88 Cr, which includes the service charges of SECI and cost for constructing the evacuation facilities. The petitioner further submitted that, though the other charges including IDC, project management charges etc incurred was Rs 36.60 crore, the same was capped at Rs 16.21 crore, limited to 5.5% of the total project cost claimed.
- (vii) The capacity commissioned upto 31<sup>st</sup> March 2017, 36 MW, may be considered as Part 1 and the remaining capacity of 14 MW as part 2, as per the Power Sale Agreement (PSA) between KSEB Ltd and IREDA.
- (viii) The scheduled date of Commissioning was extended by the Commissioning committee and therefore no delay on the part of IREDA. However, the commissioning of the entire project was delayed on account of delay in handing over of the land for the project and delaying in commissioning of the evacuation facilities.



17. Sri Bipin Sankar, Deputy Chief Engineer, KSEB Ltd, submitted that,

- (i) Generally the commissioning dates specified by IREDA is in order. However, the date of commissioning of the last unit (14 MW) on 14.09.2017 may be taken as the date of commercial operation of the 50MW project as a whole. As per the Article 7 of the PPA which provides for only one tariff, for the energy injected from the part capacity of 36 MW upto 31.03.2017 and the balance capacity as on 14.09.2017. Hence, the Commission may determine the project specific tariff for the project as a whole, considering the CoD as 14.09.2017, i.e., the date of commissioning of the last unit. Since the CoD for the whole project falls in the financial year 2017-18, the Commission may adopt the technical and financial parameters for the year 2017-18 for determining the project specific tariff for the project. Once the Commission determines the project specific tariff, the same may be made applicable for the energy generated from project as a whole.
- (ii) Regarding the issue raised by the petitioners that, one of the reason for delay in commissioning of the project was due to the non availability of the transmission system, KSEB Ltd submitted the following.
  - a) The evacuation system for evacuating 26MW from the solar park were ready through two 33KV feeders from 110KV Substation, Kanhangad on 5-12-2016, even before the commissioning of the 1<sup>st</sup> unit of Kasargode solar project. The 1<sup>st</sup> block of solar panels (Block C – 14MW) were energized only on 15-12-2016, nearly two weeks after the readiness of evacuation facility. Even with the commissioning of 14MW unit, the maximum generation that could be achieved was only 3.78MW.
  - b) Further, on 31-5-2017, KSEBL had commissioned 220KV Substation, Ambalathara with one 220/33KV 100MVA Transformer and 5 numbers of 33KV feeder bays for evacuating 100MW from the project, but the maximum generation from the plant as on 31-5-2017 was only 22.19MW. The project was commissioned in full capacity only on 14-9-2017, i.e. four months later.
- (iii) Though the contract agreement signed by the petitioner SECI with the EPC contractor M/s Jackson Engineers Limited specify that, the detailed breakup of the contract price is given as appendices, the same was not attached in the submission along with the copy of the agreement submitted before the Commission with a copy to KSEB Ltd. The detailed break up is necessary to carry out prudence check on the capital cost.
- (iv) KSEB Ltd also submitted that, the capital cost claimed for the solar plant was comparatively high, when compared to the normative capital cost for solar PV plants approved by CERC

18. The Commission expressed the view that, there is disagreement between the petitioner and KSEB Ltd regarding the CoD of the project as a whole to be considered for tariff determination. Further, there is a considerable delay in commissioning of the project when compared to the schedule of commissioning in the EPC contract. However, the petitioners had not taken any steps for recovering the liquidated damages from the EPC contractor. The petitioners claimed that, there is delay in handing over land for the project and also delay in commissioning of the evacuation system.

The Commission also noted that, for the date of commercial operation, the petitioner has produced a minutes of the meeting between the representatives of the petitioners and respondent KSEB Ltd. The Commission clarifies that the developer of the project shall declare the COD based on the prudent utility practices.

19. The Commission, vide daily order dated 05.10.2018, directed the petitioners and KSEB Ltd to clarify the following latest by 15.10.2018.

(1) Date of Commercial operation of the project: As per the details submitted before the Commission, part of the plant capacity 36 MW was commissioned before 31.03.2017 and the balance capacity 14 MW on 14.09.2017. What is the CoD of the project as a whole?. Both the parties may reach a consensus and clarify the same.

(2) The PSA provides for a 'single tariff' for the energy injected into the grid from the part capacity as well as the energy injected after the commissioning of the full capacity. Parties to clarify whether, the tariff of the project may be determined considering the project as a whole and the tariff so determined may be made applicable to the electricity generated and injected to the grid from first unit.

(3) What is the scheduled date of commissioning of the project as per the EPC contract agreement signed by the petitioners with M/s Jackson Engineers Limited. Clarify with supporting documents.

(4) When was the land for the project handed over to the petitioner SECI and when the construction of the project was started? Provide documentary evidence in support of the claim.

(5) What are the provisions for recovering the liquidated damages from the EPC contractor for delay in commissioning of the project?

20. In compliance of the direction of the Commission, the petitioners M/s IREDA and SECI on 31.10.2018 submitted the following.

(1) Date of commercial operation of the project:

As per the power sale agreement dated 31.03.2017, part commissioning of the project is allowed. 36 MW out of 50 MW was

commissioned as on 31.03.2017 and the balance 14 MW was commissioned on 14.09.2017.

- (2) Whether the tariff of the project may be determined considering the project as a whole?

In terms of the Power Sale Agreement entered into between the petitioner No.1 and KSEB Ltd, the tariff payable is single part tariff and not a two part tariff. The single part tariff would mean that for each unit of electricity generated and supplied, there will be one tariff applicable, namely as per the power sale agreement i.e., Rs 4.95/unit. The single part tariff being applicable for each unit of electricity generated and injected into the Grid will remain the same whether the part capacity is commissioned or the whole capacity is commissioned and energy injected is from the part capacity or full capacity. The capacity of 50 MW was allowed to be commissioned in a phased manner.

- (3) Scheduled date of commissioning as per EPC contract:

In terms of the LOI dated 29.12.2015, issued to the EPC contractor M/s Jakson Engineers Limited, the project time line has been specified as under.

*“2.2 The time lines for execution of the contract is 210 days from the date of award of LOI. The contractor shall commission 30 MW (AC) capacity out of 50 MW (AC) of project capacity within 100 days of issue of LOI i.e., 07.04.2016. Remaining capacity shall be commissioned and the entire project shall be completed within 210 days of issue of LOI i.e. 26.07.2016 as per conditions stipulated in Clause 8 of the SCC of NIT. The Project shall be required to have Operational Acceptance within 240 days from the issue of LOI i.e. 25.08.2016. Time is the essence of the contract. Non-compliance of timelines and deficiency in service conditions will attract LD as per relevant clauses of NIT document.”*

Thus as per the LOI dated 29.12.2015, the entire project was to be brought under COD in phases by 210 days from the date of issue of LOI. However there were issues on land allotment and evacuation facility. The petitioners are in the process for assessing the claim for liquidated damages for the delay in the part of EPC contractor. Any amount realized from contractor will be adjusted towards capital cost.

- (4) Date of handing over of land and start of construction:

The petitioners submitted that, the land was handed over in patches and entire land come into control of the petitioners only in August 2016. The EPC contractor could effectively start the construction work only after August 2016. There is no specific document of the exact date of the commencement of the work by EPC contractor.

- (5) Provision for claiming liquidated damages from the EPC contractor for delay in commissioning of the project:

Terms of the provisions of the EPC contract agreement with M/s Jackson Engineers Limited, the liquidated damages is payable with limitation of liability as provide in 34.2 ( amended) of the General Conditions of Contract (GCC). The clause 34.2 of the GCC is extracted below.

“ In case the contractor fails to achieve successful commissioning of plant by the scheduled date indicated in Project Timelines as mentioned in SCC Clause 8, the Employer shall levy Liquidated Damages on the Contractor in the following lines:

1. *For first 45 days: @ 0.10% of the Contract Value of the remaining work per day of delay, as assessed in accordance with the certified payments subtracted from the total contract value.*
2. *For delay beyond 45 days mentioned at (i) above and up to 90 days from the scheduled commissioning date, LD shall be levied @ 0.1% of the total Contract Value per day.*
3. *For the delay beyond 90 days of scheduled commissioning date; Employer after due assessment may initiate the appropriate action including getting the work completed by other suitable agency at the risk and cost of the contractor.*
4. *The above mentioned formula will be applicable on prorata basis for part-wise commissioning stipulated in project timelines in SCC Clause 8 as amended.”*

21. The respondent KSEB Ltd is yet to submit its comments.

### **Analysis and Decision**

22. The Commission has examined the petition filed by M/s IREDA and SECI, the counter affidavit filed by KSEB Ltd, other relevant documents and records placed by the petitioner and the respondent and also the deliberations during the hearing, and decided the following.
23. KSEB Ltd and SECI had entered into a Memorandum of Association (MOU) on 18.02.2015 for the development of Solar Power Projects and Supply of Solar Power in the State. A tripartite agreement was signed on 31.03.2015, between KSEB Ltd, SECI and IREDA, for development of project and sale of power for 50 MW Solar Power project at Kasargod, Kerala, where in the role and responsibilities of each entities of the agreement are clearly specified.

As per the tripartite agreement, the Solar Energy Corporation of India (SECI) is responsible to design, develop, construct and commission the project through an EPC arrangement. Further, SECI is responsible to take up operation and Maintenance of the project through an Agency on mutually agreed terms and conditions.

Indian Renewable Energy Development Agency Ltd (IREDA) shall own and fund the project. IREDA shall also enter into long term sale of power from the project.

KSEB Ltd, is to facilitate in making available the land in the solar park. Further, it is the responsibility of the KSEB Ltd to make arrange for transmission/connectivity agreement and Right of Way to IREDA/SECI for erection of transmission line connecting the project to the identified STU substation. KSEB Ltd shall purchase of power on long term basis for the contracted capacity at a fixed tariff and as per the terms and conditions of the Power Sale Agreement to be entered between IREDA and KSEB. Tariff shall be determined by the appropriate Regulator using CERC approved norms.

24. Subsequently, on 31.03.2017, IREDA and KSEB Ltd entered in to the Power Sale Agreement (PSA) for the purchase of power from the 50 MW solar plant established in the Kasargod Solar Park located at Kasargod district in the State of Kerala. The clause-7 of the PSA deals with the tariff for the sale of electricity from the project to KSEB Ltd, which is extracted below for ready reference.

*“7.0 Tariff*

*The tariff will be at a levelized tariff of Rs.4.95/unit or the rate as approved by Kerala State Electricity Regulatory Commission, whichever is lower. Both parties agree to review the tariff on completion of 15 years from the commercial operation date on mutually agreed terms.”*

As above, as per the PSA dated 31.03.2017, signed between IREDA and KSEB Ltd, this Commission has to determine the tariff for the electricity generated from the project. If the tariff so determined by this Commission is more than Rs 4.95/unit, the tariff applicable shall be Rs 4.95/unit, other wise the applicable tariff for the project shall be the same approved by this Commission.

25. In the original petition dated 16<sup>th</sup> June 2017, the petitioner IREDA filed the petition with the prayer to approve the PSA dated 31.03.2017, signed between IREDA and KSEB Ltd. However, as stated in the paragraph 24 above, as per the clause-7 of the PSA, this Commission has to determine the tariff for the electricity generated and supplied to KSEB Ltd. Hence this Commission, after hearing the matter on 29.08.2018, directed the petitioner

vide the daily order dated 30.08.2017 to file a revised petition with complete details including the technical and financial parameters to determine the project specific tariff for the electricity generated from the project. The petitioner had filed the revised petition on 11.12.2017. The Commission had conducted detailed hearing on the petition on 06.02.2018, 11.06.2018 and 26.09.2018.

26. The Commission has noted that, the total installed capacity of the plant was 50 MW. The total project cost, loan availed, RoE, evacuation facilities etc are for the total capacity. Hence the Commission has to determine the tariff for the 50 MW solar plant as a whole, based on the technical and financial parameters as on the date of the commercial operation (COD) of the project as a whole. The clause-7 of the PSA also envisages only one tariff, for the electricity generated from the plant as a whole.

However, the PSA provides for part commissioning of the project. As per the definition (xv) under clause 1.2 and clause 6 of the PSA dated 31.03.2017, the project capacity commissioned upto 31.03.2017 is taken as first part and remaining capacity as second part.

As per the details placed before the Commission, the project was commissioned in a phased manner as follows.

Capacity	Date of Commissioning
4 MW	15-12-2016
16 MW	04-01-2017
8 MW	17-02-2017
8 MW	30-03-2017
14 MW	14-09-2017

As above, 36 MW capacity was commissioned as on 31.03.2017 and balance capacity was commissioned on 14.09.2017. The Commission also noted that, the entire electricity generated from the plant is injected into the State Grid and the same is being utilized by KSEB Ltd. Hence based on the PSA signed by IREDA with KSEB Ltd, additional details submitted by IREDA and SECI, the counter affidavit filed by KSEB Ltd, the KSERC (Renewable Energy) Regulations, 2015, CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017, Tariff Regulations notified by CERC and KSER , and prudent utility practices followed in the Country has decided the following:

- (1) KSEB Ltd shall pay for the entire electricity generated from the project, irrespective of the date of commissioning, at the tariff as per the clause-7 of the PSA, i.e., at the rate of Rs 4.95/unit or the rate determined by this Commission in this order, which ever is lower.

- (2) Though the part commissioning plant is allowed, the Commission has decided to determine the tariff for electricity generated from the 50 MW solar plant as a whole, duly considering the total project incurred upto the commissioning of the last unit, the loan availed for the entire project, equity incurred for the project as a whole etc.
- (3) For adopting the technical and financial parameters during the year of commissioning of the project for determining the tariff, the Commission has decided to adopt the FY 2017-18 as the year of commissioning, since the last unit of the plant was commissioned on 14.09.2017.
27. The Commission has not specified the technical and financial norms and parameters for determining the project specific tariff RE generators for the financial year 2017-18. However, as per the Regulation-17 (4) of the KSERC (Renewable Energy) Regulations, 2015, till the Commission notify separate norms and parameters for determining the tariff for electricity generated from RE projects, the norms and parameters notified by the CERC for the purpose of determination of tariff for the electricity generated from RE projects may be adopted for determining the tariff of electricity generated from RE projects. The relevant Regulation is extracted below.

*“17(4) Until separate principles, norms and parameters are specified by the Commission as above, the principles, norms and parameters specified by the Central Commission for the purpose of determination of tariff for the electricity generated from various categories of renewable sources of energy, as specified in the Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2012, as amended from time to time, may be adopted by the Commission for the purpose of determination of tariff under these regulations.”*

CERC vide the notification No.:1/21/2017-Reg.Aff./(RE-Tariff -2017-20)/CERC Dated: 17<sup>th</sup>April 2017 has notified the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations,2017, applicable for three years from 01.04.2017. The Commission hereby adopts the norms and parameters specified by the CERC for the financial year 2017-18 for determining the project specific tariff for the electricity generated from the 50 MW solar PV park established at the solar park at Kasargod.

28. The following technical and financial parameters have been considered for determination of the tariff for the electricity generated from the solar plant.
1. Capital cost
  2. Useful life of the plant
  3. Plant load factor
  4. Auxiliary consumption
  5. Debt: Equity ratio
  6. Term of loan and interest
  7. Return on Equity

8. Interest on working capital
9. Depreciation
10. Operation and Maintenance expenses
11. Discount rate

### **Capital cost**

29. The capital cost incurred by the developer for establishing the project is the basis for determining the project specific tariff. As directed by the Commission, the petitioner had submitted the cost expended by them in the project, as detailed below.

#### Per MW Capital cost claimed by the petitioner

Sl No	Particulars	Amount (Rs.Cr)	Rs. Cr/MW
1	EPC cost	269.29	5.39
2	Power evacuation cost	25.38	0.51
3	Other charges (5.5% of (1)&(2))	16.21	0.32
	Total	310.88	6.22

The Commission noted that, the EPC cost claimed for the project is much higher than the capital cost of the similar solar PV projects, established in other parts of the country, which is in the range of Rs 5.00 crore per MW only during the period under consideration. During the deliberations of the subject matter, the petitioner submitted that, the capacity utilization factor (CUF) at 19% is fixed as a bid parameter while selecting the EPC contractor. However, in the State of Kerala, the solar intensity is very low compared to the State of Gujarat, Rajasthan etc and hence the per panel conversion rate is less for Kerala compared to other states having higher intensity solar. Hence in order to ensure the CUF of 19%, EPC contractor has to install more number of solar panels at Kasargod and this has resulted in high EPC cost.

The Commission has noted the clarification provided by the petitioner for accepting the high EPC contract price. Though the EPC contract price is seems to be higher, since the EPC contractor was selected through e-Reverse Auction among three participants, the Commission decided to adopt the EPC price claimed by the petitioner for determining the tariff.

### **Liquidated damages**

30. The clause-3 of the supply contract between SECI and the EPC contractor M/s Jakson Engineers Limited signed on 22.03.2016 deals with 'effective date for determining time for completion' which is extracted below.

*" 3. Effective Date for Determining Time for Completion*



### 3.1 Effective date and effectiveness

*The effective date for all purposes of interpretation and application of various terms and conditions in this contract shall be construed as the date of issuance of the Letter of Indent by SECI on behalf of IREDA i.e., 29.12.2015*

### 3.2 Project Timelines:

*The time lines for execution of the contract is 210 days from the date of award of LOI. The contractor shall commission 30 MW (AC) capacity out of 50 MW (AC) of project capacity within 100 days of issue of LOI i.e., 07.04.2016. Remaining capacity shall be commissioned and the entire project shall be completed within 210 days of issue of LOI i.e. 26.07.2016 as per conditions stipulated in Clause 8 of the SCC of NIT. The Project shall be required to have Operational Acceptance within 240 days from the issue of LOI i.e. 25.08.2016. Time is the essence of the contract. Non-compliance of timelines and deficiency in service conditions will attract LD as per relevant clauses of NIT document.*

31. The clause 34 of the General Conditions of Contract (GCC) deals with the liquidated damages, which is extracted below.

#### *“34. Liquidated damages*

*34.1 The project is scheduled to be commissioned within the period specified in SCC from the date of issue of LOI.*

*34.2 In case the contractor fails to achieve successful commissioning of the plant by the due date indicated in Timeline, the Employer shall levy Liquidated Damages on the Contractor at the rate of 0.10% of the total contract value per day of delay for the remaining work, subjected to a maximum of 5% (five percent) of the total contract value.*

*34.3 The project can be scheduled to be commissioned within the stipulated time period mentioned at SCC plus additional 1.5 months from the date of LOI. In case of delay for more than the maximum period allowed (including LD), the Employer may get the project completed by other suitable agency at risk and cost of Contractor. For calculation of liquidated damages, the month shall be considered consisting of 30 days and the date of LOI as reference date.”*

32. As per the details submitted before the Commission, the project was commissioned as follows.

Capacity	Date of Commissioning
4 MW	15-12-2016
16 MW	04-01-2017
8 MW	17-02-2017
8 MW	30-03-2017
14 MW	14-09-2017

33. The Lol was issued to the Contractor M/s Jakson Engineers Limited on 29.12.2015. As per the supply contract dated 22.03.2016, the contractor shall commission 30 MW capacity out of 50 MW of project capacity within 100 days from the date of Lol, i.e., by 07.04.2016. Remaining capacity shall be commissioned and the project shall be completed within 210 days of issue of Lol, i.e., 26.07.2016. The project shall be required to have operational acceptance within 240 days from the date of issue of Lol, ie., 25.08.2016. However, in the case of Kasargod solar park, the first unit was commissioned on 15.12.2016, i.e., after 8 months 9 days from the time line specified in the contract. Further, the last unit was commissioned with a delay of 13 months and 19 days.
34. The petitioner could not submit the reason for the delay in commissioning of the project. The petitioner vide the letter dated 30.10.2018 submitted that 'the liquidated damages payable only if the EPC contractor delays the completion of the project for the reasons attributable to the EPC contractor. The petitioner also submitted that, they are in the process of assessing the quantum of liquidated damages that can be claimed against the EPC contractor. Any liquidated damages recovered by the petitioners from the EPC contractor will be adjusted towards capital cost, as per the established practice in the electricity sector.
35. The Commission has examined the matter in detail. It is noted that, the total delay in commissioning of the project was about 249 days for the first 30 MW and the delay in commissioning for the total capacity was about 409 days. However, the clause 34 of the GCC limits the maximum liquidated damages of 5%, at the rate of 0.10 % of the total contract value per day. It means that, the GCC provides the liquidated damages @0.1% of the contract value per day upto a maximum of 50 days only. Hence the Commission decide to impose the maximum liquidated damage @5% of the contract value of the EPC cost of Rs 269.29 crore, i.e., a total liquidated damage of Rs 13.46 crore on the total EPC cost.
36. Thus, the Commission had considered the EPC cost excluding the liquidated damages only for determining the tariff for electricity generated from the project. The details are given below

Sl No	Particulars	Amount (Rs. Cr)
1	EPC cost	269.29
2	Liquidated damages @5% of the EPC cost	13.46
3	Net EPC cost adopted for tariff determination	255.83

### **Power Evacuation cost**

37. In the petition, the petitioner claimed the total cost of evacuation as Rs 25.38 crore. The petitioner further clarified that, IREDA had remitted Rs 17.25 crore to Renewable Power Corporation of Kerala Limited (RPCKL) for constructing evacuation facilities. Further, RPCKL has claimed an additional demand of Rs 8.13 crore, which was later withdrawn by the RPCKL.

On the contrary, KSEB Ltd vide its letter dated 28.06.2018 has submitted that, the total expenditure for the development of the evacuation facilities from solar park is Rs 31.81 crore. The substation and the connected infrastructure were created entirely for evacuation of power from the park. The evacuation infrastructure was created to cater to solar park of capacity of 130 MW. KSEB Ltd is working out a proposal for utilization of the substation by sharing the infrastructure and KSEB Ltd will share the cost of the substation to the tune of Rs 10.4723 crore, and only the balance amount of Rs 21.34 crore will be charged from RPCKL.

The Commission examined the claim of the petitioner as well the submission of KSEB Ltd. As per the details submitted by KSEB Ltd, the power evacuation facilities was created at the cost of Rs 31.86 crore to cater the solar park capacity of 130 MW. Hence there is no rationale for loading the entire cost to the 50 MW plant developed by the petitioner. Hence, the Commission has adopted the proportional cost of power evacuation for 50 MW out the total cost of Rs 31.86 crore incurred for creating the power evacuation infrastructure for 130 MW. Accordingly, the cost of power evacuation considered for tariff determination is Rs 12.25 crore.

### **Other cost**

38. The petitioners had claimed 5.5% of the EPC cost and power evacuation cost as soft cost. The petitioner claimed that, this in line with CERC norms for IDC and project management cost. The petitioners further submitted that, the clause 5.1.4 of the tripartite agreement also provides for the same. Accordingly, the petitioner has claimed Rs 16.21 crore as other cost.

The Commission noted that, the CERC order dated 23.03.2016 in petition No. 17/SM/2015 provides 5.21% of the total capital cost as preliminary and pre-operating expenses. The Commission also provide 5.21% of the total cost as other cost. This works out to Rs 14.61 crore only.

### **Capital cost approved for tariff determination**

39. As explained in the preceding paragraphs, the total capital cost considered for determining the tariff for electricity generated from the solar plant is given below.

Sl No	Particulars	Claimed by the petitioner	Approved by the Commission
		(Rs. Cr)	(Rs. Cr)
1	EPC cost	269.29	269.29
2	Liquidated damages	0	13.36
3	Net EPC cost = (1)-(2)	269.29	255.93
4	Power evacuation cost	25.38	12.24
5	Other cost	16.21	14.61
6	Total for 50 MW solar plant	310.88	282.78
7	Cost per MW (Rs. Cr/ MW)	6.22	5.66

#### **Useful life of the project**

40. The petitioner has claimed the useful life of the project as 25 years.

As per the Regulation 2(1)(cc) of the CERC RE Regulations, 2017, the useful life of the solar PV projects specified by CERC is '25' years. Hence the Commission decided to adopt the useful life of the project as 25 years for determining the tariff.

#### **Capacity Utilisation Factor (CUF)**

41. The petitioner claimed the CUF at 19% for determining the tariff for the electricity generated from the project.

As per the Regulation 53 of the CERC RE Regulations, 2017, the capacity utilization factor (CUF) of solar PV plants is specified as 19%. Hence the Commission decide to adopt the CUF @ 19% for determining the tariff.

#### **Debt: Equity Ratio**

42. The petitioner has claimed the debt:equity ration of 70:30 for determining the tariff.

The Regulation-13 of the CERC RE Regulation, 2017 also specify the debt:equity ratio at 70:30. The Commission decide to adopt the debt:equity ratio as per the CERC RE Regulations, 2017 for determining the tariff.

#### **Loan repayment period and rate of interest**

43. The petitioner proposed an interest rate @8% for determining the tariff of the electricity generated from the project.

As per Regulation 14 (1) of the CERC RE Regulations, 2017, the normative loan payment period for tariff determination is adopted as 13 years. Further as per the Regulation 14(2) of the CERC RE Regulations, 2017, the interest rate to be adopted for tariff determination is 'two hundred (200) basis points above the average SBI Marginal Cost of Funds based Lending Rate (MCLR) prevalent during the last available six months'. The average SBI MCLR rate for past six months from August 2017 is 7.95%. Accordingly, based on the CERC RE Regulations, 2017, the normative interest rate for the determination of tariff comes to 9.95%.

Further, the Regulation 7(c) of the CERC RE Regulations, 2017 provides that, the Financial and Operational norms specified therein would be the ceiling norms. Hence the interest rate of 8% claimed by the petitioner is better than the normative interest rate specified in the CERC RE Regulations, 2017, the Commission decide to adopt the same for determining the tariff.

#### **Depreciation**

44. As per the Regulation 15 of the CERC RE Regulations 2017, the depreciation rate for RE projects for the first '13' years of the useful life is 5.28% and the depreciation for the remaining period at 1.78%. The Commission adopts the same for tariff determination.

#### **Working capital**

45. As per the Regulation 17(1) of the CERC RE Regulations, 2017, the components of the working capital consists of the following:
1. O&M cost for one month.
  2. Maintenance of spares at 15% of the O&M cost
  3. Receivable for two months.

The petitioners proposed the working capital based on the CERC regulations and hence the Commission decides to adopt the same for tariff determination.

#### **Interest on working capital**

46. As per the Regulation 17(3) of the CERC RE Regulations, 2017, the interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff.

The average SBI MCLR rate for past six months since August 2017 is 7.95%. Accordingly, based on the CERC RE Regulations, 2017, the interest rate works out to 10.95 %. The Commission decide to adopt the interest on working capital at 10.95%, as per the CERC RE Regulations, 2017.

#### **Operation and Maintenance Expenses**

47. CERC vide the Regulation 54 of the CERC RE Regulations, 2017 specified that, the Commission shall determine only project specific O&M expenses based on prevailing market trends of solar thermal projects.
48. As per the Lol issued to the M/s Jackson Engineers Limited, the O&M cost is fixed for 10 years @ Rs 25762500.00 per annum for the 50 MW solar PV plant at Kasargod. Hence Commission decides to adopt the same for determining the tariff. From 11<sup>th</sup> year onwards, the Commission decide to provide an escalation @5.71% per annum.

## Return on equity

49. As per the CERC RE Regulations, 2017, the normative RoE shall be @14%, to be grossed up by prevailing Minimum Alternate Tax (MAT) as on 1<sup>st</sup> April of the previous year for the entire useful life. However, considering the ambiguity in claiming MAT, the Commission decided to allow RoE @14% on the equity of 30% of the approved capital cost. Further, any tax paid on the RoE shall be allowed as a pass through, limited to the amount of equity considered in this Order, which shall be claimed separately from KSEB Ltd, duly furnishing proof of payment of such tax.

## Discount factor for computing levelised tariff

50. The discount rate proposed by IREDA is 10.7%. As per the Regulation 10 of the CERC RE Regulation, 2017, for the purpose of levelised tariff computation, the discount factor equivalent to Post Tax Weighted Average Cost of Capital (WACC) shall be considered.

The WACC has been computed as under:

WACC = Cost of Debt + Cost of Equity

Where

Cost of Debt = 70% x market rate of interest

Cost of equity = 30% x return on equity

Accordingly, the Commission, arrive the discount factor for determining the levelised tariff as follows.

Particulars	WACC
<b>Cost of debt</b>	
0.7 * 8%	5.60%
<b>Cost of Equity</b>	
0.3 * 14%	4.20%
<b>Weighted Average cost of capital</b>	<b>9.80%</b>

## Summary of the technical and financial parameters

51. The summary of the technical and financial parameters adopted for determining the tariff of the 50 MW Solar PV project developed by IREDA at Kasargode.

### **Technical and Financial parameters adopted for tariff determination**

Sl No	Particulars			Remarks
1	Installed capacity	50	MW	As per the petition
2	Life of the plant	25	Years	CERC norms 2017
3	Capacity utilisation factor	19	%	CERC norms 2017
4	Capital cost of the project	5.66	Rs .Cr/MW	Approved after prudence check
5	Debt: Equity	70:30		CERC norms 2017
6	Loan tenure	13	Years	CERC norms 2017
7	Interest rate	8	%	As per the petition
8	RoE (post-tax)	14	%	CERC norms 2017
9	MAT/ Income tax	Pass through at actual		
10	Working capital			CERC norms 2017
	(i) O&M cost for one month			
	(ii) Receivable equivalent to two month			
	(iii) Maintenance of spares @15% of the O&M expenses			
11	Interest on WC (MCLR+3%)	10.95	%	
12	O&M cost (for first 10 years)		(as per EPC contract)	
13	O&M cost (second year onwards)	5.72% escalation from 11 th year onwards		
14	Depreciation	5.28%	for first 13 years	CERC norms 2017
		1.78%	For remaining useful life	CERC norms 2017
15	Discount rate = weighted average cost of capital	9.8	%	CERC norms 2017

52. Based on the above norms and parameters, the levelised tariff determined for the 50MW Solar PV Project for the useful life of the project at Rs 4.31/unit.

#### **Benefit of Accelerated Depreciation**

53. The Regulation 23 of the CERC RE Regulations, 2017 specifies that, the Commission shall take into consideration any incentive or subsidy offered by the Central / State Government including accelerated depreciation. The relevant regulation is extracted below.

*“ 23. Subsidy or incentive by the Central / State Government 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 projects during second half of the fiscal year. Per unit benefit shall be derived on levelled basis at discount factor equivalent to weighted average cost of capital.”*

54. As specified in the CERC RE Regulation, 2017, the Commission had estimated the benefit of accelerated depreciation. Accordingly, for determining the benefit of accelerated depreciation, the applicable Corporate Income Tax rate of 34.61% (30% Income Tax rate + 12% surcharge + 3% Education Cess) has been considered. As per the Circular dated 7 November, 2016 of the Income Tax Department, the accelerated depreciation rates have been revised to 40% for FY 2017-18. For determining the net depreciation benefits, depreciation @ 5.28% as per the Straight Line Method (book depreciation as per the Companies Act, 2013) has been compared with depreciation as per the Income Tax Act, i.e., 40% under the Written Down Value method. 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. Depreciation for the first year has been computed at the rate of 40% and the accelerated depreciation at 20%, assuming the Project to be capitalized for the full financial year. The tax benefit has been worked out as per the Corporate Income Tax rate on the net depreciation benefit. The 'per unit levelised accelerated depreciation benefit' has been computed considering the weighted average cost of capital as the discounting factor.

The benefit of accelerated depreciation for the project is Rs 0.48/unit. The net levelised tariff of the project after accounting the accelerated depreciation is Rs 3.83/unit.

### **Order of the Commission**

55. After the detailed examination of the petition filed by M/s IREDA, and comments of the respondent KSEB Ltd and also duly considering the provisions of the Electricity Act-2003, Tariff Policy 2016, and the Regulations notified by the KSERC and Central Commission, and other relevant documents wherever necessary, the Commission here by orders the following:
- (1) The levelised tariff for the electricity generated from the 50 MW Solar PV project at Kasargode is approved @Rs 3.83/unit, duly considering the benefit of accelerated depreciation.
  - (2) The levelised tariff approved by the Commission is applicable for the entire electricity injected into the grid from the date of synchronization upto 25 years.



- (3) KSEB Ltd shall reimburse, any tax paid on the RoE, limited to the amount of equity specified in this Order. For claiming the tax, developer shall furnish the proof of payment of such tax to KSEB Ltd.
- (4) KSEB Ltd shall reimburse, the land lease paid by IREDA/RPCKL, less amount received as subsidy, if any, in addition to the above.

Petition disposed off.

Sd/-  
**K.Vikraman Nair**  
Member

Sd/-  
**S.Venugopal**  
Member

Sd/-  
**Preman Dinaraj.**  
Chairman

**Approved for issue**

**Secretary**

Kasargod solar park- Parameters adopted for Tariff determination					
Sl No	Head	Sub Head	Detailed Head	Unit	Norm
1	Power Generation	Capacity	(i) Installed Power Generation Capacity	MW	1
			(ii) Capacity Utilisation factor	%	19
			(iii) Auxiliary consumption	%	0.25
			(iv) Useful life	years	25
2	Project cost	Capital cost /MW	Power plant cost	Rs .Cr	5.66
3	Source of Fund		Tariff period	Years	25
		Debt- equity	Debt	%	70
			Equity	%	30
		Debt component	Loan amount/MW	Rs.Cr	3.96
			Moratorium	Years	0
			Repayment period (include moratorium)	Years	13
			Interest rate	(MCLR+2)%	8.00
		Equity component	Equity amount/ MW	Rs.Cr	1.70
			Normative RoE	%	14.00
4	Financial Assumptions				
		Depreciation	Depreciation rate for first 13 years		5.28
					1.78
5	Working capital	For Fixed charges	O&M charges	Months	1
			Maintenance spare	% of O&M expenses	15
			Receivable for debtors	Months	2
			Interest on working capital	(MCLR+3)%	10.95
6	Operation and Maintenance	O&M expenses (2017-18)	As per the EPC contract		
			O&M expense escalation from 11th year onwards	%	5.72
Generic Tariff - for 25 years without the benefit of accelerated depreciation				4.31 Rs/unit	
Accelerated depreciation				0.48 Rs/unit	
Generic Tariff for 35 years with the benefit of accelerated depreciation				3.83 Rs/unit	

KASARGOD 50 MW Solar Park- Tariff determination														
SI No	Years													
1	Gross Generation	(MU)	1.664	1.664	1.664	1.664	1.664	1.664	1.664	1.664	1.664	1.664	1.664	1.664
2	Auxiliary consumption	(MU)	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
3	Net Generation	(MU)	1.660	1.660	1.660	1.660	1.660	1.660	1.660	1.660	1.660	1.660	1.660	1.660
	Fixed cost													
4	Interest on loan													
	Loan at the beginning of the year	(Rs. Cr)	3.96	3.65	3.35	3.05	2.74	2.44	2.13	1.83	1.52	1.22	0.91	0.61
	Interest on loan	(Rs. Cr)	0.30	0.28	0.26	0.23	0.21	0.18	0.16	0.13	0.11	0.09	0.06	0.04
5	RoE	(Rs. Cr)	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
6	Depreciation	(Rs. Cr)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
7	O&M cost	(Rs. Cr)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
8	Working capital	(Rs. Cr)	0.18	0.17	0.17	0.16	0.16	0.16	0.15	0.15	0.14	0.14	0.13	0.13
	Interest on WC	(Rs. Cr)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
9	Total annual fixed cost	(Rs. Cr)	0.91	0.89	0.86	0.84	0.81	0.79	0.76	0.74	0.71	0.69	0.67	0.64
10	Fixed cost/unit	(Rs./kWh)	5.49	5.34	5.19	5.04	4.89	4.74	4.59	4.44	4.29	4.14	4.01	3.88
11	Discount factor		1.00	0.91	0.83	0.76	0.69	0.63	0.57	0.52	0.47	0.43	0.39	0.36
12	Levelised tariff	(Rs./kWh)	4.31											





**KASARGOD Solar Park- benefit of Accelerated depreciation**

Depreciation	90% of the Capital cost																			
Book depreciation rate	5.28%	first 13 years																		
Tax depreciation rate	1.78%	Remaining 13 years																		
Income tax	40.00%																			
	34.608	%																		
Years																				
Book depreciation	(Rs. Cr)		1	2	3	4	5	6	7	8	9	10	11							
			0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Accelerated depreciation																				
Opening	(%)		100%	40.0%	24.0%	14.4%	8.6%	5.2%	3.1%	1.9%	1.1%	0.7%	0.4%							
Allowed during the year	(%)		60.0%	16.0%	9.6%	5.8%	3.5%	2.1%	1.2%	0.7%	0.4%	0.3%	0.2%							
Closing	(%)		40.0%	24.0%	14.4%	8.6%	5.2%	3.1%	1.9%	1.1%	0.7%	0.4%	0.2%							
Accelerated depreciation	(Rs.Cr)		3.05	0.81	0.49	0.29	0.18	0.11	0.06	0.04	0.02	0.01	0.01							
Net depreciation benefit	(Rs. Cr)		2.76	0.52	0.19	-0.01	-0.12	-0.19	-0.24	-0.26	-0.28	-0.28	-0.29							
Tax benefit	(Rs. Cr)		0.95	0.18	0.07	0.00	-0.04	-0.07	-0.08	-0.09	-0.10	-0.10	-0.10							
Net generation	(MU)		1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66							
Per unit accelerated depreciation	(Rs/kWh)		5.74	1.08	0.40	-0.01	-0.26	-0.40	-0.49	-0.54	-0.57	-0.59	-0.61							
Discount factor			1.00	0.91	0.83	0.76	0.69	0.63	0.57	0.52	0.47	0.43	0.39							
Levelised benefit	(Rs/kWh)		0.478																	

