नई दिल्ली
NEW DELHI

याचिका संख्या./ Petition No. 175/GT/2024

कोरम/ Coram:

Shri Jishnu Barua, Chairperson
Shri Ramesh Babu. V, Member
Shri Harish Dudani, Member

आदेश दिनांक/ Date of Order: 20th March, 2025

IN THE MATTER OF:

Petition under Sections 62 and 79(1)(a) of the Electricity Act, 2003 read with Chapter-V of the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 along with "CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020" for determination of levelized tariff for "8 MW Ground Mounted Solar Photo Voltaic Power Project" at DVC Panchet, West Bengal.

AND IN THE MATTER OF:

Damodar Valley Corporation
DVC Towers, VIP Road
Kolkata -700054

……..Petitioner

Versus

1. West Bengal State Electricity Distribution Company Limited
   Vidvut Bhavan, 7th Floor, 'C' Block
   Kolkata-700091

2. Jharkhand Bijli Vitran Nigam Limited
   Engineering Building, HEC, Dhurwa
   Ranchi- 834004

……Respondents

Parties Present: Shri Venkatesh, Advocate, DVC
Shri Nihal Bhardwaj Advocate, DVC
Shri Mohit Gupta, Advocate, DVC
Shri Kartikay Trivedi, Advocate, DVC
Shri Ms. Manu Tiwari, Advocate, DVC
Shri Shivam Kumar, Advocate, DVC

Shri Harsh Vardhan, Advocate, DVC
Shri Kshitij Pandey, Advocate, DVC

आदेश/ ORDER

1. The Petitioner, Damodar Valley Corporation (DVC), is a multi-functional organization established to manage the generation and supply of electricity. DVC, as a distribution licensee, supplies power to its consumers located in valley areas situated in the State of West Bengal and Jharkhand. As per the guidelines of the West Bengal Electricity Regulatory Commission (WBERC) & Jharkhand State Electricity Regulatory Commission (JSERC), DVC has a commitment to compliance with the Solar Renewable Purchase Obligation (RPO) as well as non-solar RPO. In view of the vision for the fulfilment of RPO as well as moving towards the achievement of the long-term vision of India for Net Zero, DVC has planned to set up Solar PV Plants within the DVC command area.

2. The Respondents, West Bengal State Electricity Distribution Company Limited (WBEDCL) and Jharkhand Bijli Vitran Nigam Limited (JBVNL) are the Distribution Companies of West Bengal and Jharkhand respectively, incorporated to carry out distribution of electricity.

3. DVC is setting up a Solar PV Power Project of 8 MW capacity at Panchet, situated in West Bengal, to supply the energy generated from this project to its existing consumers both in West Bengal and Jharkhand.

4. DVC has filed the present petition under Sections 79(1)(a) and 62 of the Electricity Act, read with Regulations 7 and 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 (RE Tariff Regulation, 2020), for determination of project specific tariff for 8 MW Solar PV Plant at Panchet, West Bengal for a duration of 25 years.

5. The project was initially scheduled for commissioning on 15.05.2024, but the Commercial Operation Date (COD) has now been extended to 30.10.2024. The Petitioner filed the present Petition under CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 (RE Tariff Regulations, 2020) for the determination of the levelized tariff for the 8 MW Solar Photo Voltaic Power Project at Panchet. However, the expected COD falls under the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024 (RE Tariff Regulations, 2024)

6. DVC has made the following prayers:
   (a) Determine and approve the levelized tariff for 8 MW Solar Photo Voltaic power project at Panchet to facilitate recovery of proposed tariff from firm consumers situated in DVC command area through distribution tariff to be approved by JSERC & WBERC or through bundling with thermal power for sale to beneficiaries or through any other mode of sale.
   (b) Allow recovery of fee & charges as applicable (i.e. SLDC Charges, Tariff filing fees, implication of any changes on tax & duties etc.).

(c) *Allow the prayer of DVC to approach before the Commission for module degradation factor, if it actually occurs in future.*
(d) *Issue any other order as deemed fit in such case.*

<u>Submission by the Petitioner, DVC</u>

7. The Petitioner submitted the following:
   (i) The Work Order to set up an 8 MW Solar PV Power Project at Panchet was awarded to the successful bidder, M/s Gensol Engineering Limited, selected through a transparent bidding process of e-tendering through CPP (Central Public Procurement) Portal followed by reverse auction.
   (ii) The Work Order for the diversion of 33 KV D/C Line for installation of Solar Power Plant at Panchet was awarded to successful bidder M/s Manish Construction, selected through a transparent bidding process of open tendering followed by reverse auction (RA). In Response to the specific query on the work order, it was submitted that 33kV D/C Line & Structure was passing through the Project Plot; it needed to be shifted/diverted for safety purposes and to avoid the shadow effect.
   (iii) Initially, the Scheduled Commercial Operation Date (SCOD) date was 15.05.2024. But in a later submission, the Petitioner submitted that due to a delay in the supply of materials & execution at the Project site, the project completion time has been extended till 30.10.2024.
   (iv) The EPC was discovered through the bidding process of e-tendering through the CPP Portal followed by reverse auction, while other parameters like Preliminary Cost, Project Management Cost, Contingency Cost, etc., are considered on a lumpsum basis. Total project EPC cost, including GST amounts to be Rs. 4664 Lakh. The total Capital Cost of the Project has been considered as Rs 4793.96 Lakh.
   (v) Estimated provisional IDC was considered as per Investment approval / Sanction Order. After completion of project work, actual capital cost including IDC in reconciliation with accounts, would be submitted at the time of True-up Petition.
   (vi) No subsidy/ incentive was received for this project from the Central Government or the State Government by DVC.
   (vii) The parameters related to the project used in the calculation of the tariff were submitted, along with a request for the Commission to determine and approve the levelized tariff of Rs. 3.92/kWh for the 8 MW Solar Photovoltaic Power Project at Panchet.
   (viii) As COD was yet to be declared, DVC was unable to submit the completed cost in the instant petition and submitted that it may be granted liberty to revise/modify the instant petition and its related claims based on the actual capital cost and final tariff as may be approved by the Commission.
   (ix) The tariff determined by the Commission is proposed to be recovered from firm consumers through ARR. The solar PV power so produced would primarily be utilised for fulfilment of RPO. Any excess power left thereafter, DVC may decide to sell the power to its beneficiaries through bundling with thermal power or through any other mode of sale. Subsequently, the petition submitted the possibilities of bundling at this stage seem remote and that the entire power would be utilised in meeting the RPO obligations of DVC.

(x) The Petitioner also requested that any levies, taxes, duties, SLDC charges, or other costs imposed on DVC, including fees paid to the Commission in this Petition and publication expenses (if any), will be charged additionally to DVC beneficiaries or electricity consumers.

Hearing held on 11.07.2024

8. No one appeared on behalf of the respondent. During the course of the hearing, the Commission allowed the Petitioner to make the paper publication of the tariff claimed in the petition for comments from firm consumers situated in the DVC command area and the beneficiaries of DVC. Further, the Commission directed the Petitioner to provide the rationale for opting for a project-specific tariff under Section 62 instead of competitive bidding under Section 63, along with the Request for Selection (RfS) document, Detailed Project Report (DPR) and the successful bidder's bid. The Petitioner was also asked to provide details on the AC/DC ratio, EPC cost breakdown, project status considering the SCOD of 15.05.2024, details of actual capital costs, IDC calculations, and their impact on the levelized tariff. Additional information sought by the Commission includes financing details (Debt-Equity Ratio, loan approval, borrowing rate, repayment schedule), competitiveness of the proposed tariff, an explanation for the high tariff of Rs 3.92/kWh for the 8 MW Solar PV plant, CUF as well as generation statements from the commercial operation date, and the proposed mechanism of selling excess power to beneficiaries through bundling with DVC thermal stations and required consent from the beneficiaries for the same. Details were also asked regarding wide publications of the tariff Petition for consultation with the firm consumers of the Petitioner in the State of West Bengal and Jharkhand and the response of the Petitioner on the comments from stakeholders, if any.

Submissions on behalf of the Petitioner, DVC, on 05.08.2024 in compliance with ROP dated 11.07.2024

9. In compliance with the direction of the Commission during the hearing dated 11.07.2024, the Petition submitted the following:

(i) The project-specific tariff under Section 62 of the Electricity Act, 2003, was chosen over competitive bidding under Section 63 due to the project's small capacity (8 MW) and investment value of less than Rs.60 crore. Moreover, the solar power generated from the project is intended for internal consumption by DVC and to meet regulatory obligations like RPO and RGO, necessitating a tariff structure aligned with these specific usage needs.

(ii) The AC /DC ratio for the project has been 1.3 based on the climatic characteristics of the project location, such as sunlight intensity, temperature, and weather patterns, which helps maintain the designed AC output and CUF by ensuring that inverters are optimally utilized even during periods of lower sunlight. Additionally, this ratio minimizes system losses from factors like shading, soiling, and temperature derating, ultimately enhancing the efficiency and reliability of the solar power system. Furthermore, the chosen AC/DC ratio improves project economics by maximizing energy yield and optimizing inverter usage, leading to a Lower-Levelized Cost of Energy (LCOE). Using more solar panels with the same inverter capacity lowers the cost per unit of energy, improving financial returns and competitiveness and securing better PPAs for long-term financial stability.

(iii) The detailed break-up of EPC cost has been submitted in the Revised Sanction Order. The 33kV D/C Line running through the project site needed to be shifted/diverted for safety reasons and to prevent any shadowing effects on the solar panels. To ensure the project's safety and optimal use of resources, DVC awarded the diversion work to a successful bidder through a separate contract.

(iv) The Project Completion time got extended till 30.10.2024 due to a delay in the supply of materials & execution at the Project site. The actual capital costs, along with IDC calculations would be correctly determined after achieving the commissioning of the project.

(v) The Project Financing (Debt Equity Ratio 80:20) has been considered as per the approved Sanction Order dated 25.07.2023. The actual loan interest rate has been considered as 8.30% (Repo Rate + 1.80%). The rate of borrowing of working capital of 12.01%, in line with Regulation 17(1)(4) of the RE Regulations, 2020, has been considered for tariff determination.

(vi) The Project was awarded through transparent, competitive bidding with reverse auction. Before the award of the contract, sufficient competition was ensured, and due diligence was carried out after comparing similar capacity plants in the Eastern Region, and the awarded value was found to be competitive. At present, DVC would be required to purchase power from the market to meet the RPO requirements, where the rate of renewable power is much higher. The average MCP for GDAM as of June 2024 was approximately Rs 5.365/kWh, which is higher than the tariff proposed by DVC. Based on the comparison of prices between the GDAM and GTAM, the GDAM prices are slightly lower than GTAM prices, ranging from Rs 5.365/kWh to Rs 5.95/kWh, respectively. The proposed tariff of Rs 3.92/kWh for the solar plant is economically favourable in this context.

(vii) The higher tariff of the project was influenced by several factors. The tariff calculation considers the cost of 33kV Line diversion and the project-specific nature of the tariff. With a transmission charge of Re 1/kWh and a withdrawal loss of 2-3%, the proposed tariff remains competitive. The project's smaller capacity and lower solar intensity in the Eastern Region require more panels to achieve a high CUF, which is reflected in the tariff. Additionally, DVC purchased 40 MW of solar power from NTPC at around Rs 10/kWh, significantly higher than the proposed tariff, emphasizing the competitiveness of DVC's proposed rate.

(viii) The present Petition was uploaded on the DVC website for the General Public, including all the consumers /stakeholders. No comments were obtained. The gist of the tariff petition was not published in the newspapers due to the significant publication cost, which could increase the unit cost for end consumers. However, if directed by the Commission, the Petitioner will publish the gist in the newspapers.

(ix) The CUF for the project was set at 22.5% as per the terms and conditions outlined in the RfS/NIT**.** The project has not yet been commissioned and is set to undergo a trial run operation. Therefore, the generation statement will be submitted once the trial run is completed.

(x) Excess Power Sales and RE Bundling: Initially, the Petitioner envisaged that it might sell the excess solar power to the beneficiaries through the RE-bundling scheme of the Ministry of Power, Govt. of India. However, it was realised that the entire solar power to be generated from the Project would be utilised entirely in meeting the Petitioner's solar RPO obligation and providing power to the firm consumers in its command area. Considering the stringent target set by the Regulators, the entire power would be utilised in meeting RPO obligation only, and chances of selling to beneficiaries through RE bundling at this stage seem remote.

<u>Hearing held on 30.09.2024</u>

10. During the course of the hearing, the learned counsel for the Petitioner submitted that though the Commission vide ROP dated 11.07.2024 permitted the paper publication of the tariff petition, the Petitioner had also sent individual e-mails to all the customers of the project but received no responses. Accordingly, the learned counsel prayed that the service through e-mail may be accepted. Further, no representative of the Respondent was present despite notice. The Commission directed the Petitioner to file an affidavit with regard to such service of e-mails. Subject to this, the order was reserved.

<u>Affidavit on behalf of the Petitioner in compliance with ROP dated 30.09.2024</u>

11. In compliance with the Commission's direction, the Petitioner submitted the Affidavit, which included the emails sent to DVC's customers on 28.09.2024, informing them and providing a copy of the present petition. Additionally, the Petitioner also made newspaper publications to invite comments from the stakeholders. The Petitioner also requested that the publication expense and filing fees be borne separately by the beneficiaries of the Project.

<u>Analysis and Decision</u>

12. We have heard the learned counsels of parties and have carefully perused the records.

13. The Petitioner has filed the Petition under RE Tariff Regulations, 2020. At the time of filling the petition, the expected COD was on 15.05.2024. But as per the ROP compliance submitted on 05.08.2024, the Petitioner submitted that the project completion time had been extended till 30.10.2024 due to a delay in the supply of materials & execution at the project site. As such, the expected COD is covered under the RE Tariff Regulations, 2024, as the Control Period of these Regulations is from 01.07.2024 till 31.03.2027.

14. The determination of project-specific tariff is governed by Regulations 7 & 8 of the RE Tariff Regulations 2024. The relevant extracts of the Regulations are reproduced as under:
"7. Project Specific tariff
a) Project specific tariff, on case to case basis, shall be determined by the Commission for the following types of renewable energy projects:
i. Solar PV power projects, floating solar projects and solar thermal power projects;
ii. Wind power projects (both on-shore and off-shore);
iii. Biomass Projects, Biomass gasifier based power projects, and biogas based power projects – if a project developer opts for project specific tariff;;

iv. Municipal solid waste based power projects and refuse derived fuel based municipal solid waste power projects – if a project developer opts for project specific tariff;
v. Renewable hybrid energy projects;
vi. Renewable energy with storage projects; and
vii. Any other project based on new renewable energy sources or technologies approved by the Central Government.

b) Financial and operational norms specified in these regulations, except for capital cost shall be the ceiling norms while determining the project specific tariff.

8. Petition and proceedings for determination of tariff
(1) In case of renewable energy projects for which a generic tariff has to be determined as per these regulations, the Commission shall determine such generic tariff prior to the commencement of the year for each year of the Control Period:

Provided that for the first year of the Control Period, i.e., from 01.07.2024 to 31.03.2025, the generic tariff shall be determined upon issuance of these regulations.

(2) A petition for determination of project specific tariff shall be accompanied by such fee as may be specified in the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time or any subsequent re-enactment thereof, and shall be accompanied by:
a) Information in forms 1.1, 1.2, 2.1, 2.2 and 2.3, as the case may be, as appended to these regulations;
b) Detailed project report outlining technical and operational details, site specific aspects, basis for capital cost, detailed break-up of capital cost and financing plan;
c) A statement of all applicable terms and conditions and anticipated expenditure for the period for which tariff is to be determined;
d) A statement containing details of the calculation of any grant, subsidy, or incentive received, due or assumed to be due, from the Central Government or State Government or both. This statement shall also include the proposed tariff calculated without such subsidy or incentive;
e) Consent from the beneficiary for procurement of power from renewable energy project, unless such requirement has been exempted by the Central or State Government; and
f) Following documents in case of a petition for determination of project specific tariff by renewable energy projects, where tariff from such renewable energy sources is generally determined through a competitive bidding process in accordance with provisions of Section 63 of the Act:
i. Rationale for opting project specific tariff instead of competitive bidding; and
ii. Competitiveness of the proposed tariff vis-à-vis tariff discovered through competitive bidding/ tariff prevalent in the market.
g) Any other information directed by the Commission.
(3) The proceedings for determination of tariff shall be in accordance with the provisions of the Conduct of Business Regulations.

15. The technical and operational norms for Solar PV Projects are specified in Chapter 7 of the RE Tariff Regulations 2024. The relevant extracts are reproduced as under:

"Chapter 7: Parameters for solar PV power projects, solar thermal power projects and floating solar projects

46. Capital Cost

The Commission shall determine only project specific capital cost considering the prevailing market trends.

47. Capacity Utilisation Factor

The Commission shall only approve capacity utilisation factor for project specific tariff:

Provided that the minimum capacity utilization factor for solar PV power projects shall be 21%:

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48. Operation and Maintenance expenses

The Commission shall determine only project specific O&M expenses considering the prevailing market trends.

49. Auxiliary Consumption

The Commission shall only approve auxiliary consumption for project specific tariff:

Provided that the maximum auxiliary consumption for solar PV power projects shall be 0.75%;

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Tariff Design

16. Regulations 9 & 10 of the RE Tariff Regulations, 2024 state as under:

"9. Tariff Structure

The tariff for renewable energy sources shall consist of the following components:

(a) Return on equity;

(b) Interest on loan;

(c) Depreciation;

(d) Interest on working capital; and

(e) Operation and Maintenance expenses;

Provided that for renewable energy projects having fuel cost component, like biomass power projects with rankine cycle technology, biomass gasifier based power projects, biogas based power projects, non-fossil fuel based co-generation projects and refuse derived fuel based power projects, single part tariff with two components, fixed cost component and fuel cost component, shall be determined.

10. Tariff Design

(1) The generic tariff shall be determined, on levelized basis, considering the year of commissioning of the project, for the tariff period of the project:

Provided that for renewable energy projects having single part tariff with two components, fixed cost component shall be determined on levelized basis considering the year of commissioning of the project while fuel cost component shall be determined on year of operation basis in the Tariff Order to be issued by the Commission.

(2) For the purpose of levelized tariff computation, discount factor equivalent to post-tax weighted average cost of capital shall be considered.
(3) The above principles shall also apply for project specific tariff."

17. Accordingly, the Commission shall determine the project-specific tariff of the Petitioner's (DVC) project as a single-part tariff considering the year of commissioning of the project. However, before proceeding to determine the tariff, the Commission would like to deal with the question about the Petitioner's decision to opt for a project-specific tariff under Section 62 over competitive bidding under Section 63 of the Electricity Act, 2003. In response to the specific query of the Commission in this regard, the Petitioner has submitted that Section 62 project-specific tariff was chosen due to the project's small capacity (8 MW) and investment value of less than Rs.60 crore. Moreover, the solar power generated from the project is intended for internal consumption by DVC and to meet regulatory obligations like RPO and RGO, necessitating a tariff structure aligned with these specific usage needs. The Commission has noted the justification but would advise the Petitioner to seriously explore the option of competitive bidding before opting for project-specific tariffs in the future. Now, we would deal with the tariff determination for the Petitioner's project in the instant case.

<u>Debt-Equity Ratio</u>

18. DVC has considered debt-equity Ratio as 80:20 for the purpose of computation of Tariff. The Project Financing has been considered as per the approved Sanction order dated 25.07.2023.
19. Regulation 13 of the RE Tariff Regulations, 2024 states as under:

"13. Debt Equity Ratio

(1) For determination of generic tariff and project specific tariff, the debt-equity ratio shall be considered as 70:30:
Provided that:

i. The project specific tariffs, where the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as a normative loan;
ii. The project specific tariffs where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff;
iii. The equity invested in foreign currency shall be designated in Indian rupees on the date of each investment;
iv. The debt-equity ratio shall be considered after deducting the amount of grant or capital subsidy received for the project for arriving at the amount of debt and equity; and
v. The premium, if any, raised by the generating company while issuing share capital and investment of internal resources created out of its free reserve for the funding of the project shall be reckoned as paid-up capital for the purpose of computing return on equity only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the renewable energy project.

(2) *The project developer shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding the infusion of funds from internal resources in support of the utilization made or proposed to be made to meet the capital expenditure of the renewable energy project.*

20. The Commission notes that the Petitioner has considered the debt-equity ratio as 80:20. As per Regulation 13 of the RE Tariff Regulations, where the equity actually deployed is less than 30% of the capital cost, the actual equity needs to be considered for determination of tariff. The Petitioner has also submitted the revised sanction order dt. 15.03.2024, in which the financing pattern of debt-equity ratio as 80:20 has been approved. Accordingly, in terms of Regulation 13 of the RE Tariff Regulations, the Commission has decided to consider the debt-equity ratio of 80:20 for tariff determination of the said project.

Return on Equity

21. DVC has claimed a Return on Equity of 18.709 % by grossing up the normative return on equity of 14% with the applicable corporate tax rate. The Petitioner has exercised the option u/s 115BAA of the Income Tax Act, 1961, from the Assessment Year 2020-21 onwards. DVC submitted that Section 115BAA of the Income Tax Act states that domestic companies have the option to pay Tax @ 22% plus Surcharge of 10% & Cess of 4% (Effective Tax Rate = 25.168 %). Hence, the above tax rate, i.e., 25.168 % has been considered for the purpose of computation of tariff by the Petitioner. The rate of Income tax adopted as 25.168% {22% (corporate tax) * 1.10 (surcharge) * 1.04 (education Cess)}. Accordingly, the Petitioner has computed the Rate of Return as 18.71% for the entire tariff period (25 years).

22. Regulation 16 of the RE Tariff Regulations 2024 states as under:
"16. Return on Equity
(1) The value base for equity shall be as determined under Regulation 13.
(2) The normative Return on Equity for renewable energy projects other than small hydro projects shall be 14%, and that for the small hydro projects shall be 15%. The normative Return on Equity shall be grossed up by the latest available notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the latest available notified Corporate Tax rate for the remaining Tariff Period.

23. As per Regulation 16 of the RE Tariff Regulations, normative ROE needs to be grossed up by the MAT rate for the first 20 years of the tariff period and by the Corporate Tax Rate for the remaining tariff period.
24. For FY 2024-25, the MAT rate was 15%, and accordingly, the effective MAT rate (including a 12% surcharge and 4% Health and Education cess) works out to 17.472%. The Commission, in its generic tariff order dated 02.08.2024 in Petition No 5/SM/2024 for the renewable energy project to be commissioned in FY 2024-25, has considered the MAT rate of 17.47% and Corporate Tax rate of 34.94%. Accordingly, as per the RE Tariff Regulations, the normative ROE of 14% has been grossed up by a MAT rate of

17.472% for the first 20 years which yields the Return on Equity Rate of 16.96% and for the remaining tariff period, it is grossed up by the corporate tax rate of 34.94% (30% Income Tax rate+ 12% surcharge +4% Health and Education cess) which yields the ROE of 21.52%. Accordingly, the same has been considered for the purpose of tariff determination. The Commission has adopted a similar approach while dealing with such petitions under project-specific tariffs.

Interest on Loan Capital

25. DVC has submitted that the actual rate of interest on loan capital as 8.3 % has been considered for the purpose of computation of tariff. In response to the specific query regarding the financing of the project, DVC has submitted an approved Sanction Order dated 25.07.2023 from the Punjab and Singh Bank (PSB) Bank. DVC has also annexed a copy of the Loan Sanction Agreement with PSB for a Term Loan of Rs. 672 Crore to be utilized for capital expenditure to set up Renewable Energy projects, including ground-mounted solar PV plants. Clause 4 of the Agreement mentioned the rate of borrowing of a loan as 8.30% per annum. As per Clause 6 of the Agreement, the loan shall be repaid in 40 (Forty) equal quarterly instalments in April, July, October, and January each year. Accordingly, the Petitioner has considered the interest on loan capital as 8.3% in tariff determination.
26. Regulation 14 (2) of the RE Tariff Regulations 2024 states as under:

   "(2) Interest on Loan

   (a) The loans arrived at in the manner indicated in Regulation 13 shall be considered as gross normative loans for the calculation of interest on loans. For project specific tariff, the normative loan outstanding as on the 1st of April of every year shall be worked out by deducting the cumulative repayment up to the 31st of March of the previous year from the gross normative loan.

   (b) For the purpose of computation of tariff, the normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months shall be considered.

   (c)Notwithstanding any moratorium period availed by the project developer, the repayment of the loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

27. Regulation 7 of the RE Tariff Regulations 2024 states as under:

   "7. Project Specific tariff

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   b) Financial and operational norms specified in these regulations, except for capital cost shall be the ceiling norms while determining the project specific tariff."

28. The Commission notes that according to Clause (b) of Regulation 7 of the RE Tariff Regulations 2020, the financial norms, except for capital cost, shall be the ceiling norms for determining the project-specific tariff. It would be pertinent to mention that in its generic tariff order dated 02.08.2024 in Petition No 5/SM/2024 for the renewable energy projects to be commissioned in FY 2024-25, the Commission has considered the interest

on loan component as 10.65% (average of SBI MCLR Rate for six months from 15th December 2023 till 14th June 2024 plus 200 basis points).

29. As per the monthly data of MCLR for the last available six months (prior to the expected COD (i.e., 30.10.2024) of the project) from the State Bank of India and the average MCLR is shown in the following table:

Effective Date	**One Year Tenor MCLR Rates**
15.05.2024 to 14.06.2024	8.65%
15.06.2024 to 14.07.2024	8.75%
15.07.2024 to 14.08.2024	8.85%
15.08.2024 to 14.09.2024	8.95%
15.09.2024 to 14.10.2024	8.95%
15.10.2024 to 14.11.2024	8.95%
Avg. for last Available 6 months	**8.85%**

30. As provided in Regulation 7 (b) of the RE Tariff Regulations 2024, financial parameters specified in the Regulations are ceiling norms. Accordingly, the Commission decides to consider the actual interest on a loan provided by DVC by the Petitioner as 8.30 % p.a for determination of tariff.

31. Further, the Commission also observes that while the tenure of the loan period is 10 years with 3 year moratorium period, the Petitioner has considered the repayment of the loan from the first year of the commercial operation of the project as per Regulation 14(2) (c) of the RE Tariff Regulations. The Commission accepts the proposed methodology adopted by the Petitioner. Accordingly, the interest on the loan has been calculated by considering loan repayment equal to the annual depreciation allowed for the project while determining the tariff calculation as proposed by the Petitioner.

Depreciation

32. DVC has claimed depreciation as 4.67% for the first 15 years of the project life and the remaining depreciation of 2% spread over the useful life of the project. The salvage value of the asset has been considered as 10%.
33. Regulation 15 of RE Tariff Regulations 2024 states as under:

"15. Depreciation

(1) The value base for the purpose of depreciation shall be the capital cost of the project admitted by the Commission. The salvage value of the project shall be considered as 10%, and depreciation shall be allowed up to a maximum of 90% of the capital cost of the project:

Provided that no depreciation shall be allowed to the extent of grant or capital *subsidy received for the project.*

(2)Depreciation rate of 4.67% per annum shall be considered for the first 15 years and the remaining depreciation shall be evenly spread during the remaining Useful Life of the project.

(3)Depreciation shall be computed from the first year of commercial operation:

Provided that, for determination of project specific tariff, in case of commercial operation of the project for part of the year, depreciation shall be computed on a pro rata basis.

34. According to Clause (b) of Regulation 7 of the RE Tariff Regulations, the financial norms, except for capital cost, shall be the ceiling norms for determining the project-specific tariff. Accordingly, the salvage value of the asset is considered 10%, and depreciation is allowed up to 90% of the capital cost. Further, the Commission has considered depreciation at 4.67% for the first 15 years and 2% for the remaining period spread over the useful life of the project as proposed by the Petitioner.

Interest on Working Capital

35. DVC has considered the interest on working capital as 12.10% in terms of Regulation 17(1) (4) of the RE Tariff Regulations. The Petitioner has considered the average of the State Bank of India (SBI) MCLR (1 Year Tenor) for six months (from 15.09.2023 till 15.02.2024) as 8.51% and has taken an additional 350 basis points as per the RE Tariff Regulations, 2020 to arrive at the interest on working capital as 12.10% for tariff determination purpose.

36. Regulation 17 of the RE Tariff Regulations 2024 states as under:

"17. Interest on Working Capital

(1) The Working Capital requirement in respect of wind power projects, small hydro projects, solar PV power projects, floating solar projects, solar thermal power projects, municipal solid waste based power projects and refuse derived fuel based power projects and renewable energy with storage projects shall be computed in accordance with the following:

a) Operation and Maintenance expenses for one month;

b) Receivables equivalent to 45 days of tariff for the sale of electricity calculated on the normative Capacity Utilisation Factor or Plant Load Factor, as the case may be; and

c) Maintenance spares equivalent to 15% of Operation and Maintenance expenses

…………………………..

(4) Interest on Working Capital shall be at an interest rate equivalent to the normative interest rate of three hundred and twenty-five (325) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months.

37. As per the monthly data of MCLR for the last available six months (prior to the expected COD (i.e., 30.10.2024) of the project) from the State Bank of India and the average MCLR is shown in the following table:

Effective Date	One Year Tenor MCLR Rates
15.05.2024 to 14.06.2024	8.65%
15.06.2024 to 14.07.2024	8.75%
15.07.2024 to 14.08.2024	8.85%
15.08.2024 to 14.09.2024	8.95%
15.09.2024 to 14.10.2024	8.95%
15.10.2024 to 14.11.2024	8.95%
Avg. for last Available 6 months	**8.85%**

38. As per the RE Tariff Regulations, interest on working capital needs to be computed as the average of the State Bank of India MCLR (One Year Tenor) prevalent during the last available six months plus 325 basis points. According to the RE Tariff Regulations, the interest on working capital works out to be 12.10% (i.e., 8.85 % plus 325 basis points).

39. The Commission observes that the Petitioner has not submitted any actual interest on working capital documentation and instead has preferred to consider a normative interest rate for working capital as per the RE Tariff Regulations.

40. Upon the specific query on the interest on working capital, DVC submitted that it has arranged multiple Short-Term loan arrangements with different banks. The Rate of interest currently ranges from 6.98% to 7.35% for STL/WCDL, whereas the Rate of Cash credit ranges from 8.25% to 8.70%. As financial parameters specified in the Regulations are ceiling norms for project-specific tariff determination, the Commission has decided to consider the average rate of interest of 7.84% as interest on working capital, based on the Petitioner's submission on short-term loan arrangements instead of the normative rate of interest on working capital.

Discount Factor

41. DVC has considered the discount factor as 7.77% equivalent to the Post tax weighted average cost of capital [{(8.30% x 0.80) x (1 – 25.168%)} + (14.0% x0.20)] for computation for tariff.

42. Regulation 10 (2) of the RE Tariff Regulations 2024 provides as under:

"10 Tariff Design

………………………………………….

(2) For the purpose of levelized tariff computation, discount factor equivalent to post-tax weighted average cost of capital shall be considered.
…………………..''

43. The Commission observes that for computing the discount factor, DVC has considered an effective corporate tax rate of 25.168%, being the domestic company that has exercised the option under Section115BAA of the Income Tax Act, 1961. As explained in the Return on Equity, the Commission follows the normative corporate tax rate instead of individual effective tax for the determination of tariff. The Commission notes that the discount factor as per the RE Tariff Regulations should be equal to the post-tax weighted average cost of capital on the basis of the debt: equity ratio specified in the Regulations. Considering the debt-equity ratio (80:20) and the weighted average of the post-tax rates for the debt and equity component, the discount factor is calculated. The actual Interest Rate considered for the loan component (i.e.80 %) of capital cost is 8.30 %. For the equity component (i.e., 20 %), the rate of Return on Equity (ROE) is considered at a post-tax rate of 14 %. The Commission has considered the normative corporate tax rate as 34.94% (30% Income Tax rate+ 12% surcharge +4% Health and Education cess). The discount factor derived as per the Regulation 10(2) works out to 7.12% [(8.30 % x 0.80 x (1 – 34.94%)) + (14.0% x 0.20)]. Accordingly, the Commission allows the discount rate of 7.12% in the instant case.

Capital Cost of the Project

44. DVC has submitted the capital cost for the 8 MW Solar PV Power Plant as Rs. 4793.96 Lakh. DVC has claimed that this cost includes the EPC cost for the 8MW Solar PV plant and the work order for the diversion of the 33 KV D/C line discovered through a transparent bidding process of e-tendering through the CPP Portal (etenders.gov.in) followed by reverse auction (RA). The total project EPC cost for the Solar project, including the diversion of the 33 KV line, is Rs. 4664.39 Lakh as follows:

Contracts		**Price (Excluding GST)**	**GST Price**	**Total Price (Including GST)**
First Contract (Erection and commissioning of Solar PV plant)	Rs. Lakh	3,554.97	471.25	**4,026.22**
Second Contract (Service Cost)	Rs. Lakh	460.27	82.85	**543.12**
Diversion of 33 KV D/C PHS Madhukunda Line	Rs Lakh	80.55	14.50	**95.05**
Total Project Cost (Capital Cost)	**Rs Lakh**	**4,095.79**	**568.60**	**4,664.39**

45. DVC further submitted that other parameters like Preliminary Cost, Project Management Cost, Contingency Cost, etc., have been considered on a lumpsum basis and the estimated provisional IDC has been considered as per Investment approval / Sanction Order. It is submitted that after completion of the project work, actual capital cost, including IDC in reconciliation with accounts, would be submitted at the time of the True-up Petition.

46. According to DVC, no subsidy/ incentive has been received for this project from the Central Government or the State Government by DVC.

47. The breakdown of the Capital Cost as submitted by DVC is as under:

Particulars	Unit	Amount
Total EPC Cost for the Solar Project including Diversion of 33 KV Line	Rs. Lakhs	4664.00
Preliminary Cost @0.50 % of EPC Cost	Rs. Lakhs	23.32
Land Cost- Leasehold	Rs. Lakhs	0.00
Land Cost- Freehold	Rs. Lakhs	0.00
Infrastructure Cost	Rs. Lakhs	0.00
Project Management @0.50 % of EPC Cost	Rs. Lakhs	23.32
Contingency @0.50 % of EPC Cost	Rs. Lakhs	23.32
IDC (Estimated amount)	Rs. Lakhs	60.00
Total Capital Cost of the Project	**Rs. Lakhs**	**4793.96**

48. Regulation 12 and Regulation 46 of the Renewable Tariff Regulations, 2024 provide as under:

“Chapter 2: Financial Principles

……

12. Capital Cost

Norms for capital cost, as specified in relevant chapters of these regulations, shall be inclusive of land cost, pre-development expenses, all capital work including plant & machinery, civil work, erection, commissioning, financing cost, interest during construction and evacuation infrastructure up to inter-connection point.

Chapter 7: Parameters for solar PV power projects, solar thermal power projects and floating solar projects

46. Capital Cost

The Commission shall determine only project specific capital costs considering the prevailing market trends.

49. The Commission observes that the Petitioner has claimed a Capital Cost of Rs 4793.96 Lakhs for 8 MW of Ground mounted solar PV Project which comes to Rs.599.25 Lakh per MW. Based on analysis of the data received from various financial institutions while finalising the RE Tariff Regulations 2024, the Commission finds that the capital cost claimed by the petitioner is on the higher side. In response to the query on explaining the reasons for the higher tariff, the Petitioner has submitted that the project cost has increased because of various factors including, the small size of the project, location of the project, and inclusion of the cost associated with diversion of 33 KV line as part of the capital cost.

50. The Commission notes that 'Capital Cost,' as defined in the RE Tariff Regulations, includes land cost, pre-development expenses, all capital work including plant & machinery, civil work, erection, commissioning, financing cost, interest during construction and evacuation infrastructure up to an interconnection point. The cost associated with the diversion of the 33KV line cannot be included in the capital cost of the Solar PV projects.

51. As claimed by the Petitioner, other parameters like preliminary cost, project management cost, and contingency are considered on a lumpsum basis, while the cost associated with IDC is also an estimated cost instead of the actual cost. The Petitioner has submitted that after completion of the project, actual capital cost, including IDC in reconciliation with accounts would be submitted to the Commission. In view of this the Commission decides not to consider such estimated lumpsum cost associated with other parameters while determining the tariff in this petition. The Commission would consider the cost associated with the other parameters at the time of reconciliation as proposed by the Petitioner.

52. Accordingly, the following table provides the approved cost by the Commission under different heads as against those claimed by the Petitioner:

Particulars	**Unit**	**As claimed by the Petitioner**	**As approved by the Commission**
EPC Cost for the Solar PV Project as discovered in the bidding (First Contract)	Rs. Lakh	4026.22	4026.22
Service Cost for the Solar PV Project as discovered in the bidding (Second Contract)	Rs. Lakh	543.12	543.12
Work Order for diversion of 33 KV D/C line	Rs. Lakh	95.05	NA
Total EPC Cost	**Rs. Lakhs**	**4664.39**	**4569.34**
Preliminary Cost @0.50 % of EPC Cost	Rs. Lakhs	23.32	NA
Land Cost- Leasehold	Rs. Lakhs	0.00	0.00
Land Cost- Freehold	Rs. Lakhs	0.00	0.00
Infrastructure Cost	Rs. Lakhs	0.00	0.00
Project Management @0.50 % of EPC Cost	Rs. Lakhs	23.32	NA
Contingency @0.50 % of EPC Cost	Rs. Lakhs	23.32	NA
IDC (Estimated amount)	Rs. Lakhs	60.00	NA
Total Capital Cost of the Project	**Rs. Lakhs**	**4793.96**	**4569.34**

53. Based on the above, the Commission approves the Capital Cost of the project as Rs 4569.34 lakh.

Capacity Utilisation Factor (CUF)

54. DVC has submitted that for the purpose of tariff computation for the 8 MW project, a

CUF of 22.50 % has been considered at the ex-bus level. The Petitioner, in response to the query, has submitted that the DC/AC ratio for the project is 1.3, which was chosen based on the climatic characteristics of the project location, such as sunlight intensity, temperature, and weather pattern. According to the Petitioner, a DC/AC ratio of 1.3 would help maintain the CUF of 22.50% by ensuring that inverters are optimally utilized even during periods of lower sunlight.

55. Regulation 47 of the RE Tariff Regulations 2024 states as under:

"47. Capacity Utilisation Factor
The Commission shall only approve capacity utilisation factor for project specific tariff:
Provided that the minimum capacity utilization factor for solar PV power projects shall be 21%:
……"

56. The Commission has observed that the CUF considered by the Petitioner is higher than the minimum CUF of 21% as specified in Regulation 47 of the RE Tariff Regulations 2024. The Commission also noted the DC/AC ratio of 1.3 submitted by the Petitioner for optimum utilisation of inverters during the periods of lower sunlight. The Commission notes that the project CUF is in line with the norms specified in Regulation 47 of the RE Tariff Regulations 2024 for the Solar PV Projects, and therefore, the Commission approves the CUF of 22.50%.

Auxiliary Consumption

57. DVC has submitted that Auxiliary Consumption has not been considered as energy to be generated at CUF and has been considered at the ex-bus level only.

58. Regulation 49 of the RE Tariff Regulations 2024 states as under:

"49. Auxiliary Consumption
The Commission shall only approve auxiliary consumption for project specific tariffs:
Provided that the maximum auxiliary consumption for solar PV power projects shall be 0.75%;
Provided further that the maximum auxiliary consumption for solar thermal power projects shall be 10%;
Provided also that the maximum auxiliary consumption for floating solar projects shall be 0.75%.

59. The Commission notes that Regulation 49 of the RE Tariff Regulations provides a maximum of 0.75% as auxiliary consumption for the Solar PV Project. The Petitioner has not considered auxiliary consumption for tariff determination purposes and hence has been approved by the Commission as proposed by the Petitioner.

Module Degradation Factor

60. DVC has submitted that as per industry practice module degradation factor is 0.7 %. But at present, it has not considered the module degradation factor for the calculation of tariff

with a prayer that DVC may be allowed liberty to approach the Commission for tariff modification, if module degradation actually occurs in the future.

61. The Commission notes that the RE Tariff Regulations 2024 do not provide any norms for the module degradation factor. As submitted by the Petitioner, the module degradation factor has not been considered for the determination of the Tariff. Accordingly, the Commission has decided to determine the tariff without factoring in any model degradation factor.

<u>Operation and Maintenance Expenses</u>

62. DVC has submitted that a Separate O&M Contract has been awarded to M/s Gensol Engineering Limited for 5 years with year-wise escalation of 5 %, which has been discovered through the same competitive bidding process. Accordingly, O&M cost escalation @ 5 % p.a. has been considered as per Letter of Award (LOA) for the 1st 5 years, and from the 6th year onward @ 3.84 % p.a. based on 5th year has been considered in line with RE Tariff Regulations,2020, for the purpose of computation of tariff.

63. Regulation 48 of the RE Tariff Regulations 2024 states as under:

"Chapter 7: Parameters for solar PV power projects, solar thermal power projects and floating solar projects

…….

48.Operation and Maintenance expenses

The Commission shall determine only project specific O&M expenses considering the prevailing market trends.

64. Regulation 19 of the RE Tariff Regulations 2024 states as under:

"19. Operation and Maintenance Expenses

……………

(2) Normative O&M expenses allowed during the first year of the Control Period, i.e. financial year 2024-25, under these regulations, shall be escalated at the rate of 5.25% per annum for the Tariff Period."

65. The Commission notes that the Petitioner has awarded the contract to the EPC contractor, namely M/s Gensol Engineering Limited, for 5 years with year-wise escalation of 5 %, which has been discovered through the same competitive bidding process. The contract price discovered in the competitive bidding process for O&M Price, including the GST for the first five years is reproduced below:

Operation and Maintenance Contract	Price	GST (18%)	Total Price
First Year	37,19,904.54	6,69,582.82	43,89,487.36
Second Year	39,05,899.77	7,03,061.96	46,08,961.73
Third Year	41,01,194.75	7,38,215.06	48,39,409.81
Fourth Year	43,06,254.50	7,75,125.81	50,81,380.31
Fifth Year	45,21,567.22	8,13,882.10	53,35,449.32
Grand Total	**2,05,54,820.78**	**36,99,867.74**	**2,42,54,688.52**

66. The Commission notes that the O&M costs escalates @5% for the first five years as per the contract. Further, for O&M costs beyond five years, the Petitioner has considered an escalation of 3.84% as per the RE Tariff Regulations, 2020. As explained earlier, since the commissioning of the Project is scheduled in the control period of the RE Tariff Regulations, 2024, the Commission has considered the norms specified as per RE Tariff Regulations, 2024. As per Regulation 19 of the RE Tariff Regulations, 2024 O&M expenses need to be escalated at the rate of 5.25% per annum for the tariff period. However, since the Petitioner has considered an escalation rate of 3.84% from the sixth year onward, the Commission decides to consider the same for tariff determination purposes. Accordingly, the Commission decided that O & M expenses of Rs. 43.89 Lakh (including quoted GST @18%) for the first year shall be considered with an escalation of 5% for the first 5 (five) years as per the contract and thereafter as proposed by the Petitioner O &M escalation of 3.84% shall be considered for the remaining Tariff Period.

Particular	Cost (Rs. Lakh)	Escalation applicable
Operation and Maintenance expenses as per Contract Price	43.89	Escalation @5% per annum for the 1^{st} 5 years
Operation and Maintenance expenses: Escalation % as per RE Tariff Regulation	53.35	Escalation @3.84% per annum based on the 5^{th} Year and from 6^{th} year onwards

<u>Issue of Bundling with Thermal Power:</u>

67. The Petitioner initially contemplated selling the excess solar power generated from the project to its beneficiaries under the scheme by the Ministry of Power on 'flexibility in generation and scheduling of Thermal/Hydropower Stations through bundling with renewable energy and Storage Power.' However, in a later submission, the Petitioner stated that the entire solar power generated would be required to fulfil its solar RPO obligations and to provide power to its firm consumers within its command area, thereby making the possibility of selling excess power through RE bundling unlikely. Accordingly, the Commission has noted the submission of the Petitioner.

68. The following table provides a summary of various parameters approved by the Commission for the determination of 8MW of Ground Mounted Solar PV project at Panchet, West Bengal:

S. No	Details	Units	As submitted by DVC	As computed by the Commission
1	Capacity	MW	8	8
2	Total EPC Cost for the Solar Project, including Diversion of 33 KV Line	Rs. Lakh	4664.39	4569.34
	Preliminary Cost @0.50 % of EPC Cost	Rs. Lakh	23.32	0.00
	Infrastructure Cost	Rs. Lakh	0.00	0.00
	Project Management @0.50 % of EPC Cost	Rs. Lakh	23.32	0.00
	Contingency @0.50 % of EPC Cost	Rs. Lakh	23.32	0.00
	IDC (Estimated amount as per Sanction Order)	Rs. Lakh	60.00	0.00
	Total Capital Cost of the Project	Rs. Lakh	4793.96	4569.34
	Total Capital Cost	Rs Lakh/MW	599.25	571.17
3	Debt	%	80	80
4	Equity	%	20	20
5	Debt Amount	Rs Lakh	3835.17	3655.47
	Equity Amount	Rs Lakh	958.79	913.87
6	Project Useful Life	Years	25	25
7	Interest on Loan	%	8.30	8.30
8	Depreciation	%	4.67	4.67
	Salvage Value	%	90	90
	Rate (For 1st 20 Years)	%	18.71	16.96
	Rate (For Remaining Life)		18.71	21.52
9	ROE	%	14	14
10	MAT Rate	%	NA	17.47%
11	Corporate Rate	%	25.17	34.94%
12	O & M Expenses for 1st Year	Rs. Lakh/MW	5.49	5.49
	O & M Expenses for 1st Year	Rs. Lakh	43.89	43.89
	O&M Escalation Rate till 5th Year	%	5.00	5.00
	O&M Escalation Rate from 6th year onwards	%	3.84	3.84
13	Interest on WC %	%	12.10	7.84
14	CUF	%	22.50	22.50
15	Aux Power Consumption	%	0	0
16	WACC -Discount Rate	%	7.77	7.12

69. Based on the parameters, assumptions, and methodology outlined in the earlier paragraphs for the 8 MW Solar PV Project, the levelized tariff works out to be Rs. 3.62 per kWh.

70. The Commission notes that as per the Petitioner's submission, the Commercial Operation Date (COD) of the Project has been extended up to 30.10.2024, and the Petitioner sought liberty to approach the Commission with a detailed breakup of the Cost and other parameters. Accordingly, the Commission approves the interim tariff of Rs. 3.62 /kWh as against the Petitioner's claim of Rs. 3.92/kWh with liberty to the Petitioner to approach the Commission after commissioning of the project with actual costs.

71. Annexure-1 and Annexure 1A, given hereinafter form part of the Order.

72. Accordingly, Petition No. 175/GT/2024 is disposed of in terms of the above.

Sd/-	Sd/-	Sd/-
Shri Harish Dudani	**Shri Ramesh Babu. V**	**Jishnu Barua**
Member	**Member**	**Chairperson**

Annexure-1

Parameters for for "8 MW Ground Mounted Solar Photo Voltaic Power Project at Panchet":

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	8
			Capacity Utilization Factor (CUF)	%	22.5
			Degradation Factor	%	0
			Auxiliary Power Consumption	%	0
			Useful Life	Years	25
2	Project Cost	Capital Cost	Normative Capital Cost	Rs. Lakh/ MW	571.17
			Capital Cost	Rs. Lakh	4569.34
			Capital Subsidy, if any	Rs. Lakh	0
			Net Capital Cost	Rs. Lakh	4569.34
3	Financial Assumption	Debt Equity	Tariff Period	Years	25
			Debt	%	80
			Equity	%	20
		Debt Component	Total debt amount	Rs. Lakh	3655.47
			Total equity amount	Rs. Lakh	913.87
			Loan Amount	Rs. Lakh	3655.47
			Moratorium Period	Years	3
			Repayment Period (incl. moratorium)	Years	13
			Rate of Interest on Loan (Actual)	%	8.3
		Equity Component	Equity Amount	Rs. Lakh	913.87
			Return on Equity (Post Tax)	% p.a.	14
			ROE for First 20 years [ROE grossed up with Effective Tax Rate applicable to DVC]	% p.a.	16.96
			Return on Equity after 20 years [ROE grossed up with Effective Tax Rate applicable to DVC]	% p.a.	21.52
		Depreciation	Depreciation Rate for 1st 15 years	%	4.67
			Depreciation rate 16th year onwards	%	2.00
		Incentives	GBI, if any	Rs. Lakh	Nil
			Period for GBI	Years	Nil
4	O& M Expenses	Normative O&M Expense	For the first year as per LOA	Rs. Lakh/MW	5.49
		O&M Expenses p.a.	For the first year as per LOA	Rs. Lakh	43.89
		Escalation Factor	For the first 5 years as per LOA	%	5
			Escalation for 6th year onwards considered based on 5th year	%	3.84
5	Working Capital	O&M Expenses		Month	1
		Maintenance Spares	% of O&M Expenses	%	15
		Receivables		Days	45
		Interest on Woking Capital		% per annum	7.84
6		Discount Factor	For calculation of levelised tariff	%	7.12

Annexure-1A

Determination of Tariff Components for "8 MW Ground Mounted Solar Photo Voltaic Power Project at Panchet":

Units Generation	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Installed Capacity	MW	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Gross Generation	MU	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78
Gross Gen. without cnsidering degradation loss	MU	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78
*APC @ 0.0 %	MU	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Generation	MU	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78	15.78

Tariff Components (Fixed charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
O&M Expenses	Rs Lakh	43.9	46.1	48.4	50.8	53.4	55.4	57.5	59.7	62.0	64.4	66.9	69.5	72.1	74.9	77.8	80.8	83.9	87.1	90.4	93.9	97.5	101.2	105.1	109.2	113.4
Depreciation	Rs Lakh	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	213.4	91.2	91.2	91.2	91.2	91.2	91.2	91.2	91.2	91.2	91.2
Interest on Term Loan	Rs Lakh	294.5	276.8	259.1	241.4	223.7	206.0	188.3	170.6	152.9	135.1	117.4	99.7	82.0	64.3	46.6	34.0	26.4	18.8	11.3	3.7	0.0	0.0	0.0	0.0	0.0
Interest on working capital	Rs Lakh	7.7	7.6	7.5	7.4	7.3	7.2	7.1	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.2	5.0	5.0	5.0	5.1	5.1	5.6	5.7	5.8	5.9	6.0
Return on Equity	Rs Lakh	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	155.0	196.7	196.7	196.7	196.7	196.7
Total Fixed Cost	Rs Lakh	714.6	698.9	683.4	668.0	652.8	637.0	621.3	605.7	590.1	574.7	559.4	544.1	529.0	514.0	499.0	365.9	361.5	357.1	352.9	348.9	390.9	394.7	398.7	402.9	407.2

Per Unit Tariff components	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
PU O&M Expenses	Rs /KWh	0.28	0.29	0.31	0.32	0.34	0.35	0.36	0.38	0.39	0.41	0.42	0.44	0.46	0.47	0.49	0.51	0.53	0.55	0.57	0.60	0.62	0.64	0.67	0.69	0.72
PU Depreciation	Rs /KWh	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
PU Interest on Term Loan	Rs /KWh	1.87	1.75	1.64	1.53	1.42	1.31	1.19	1.08	0.97	0.86	0.74	0.63	0.52	0.41	0.30	0.22	0.17	0.12	0.07	0.02	0.00	0.00	0.00	0.00	0.00
PU Interest on working capital	Rs /KWh	0.05	0.05	0.05	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04
PU Return on Equity	Rs /KWh	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	1.25	1.25	1.25	1.25	1.25
PU Tariff Components	Rs /KWh	4.53	4.43	4.33	4.23	4.14	4.04	3.94	3.84	3.74	3.64	3.55	3.45	3.35	3.26	3.16	2.32	2.29	2.26	2.24	2.21	2.48	2.50	2.53	2.55	2.58

Levelised Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Discount Factor		1.00	0.93	0.87	0.81	0.76	0.71	0.66	0.62	0.58	0.54	0.50	0.47	0.44	0.41	0.38	0.36	0.33	0.31	0.29	0.27	0.25	0.24	0.22	0.21	0.19
Discounted Tariff Component	Rs /KWh	4.53	4.14	3.77	3.44	3.14	2.86	2.61	2.37	2.16	1.96	1.78	1.62	1.47	1.33	1.21	0.83	0.76	0.70	0.65	0.60	0.63	0.59	0.56	0.52	0.50
Levelised Tariff	Rs /KWh	**3.62**																								