

**Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
World Trade Centre, Centre No.1, 13th Floor, Cuffe Parade, Mumbai – 400 005
Tel. No. 022 22163964/ 65/ 69 Fax No. 022 - 22163976**

Email: mercindia@merc.gov.in

Website: www.merc.gov.in

CASE NO. 63 of 2021

**In the matter of
Petition filed by M/s Mahati Hydro Power Veer Project Private Limited for
determination of Project Specific Tariff for Veer Hydro Electric Project (2x4.5MW)
under Renovation and Modernisation.**

Coram

Sanjay Kumar, Chairperson

I. M. Bohari, Member

Mukesh Khullar, Member

M/s Mahati Hydro Power Veer Project Pvt. Ltd	... Petitioner
Maharashtra State Electricity Distribution Co. Ltd	... Respondent
Water Resource Department, Government of Maharashtra Impleaded Respondent

ORDER

Date: 17 August 2021

M/s Mahati Hydro Power Veer Project Pvt. Ltd. (MHPVPPL), 32/33, Shankar Sheth Rd, Ghorpade Peth, Swargate, Pune, Maharashtra 411037 has filed this Petition on 07 May 2021 under Regulation 9.1, 10.2, 74 and 77 of MERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2019 (herein referred as RE Tariff Regulations-2019) and Section 62(1)(a) and 86(1)(e) of the Electricity Act, 2003 (EA-2003) for determination of Tariff for sale of electricity to MSEDCL from (2x4.5MW) Veer Hydro Electric Project (Veer HEP) under Renovation and Modernisation (R&M) scheme.

The Commission, in exercise of the powers vested in it under Sections 61 and 62 of the EA-2003 and all other powers enabling it in this behalf, and after taking into consideration the submissions made by MHPVPPL and in the public consultation process, and all other relevant material, has approved Tariff for the power to be generated from the small hydro project in this Order.

TABLE OF CONTENTS

1	INTRODUCTION.....	6
1.1	Background	6
1.2	Admission of Petition and Public Consultation Process	7
1.3	Organisation of the Order.....	8
2	PREMISE FOR DETERMINATION OF PROJECT-SPECIFIC TARIFF.....	9
2.1	Provisions of Tariff Policy 2016	9
2.2	Regulatory Framework for Tariff Determination.....	9
2.3	Applicability of Regulatory Framework:	11
2.4	Premise for Development of Tariff Structure.....	13
3	SUGGESTIONS/OBJECTIONS, MHPVPPL’S RESPONSE AND COMMISSION’S RULINGS.....	14
3.1	MSEDCL cannot be forced to sign PPA with MHPVPPL	14
3.2	Proposed Tariffs are on higher side.....	16
3.3	Capital Cost proposed MHPVPPL is higher than GOMWRD:	17
3.4	Life of Project:.....	19
3.5	Capacity Utilisation Factor (CUF):	20
3.6	Accelerated Depreciation:	21
3.7	Infirm nature of Power:	21
4	PARAMETERS OF TARIFF DETERMINATION.....	23
4.1	Background	23
4.2	Project Details	24
4.3	Change in Hydrology:	25
4.4	Existing operational status of Veer HEP:.....	27
4.5	Envisaged Renovation and Modernisation Plan.....	28
4.6	Present Status of the Plant and Implementation schedule:.....	33
4.7	Useful life of Assets:	33
4.8	Capital Cost	35
4.9	Eligible Subsidy Component:.....	51
4.10	Debt-Equity Ratio.....	52
4.11	Depreciation	52
4.12	Operation and Maintenance (O&M) expenses	54

4.13	Charges for maintenance of Intake Structure, Penstock etc	56
4.14	Interest on Term Loan	59
4.15	Interest on Working Capital	61
4.16	Return on Equity	61
4.17	Discount Rate	65
4.18	The summary of various parameters and assumptions.....	66
4.19	Tariff and Other Conditions	68
4.20	Other Commercial aspects.....	69

5 SUMMARY OF COMMISSION’S DIRECTIVES AND APPLICABILITY OF ORDER72

Appendix – 1: List of persons at the Public Hearing held on 29 June 2021	73
Annexure – 1: Summary of Levellised Tariff.....	74

LIST OF TABLES

Table 1: Preferential tariff for new SHPs from 5-25 MW capacities	17
Table 2: Actual Generation (MUs) of NRBC after Commissioning of NLBC powerhouse ...	28
Table 3: Proposed Renovation and Modernisation Activities	28
Table 4: Estimated Capital Cost for R&M of Veer HEP.....	36
Table 5: Capital Cost of SHP Projects, as approved by other SERCs.....	37
Table 6: Recapitulation sheet for Veer SHP, as approved by GOMWRD	41
Table 7: Hard Cost proposed by MHPVPPL.....	43
Table 8: Hard Cost, as approved by the Commission.....	43
Table 9: Scrap Cost.....	44
Table 10: Hard Cost, as approved by the Commission.....	44
Table 11: Pre-operative Expenses, as submitted by MHPVPPL	45
Table 12 : Pre-operative Expenses, as approved by the Commission	46
Table 13: Financial Charges excluding IDC, as submitted by MHPVPPL.....	46
Table 14: Financial Charges excluding IDC, as approved by the Commission	47
Table 15: Details of Premium Paid by MHPVPPL	47
Table 16: Threshold Premium, as approved by the Commission	49
Table 17: IDC computation, as submitted by MHPVPPL.....	49
Table 18: IDC computation, as approved by the Commission	49
Table 19 : Capital Cost of Veer HEP considered by the Commission	50
Table 20: Capital cost of Mini/Small Hydro Projects.....	50
Table 21: Computation of Depreciable amount, as submitted by MHPVPPL	53
Table 22: Depreciation Rate considered by the Commission.....	54
Table 23: O&M Expenses for Base Year (in Rs. lakhs) and Escalation factor, as submitted by MHPVPPL	55
Table 24: O&M escalation rate, as considered by the Commission	56
Table 25: SBI MCLR Rate, as submitted by MHPVPPL.....	59
Table 26: Grossed up Return on Equity (%), considered by the Commission	64
Table 27: Discount Rate, considered by the Commission	65
Table 28: Summary of Project Specific Parameters	66

LIST OF ABBREVIATIONS

COD	Commercial Operation Date
CERC	Central Electricity Regulatory Commission
HPDA	Hydro Power Development Agreement
DPR	Detail Project Report
TEFR	Techno Economic Feasibility Report
EA	Electricity Act, 2003
EPA	Energy Purchase Agreement
EPC	Engineering Procurement Construction
GoI	Government of India
GST	Goods and Service Tax
IDC	Interest During Construction
kVA	Kilo Volt Ampere
kW	Kilo watt
kWh	Kilo watt hour
MEDA	Maharashtra Energy Development Agency
MERC	Maharashtra Electricity Regulatory Commission
MSEDCL	Maharashtra State Electricity Distribution Company Limited
MSPGCL	Maharashtra State Power Generation Company Limited
MCLR	Marginal Cost Lending Rates
MOD	Merit Order Dispatch
MYT	Multi-Year Tariff
O&M	Operation and Maintenance
OEM	Original Equipment Manufacturer
RTU	Real Time Unit
p.a	Per Annum
PLF	Plant Load Factor
RE	Renewable Energy
RPO	Renewable Purchase Obligation
SBI	State Bank of India
SPV	Special Purpose Vehicle

1 INTRODUCTION

1.1 Background

- 1.1.1 Government of Maharashtra through Water Resources Department (GOMWRD) (formerly known as Irrigation Department) undertakes survey, investigation, erection, and commissioning of Hydro Power generating stations through its own resources. GOMWRD has developed, commissioned and handed over 28 Hydro Projects to Maharashtra State Power Generating Company Limited (MSPGCL) (formerly MSEB) for Operations and Maintenance (O&M) on lease basis.
- 1.1.2 Veer HEP is commissioned by GOMWRD in February 1975. The Project was handed over to MSPGCL for Operation and Maintenance on lease basis as per normal practice. The plant life of 35 years was completed in 2010. Hence, the Project was taken back from MSPGCL for R&M works. From 1 June 2010 onwards, O&M is carried out by GOMWRD and electricity generated from this project is fed into the grid of MSEDCL.
- 1.1.3 Accordingly, on 21 September 2020, the GOMWRD invited bids for Renovation, Operation, Maintenance and Transfer back of Veer Hydro Electric Project (Veer HEP) which has delivered its services for about 45 years.
- 1.1.4 As per the bidding conditions, the successful Bidder will have to Renovate, Operate and Maintain Veer Power Project at its own cost and in turn will be permitted to use energy generated from the Project as a captive user or sell the energy as per provision of the EA-2003. The bidder is expected to transfer back the Project to GOMWRD at the end of lease period of 25 years. The tariff for sale of energy generated from the Project to the Distribution Licensee shall be regulated by the Commission.
- 1.1.5 M/s. Mahati Industries Private Ltd. (MIPL) participated in the bidding process. MIPL offered the highest Upfront Premium of Rs 63 Lakhs over and above the Threshold Premium of Rs 990 Lakhs, fixed by the GOMWRD. Based on the highest Upfront Premium offered, MIPL has been adjudged as the successful Bidder and awarded with the Notification of Award (NoA) on 27 January 2021.
- 1.1.6 Further, as per the provisions in the Bidding document the successful Bidder can form the Special Purpose Vehicle (SPV) for the execution of the project. Accordingly, MIPL has developed the SPV named Mahati Hydro Power Veer Project Private Limited (MHPVPPL) for execution of Veer HEP. The GOMWRD by its letter dated 5 April 2021 has also accepted the formation of SPV.
- 1.1.7 As per the provisions of the Bid document, the Lease Agreement was signed between Water Resources Department and MHPVPPL on 28 April 2021.

- 1.1.8 Being a SPV, MHPVPPL is responsible for Renovation Modernisation, Operation and Maintenance of Veer HEP as per provisions in the Lease Agreement.
- 1.1.9 The power generated, during the lease period of 25 years is proposed to be sold to the Distribution Licensee (MSEDCL). Accordingly, MHPVPPL has approached Commission with the instant Petition to seek determination of Project specific tariff for its Project situated at Right Bank of the Veer dam, in Taluka Khandala, District Satara.
- 1.1.10 The main prayers of MHPVPPL are as follows:
- a) To admit the Petition, seeking approval for Project Specific Tariff for Veer Hydro Electric Project under Renovation and Modernisation with capacity of 9 MW located at Veer dam, near Shirwal, Dist. Satara;*
 - b) To invoke its power under Regulation 74- Power to relax and Regulation 77- Power to remove difficulties and to allow the deviations from MERC RE Tariff Regulations, 2019, wherever sought in this Petition;*
 - c) To approve Project Specific Tariff of Rs 3.91/kWh for Veer Hydro Electric Project;*
 - d) To allow the recovery of land lease rent, water royalty charges, charges for 13% of Gross Generation to be paid to Government of Maharashtra on actual basis during tariff period;*
 - e) To allow additions/alterations/modifications/changes to the Petition as may be required at a future date;*
 - f) To allow any other relief, order, or direction, which the Hon'ble Commission deems fit to be issued;*
 - g) To condone any error/ omission and to give opportunity to rectify the same;*

1.2 Admission of Petition and Public Consultation Process

- 1.2.1 MHPVPPL has filed the Petition on 07 May 2020. Preliminary data gaps were sent to MHPVPPL on 18 May 2021, to which MHPVPPL has submitted its replies dated 22 May 2021.
- 1.2.2 Considering replies to the data gaps, the Commission admitted the Petition on 28 May 2021 in accordance with Section 64 (2) of the Electricity Act, 2003, and directed MHPVPPL to publish its Petition in an abridged form and manner for public consultations, and to reply expeditiously to all suggestions and objections received from the public on its Petition.
- 1.2.3 It is pertinent to note that MHPVPPL has made MSEDCL as Respondent in the present matter. As GOMWRD is a lessor of the project, the Commission impleaded GOMWRD in the present proceedings as Respondent No.2. For analysis of cost reasonability and conditionalities in bidding, the Commission separately issued data gaps to GOMWRD. GOMWRD has provided its reply to data gaps vide letter dated 28 June 2021.

- 1.2.4 MHPVPPL published the public Notice in two daily English Newspapers, viz., Financial Express & Business Standard and two daily Marathi Newspapers, viz. Punyanagari & Prabhat, on 4 June 2021 inviting suggestions/objections from public and intimating the date of Public Hearing. Copies of the Petition and its Executive Summary were made available at MHPVPPL's offices and website (www.mahati.com) in downloadable format. The Public Notice and Executive Summary of the Petition were also made available on the website of the Commission (www.merc.gov.in) in downloadable format.
- 1.2.5 E-Public Hearing was held in the matter on 29 June 2021 through video conferencing. The list of persons who attended the Public Hearing is at **Appendix-1**.
- 1.2.6 The Commission has ensured that the due process as contemplated under the law to ensure transparency and public participation was followed at every stage and adequate opportunity was given to all concerned to express their view.

1.3 Organisation of the Order

- 1.3.1 This Order is organized in the following 6 Sections:
- a) Section 1 provides a brief introduction and sets out the quasi-judicial regulatory process undertaken by the Commission.
 - b) Section 2 details the Tariff philosophy underlying the tariff determination.
 - c) Section 3 covers objections received during public consultation, summary and rulings thereon.
 - d) Section 4 comprises the submissions with respect to performance and financial parameters, the Commission's analysis, and the methodology adopted to determine the tariff and other parameters.
 - e) Section 5 summarizes the directives and rulings of the Commission, and applicability of this Tariff Order.

2 PREMISE FOR DETERMINATION OF PROJECT-SPECIFIC TARIFF

2.1 Provisions of Tariff Policy 2016

2.1.1 The Tariff Policy identifies hydro power development as one of the policy objectives, the relevant extracts are reproduced below:

“
4.0 OBJECTIVES OF THE POLICY

The objectives of this tariff policy are to:

.....

(f) Promote Hydroelectric Power generation including Pumped Storage Projects (PSP) to provide adequate peaking reserves, reliable grid operation and integration of variable renewable energy sources.”

2.2 Regulatory Framework for Tariff Determination

2.2.1 As per Section 62 (1) of the EA-2003 the Appropriate Commission is empowered to determine the Tariff for supply of electricity by a Generating Company to a Distribution Licensee, and for transmission and wheeling of electricity. As per Section 61 (h), the Commission shall be guided, among others, by the aspect of promotion of electricity generation from renewable source of energy.

Relevant provisions of the EA-2003 reads as below:

“

61. The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff and in doing so, shall be guided by the following, namely.....

(h) the promotion of co-generation and generation of electricity from renewable sources of energy.

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

(a) supply of electricity by a generating company to a distribution licensee.”

2.2.2 Section 86(1)(e) of the EA-2003 stipulates that –

“

(1) The State Commission shall discharge the following functions, namely: -

.....

(1)(e) promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with grid and sale of electricity to any person, and also specify, for purchase of electricity from such

sources, a percentage of total consumption of electricity in the area of a distribution licensee.”

2.2.3 The Commission has recognized Mini, Micro and small Hydro Projects as Renewable Energy Sources. As per Regulation 2(dd) of the RE Tariff Regulations-2019.

“

*(dd) ‘Renewable Energy sources’ means the renewable sources such as Mini, Micro and **Small Hydro**, Wind, Solar, Biomass including bagasse, bio-fuel, urban or Municipal Solid Waste and such other sources as are recognized or approved by the MNRE;”*

Further, Regulation 2.1 (gg) defines the Small Hydro Power Project, which reads as below:

“

(gg) ‘Small Hydro Power Project’ means a Hydro Power Project with a Station capacity of 25 MW or less, but above 1 MW;”

The MHPVPPL’s 2X4.5 MW HEP qualifies to be termed as Small Hydro Power Project in terms of RE Tariff Regulation-2019.

2.2.4 The eligibility of Small Hydro Power Project has been specified in Regulation 2.1(n) (ii) of RE Tariff Regulations-2019, which reads as follows:

“

2.1 (n) ‘Eligible Project’ means any of the following Renewable Energy Projects with or without Storage:

*ii. Small Hydro Power Project commissioned after notification of these Regulations and located at a site approved by the State Nodal Agency/State Government **using new plant and machinery**, and with installed power Project capacity of 25 MW or less at a single location;*

2.2.5 Regulation 3 of MERC RE Tariff Regulations, 2019 specifies scope and applicability of these Regulations as under:

*“3.1 These Regulations shall apply to those **new RE Projects**, which fulfil the following criteria:*

(a) are commissioned in the State of Maharashtra for the generation and sale of electricity to Distribution Licensees in the State;

(b) are Eligible Projects for the purposes of these Regulations; and

(c) whose tariff is to be determined by the Commission under the provisions of Section 62 read with Section 86 of the Act:

2.2.6 As per Regulation 9.1 of RE Tariff Regulations-2019, a Project-specific tariff shall be determined by the Commission on a case-to case basis for Small Hydro Power Projects.

“

9.1 A Project-specific tariff shall be determined by the Commission on a case-to case basis for the following types of RE Projects:

.....

(c) Small Hydro Projects, Mini Hydro Projects and Micro Hydro Projects;”

2.2.7 Regulation 9.2 of RE Tariff Regulations-2019 provides that the financial norms set out in the Regulations shall be the ceiling norms while determining the Project specific Tariff:

“

9.2 The determination of project-specific tariff for generation of electricity from such RE sources shall be in accordance with the ceiling norms specified in these Regulations for the respective technologies and the terms and conditions as may be stipulated in the relevant Orders of the Commission:

Provided that the financial norms specified in Chapter 2, shall be the ceiling norms while determining such project-specific tariff”

2.3 Applicability of Regulatory Framework:

2.3.1 It is observed that though Veer HEP has completed its technical life, still assets are serviceable with R&M works. The critical factor is Dam, which is in good condition and its residual service life is more than 50 years.

2.3.2 The Commission notes that while dealing with projects which have outlived its normative life it has two options to consider:

- i. To Decommission and demolish the project and construct the new project, or
- ii. To carry out Renovation and Modernisation of existing outlived project.

2.3.3 MHPVPPL provided following rationale for R&M of existing projects:

- a. The Powerhouse site is adjacent to the irrigation canal which is running almost throughout the year and supplies water to irrigate 65,506 Ha land. The demolition of power house would disturb the irrigation cycle.
- b. The demolition and reconstruction of new power house is not only time consuming but also substantially costly especially due to restrictions of work site.

- c. Considering the hydrological constraints there is no scope for uprating the installed capacity of machines.
- d. The civil component under R&M option need very marginal cost of retrofitting.
- e. The construction period of new power house would be 4 to 5 years including demolishing period of existing project whereas R&M would require only 6 months. Therefore, during construction period of new powerhouse (4 to 5 years) there would be loss of generation potential of about 20 MUs per year.
- f. Being an existing Project, it would not require any additional clearances including environmental clearance which would have delayed the project.

Considering above, R&M option was opted for the restoration of ineffective installed capacity of the Project.

2.3.4 It is evident from Regulation 2.1(n) (ii) and Regulation 3.1 of RE Tariff Regulations-2019 that the norms set out in the Regulations are meant for new projects. The Veer HEP is old project, which will be going through substantial R&M works for life extension and enhancement of operational efficacy.

2.3.5 MHPVPPL has quoted all relevant provisions along with Commission's inherent powers under powers to remove difficulties and power to relax provisions of RE Tariff Regulations-2019 and EA-2003. While mentioning rationale MHPVPPL submitted that although, R&M projects are not explicitly provided for in the scope and applicability of RE Tariff Regulations-2019, however, the principles laid down therein; are relevant for R&M projects as well. Further, the Clause 11.5 of the Lease Agreement also mentions that tariff for sale of energy to MSEDCL or any other distribution licensee shall be as determined by the Commission. The Commission further notes that the capacity addition through R&M of old units is an attractive proposition in terms of capital cost requirement, minimal impact on environment (aqua life) and with low gestation period. Further, R&M option will lead to optimal utilization of transmission/Distribution Assets (Evacuation systems). Also expected life of the project post R&M is 25 years. Hence, the Commission is of the opinion that as there is no separate norms under RE Tariff Regulation-2019 for R&M projects, considering long life which would be available post R&M work, it would be appropriate to apply norms stipulated in Regulations for new projects to present project.

2.3.6 Regulation 77 of RE Tariff Regulations-2019 reads as below:

“

77. Power to remove difficulties

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific Order, make such provisions, not

inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.”

In exercise of Regulation 77, the Commission adopts the relevant principles and methodology in the RE Tariff Regulation-2019 and other regulatory provisions including Maharashtra Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2019 (hereinafter MYT Regulations) for tariff setting of Veer HEP so as to ensure consistency and certainty in the regulatory approach.

2.4 Premise for Development of Tariff Structure

2.4.1 The Commission has analysed the Lease Agreement, Detailed Project Report (DPR) in the Petition submitted by MHPVPPL along with submission of GOMWRD. The Commission has also taken into consideration objections/suggestions/ views expressed by stakeholders through public consultation process and submission thereof. The Tariff has been determined as per Regulation 10.2 of the RE Tariff Regulations- 2019 which reads as follows:

“10.2 A Petition for determination of project-specific tariff shall be filed by the concerned RE Power Project entity, with the concerned Distribution Licensee as a Respondent, accompanied by such fee as may be specified in the applicable Regulations of the Commission, and shall be accompanied by:

- (a) Information in Forms 1.1, 1.2, 2.1 and 2.2, as the case may be, appended as Annexure-A to these Regulations;*
- (b) A detailed project report outlining technical and operational details, site-specific aspects, premise for Capital Cost and financing plan, etc.;*
- (c) A statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined;*
- (d) A statement containing details of any grant, subsidy or incentive received, due or assumed to be due from the Central Government and/or State Government, which shall also include the computation of tariff without consideration of such grant, subsidy or incentive;*
- (e) Details of financial gain through REC or any other mechanism;*
- (f) Any other information that the Commission may require the Petitioner to submit.”*

2.4.2 The assumptions and rationale for input values of Project-specific parameters have been elaborated in the subsequent Sections of this Tariff Order.

3 SUGGESTIONS/OBJECTIONS, MHPVPPL'S RESPONSE AND COMMISSION'S RULINGS

Following issues have been raised by Maharashtra State Electricity Distribution Company Limited's (MSEDCL) and GOMWRD in their respective Submissions:

3.1 MSEDCL cannot be forced to sign PPA with MHPVPPL

MSEDCL:

MHPVPPL cannot invoke any provision of the Electricity Act, Regulations made thereunder, to compel MSEDCL to enter into a power purchase agreement with it. It is settled law that contract between two parties is dependent on consent of parties and accordingly, MHPVPPL cannot pray for mandatory contract execution.

It is settled law that Commission cannot compel / direct a party to enter into a PPA / EPA. For supplementing the argument, MSEDCL relied upon Hon'ble Supreme Court Judgement in *Gujarat Urja Vikas Nigam Ltd. v. Solar Semiconductor Power Co. (India) (P) Ltd., (2017) 16 SCC 498*.

As per MSEDCL under Regulation 10.2 of the RE Tariff Regulations, 2019, it was mandatory for MHPVPPL to approach the Commission along with an EPA with a Distribution Licensee. There is no provision under Regulation 10.2 that suggests that the Petitioner can approach without an EPA, and the Commission while determining Tariff under Regulation 9.1 could direct / identify / mandate a DISCOM to purchase electricity for which the tariff is being determined.

National Tariff Policy relied upon by MHPVPPL is not binding but merely directory in nature. It only emphasizes on promotion of the generation of the hydroelectricity. For supplementing the argument, MSEDCL relied upon the Judgement of The Constitution Bench of the Hon'ble Supreme Court in *PTC India Ltd. v. Central Electricity Regulatory Commission, (2010) 4 SCC 603* and the judgment of the Hon'ble Supreme Court in *P.T.C India (Supra) in Appeal No. 103/2012 Maruti Suzuki India Limited v. Haryana Electricity Regulatory Commission*. The policy in no manner empowers the Commission to force parties to enter into a contract that it otherwise was not intending to.

The present contracted Non-solar RE capacity is 11151 MW (as on 31 March 2021). Hence, no additional Non-Solar RE Power is required to be contracted. However, considering the expiry of existing contracts, earlier shortfall and low CUF due to climatic conditions. MSEDCL has planned to procure additional 2000MW Non-solar RE Power. However, this procurement will be through projects whose tariff is discovered through competitive bidding mode only. Hence, MSEDCL is not inclined

to have any kind of agreement with MHPVPPL as the tariff of envisaged project is not competitive.

MHPVPPL Reply:

MHPVPPL points out that the constant alteration of stance by MSEDCL is detrimental to the development of SHP in the State. MHPVPPL had approached MSEDCL vide its letter dated 28 January 2021 and 11 February 2021 seeking its consent to purchase power from MHPVPPL. The response of MSEDCL vide its letter no. 8245 dated 15 April 2021 is different and distinct from the contents of its Affidavit in Reply dated 28 June 2021, wherein MSEDCL has raised various legal contentions.

In the Non-Conventional Energy Generation Policy-2020, it is further mentioned that the target fixed for SHPs as per State RE Policy 2015 was 400 MW out of which only 20 MW could be actually achieved. Hence the target of 380 MW has been set under the present 2020 policy which is to be achieved by 2025. MSEDCL in its communication dated 15 April 2021 had expressed its reservations only in respect of the tariff which would be computed by the Commission, barring this reservation, MSEDCL had not in principle disagreed to enter into a PPA with MHPVPPL.

MHPVPPL was under legitimate expectation that the State Government Company would stand by and adhere to its own communication dated 15 April 2021 at the least. MHPVPPL also had legitimate expectation that being a State Government Company the MSEDCL would indeed adhere to the State Government Policy dated 31 December 2020.

MSEDCL on one hand refuses to sign the EPA in absence of tariff determination from the Commission and on the other hand when Petition is filed for tariff determination, MSEDCL has made submissions that EPA is not signed by the Petitioner.

The submission made by MSEDCL in respect of Tariff Policy being directory and guiding in nature and not binding is clearly in teeth of the Judgment of Hon'ble Supreme Court dated 11 April, 2017 in *Energy Watchdog Vs. CERC, reported in 2017 (14) SCC 80* wherein it has been held that the Tariff Policy is statutory and binding.

Based on the submission made by MSEDCL in Case No 49 of 2021 in respect of RPO Compliance for FY 2018-19 and FY 2019-20, there is non-Solar RPO shortfall of 1880 MUs for FY 2018-19 and 4197 MUs for FY 2019-20. The Commission is well within its wide regulatory powers to direct MSEDCL to purchase non-solar RE Power to meet the RPO targets specified by the Commission. Further, the Commission under Section 86 (4) of EA03, to promote the various renewable sources of energy as mandated by the Act, Centre/State Policies can direct MSEDCL to sign the EPA.

MSEDCL has agreed to purchase power from bagasse based co-generation plant at Rs 4.75/kWh as approved by the Hon'ble Commission whereas the tariff proposed by the Petitioner is much lower at Rs 3.91/kWh.

Commission's Analysis & Ruling:

The Commission notes MSEDCL contention that it cannot be forced to sign PPA/EPA with any specific generator. At the same time, the Commission is mandated under Section 86 (1) (e) to promote renewable energy sources. Incidentally, tariff proposed by MHPVPPL is lower than Average Power Purchase Cost (APPC) of MSEDCL and during scrutiny as explained in latter part of this Order, tariff determined by the Commission is lower than that has been projected by the MHPVPPL. Thus even without considerations of Regulatory (repeated shortfall in RPO) and Policy (Tariff policy on promoting the RE generation) mandate, purely on the commercial considerations also, it would be in the interest of MSEDCL to sign PPA/EPA with MHPVPPL at tariff rate which is lower than its APPC.

The Commission also notes that MHPVPPL has raised objection about MSEDCL not complying with mandate under GoM's RE Policy 2020. In this regard the Commission is of the view that in case MHPVPPL has any issue about non-implementation of Policy, it should approach the Government of Maharashtra for redressal of its grievance. It is also opined that in case MSEDCL is having any difficulty in implementation of the RE Policy of Government of Maharashtra, they may approach the government for its redressal.

It is also important to note that GOMWRD's policy enables MHPVPPL to sell energy generated from such project to any person in the State of Maharashtra. However, it is important to note that this is not a new project but project for R&M of existing project. During initial period of that project, MSEDCL has serviced its cost through EPA for earlier period. Now, this project is being revived through R&M activities, which would result in a comparatively lower tariff than that of a new project and it is not prudent to allow its benefit to person other than MSEDCL.

As MHPVPPL has shown its willingness to sign PPA/EPA with MSEDCL, considering tariff determined in the present case which is lower than APPC of MSEDCL, the Commission is of the opinion that it would be in the interest of MSEDCL and its consumers to sign such PPA. Hence, the Commission directs, MSEDCL to sign PPA with MHPVPPL at the tariff determined under this Order.

3.2 Proposed Tariffs are on higher side

MSEDCL:

The tariff quoted by MHPVPPL of Rs. 3.91 per unit for a project to be developed on renovation & maintenance basis is on higher side as the preferential tariff for new SHPs from 5-25 MW capacities was in the range of Rs. 3.65 per unit (Rs.3.14 after availing benefit of accelerated depreciation) to Rs.4.35 per unit (Rs.3.96 after availing benefit of accelerated depreciation) determined prior to RE Tariff Regulations-2019 by the Commission from 2010 till 2019-20. The table showing preferential tariff for new SHPs from 5-25 MW capacities are as follows:

Table 1: Preferential tariff for new SHPs from 5-25 MW capacities

SHP Capacity	FY 2010-11	FY 2011-12	FY 2012-13	FY 2013-14	FY 2014-15	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20
> 5MW and ≤ 25 MW	3.65 (3.14)	3.87 (3.34)	4.09 (3.56)	4.21 (3.68)	4.33 (3.76)	4.35 (3.96)	4.08 (3.68)	4.11 (3.81)	3.92 (3.66)	4.13 (3.83)

** Rates in brackets are rate on availing accelerated depreciation.

Evidently the rate for renovated project of 9 MW SHP should be lower than the previously approved preferential Tariff of Rs. 3.83 per unit.

MHPVPPL Reply:

The tariff proposed by the Petitioner is Rs 3.91/kWh which is lower than the Average Power Purchase Cost (APPC) of Rs 3.94/kWh. Tariff referred to by MSEDCL is generic tariff approved by the Commission up to FY 2019-20, whereas the present Petition is for determination of project specific tariff and hence not comparable.

Commission's Analysis & Ruling:

The Commission notes objection of MSEDCL and Reply of MHPVPPL. As against MSEDCL suggestion that tariff should be lower than Rs. 3.83/kWh (after considering the merits of the case and the applicable provisions vis-à-vis this claim of MSEDCL), the Commission has determined tariff of Rs. 3.75/kWh in the present Order. Details of the same is given in latter part of the Order.

3.3 Capital Cost proposed MHPVPPL is higher than GOMWRD:

MSEDCL Submission:

The project cost of work for renovation and maintenance in the tender issued by GOMWRD for the said SHP is Rs. 28 Crores and the capital cost quoted by MHPVPPL is Rs. 43.99 Cr. Evidently, MHPVPPL's cost estimate is on a much higher side.

MSEDCL in its initial submissions has stated that at present MSEDCL is only in a position to purchase power from the Petitioner's R & M SHP at the ceiling cost of Rs. 3.00/kWh. MSEDCL in its subsequent submission has stated that it has arrived at the estimated Tariff of Rs. 3.49 per unit as against the tariff proposed by the Petitioner of Rs. 3.91 per unit for the said 9 MW small hydro project.

MSEDCL may procure power from the said 9 MW Small Hydro Project of MHPVPPL at a Tariff not more than Rs. 3.49 per unit, subject to prudence check by the Commission.

GOMWRD Submission:

In respect of Capital Cost estimated by MHPVPPL, GOMWRD submitted that, in 2012, proposal for Administrative Approval for R & M of Veer HEP (2x4.5 MW) through department has been prepared at field level and submitted to Government for approval.

This cost estimate for civil items was based on the Schedule of Rates. The Cost estimate of Electro-Mechanical works is based on the market offers invited in 2012. The cost of Hydro-Mechanical works is based on the estimates received from Mechanical Organization of the WRD in September-2012.

The total cost including costs for establishment, audit, secretariat charges etc is Rs.3000 Lakhs. However, the cost of the work component is Rs.2749.25 Lakhs This cost does not include any provision for the Threshold premium but includes the applicable taxes.

MHPVPPL Reply:

As per MHPVPPL total estimated cost is Rs. 4468.63 Lakh which also includes provisions for the Threshold Premium (1168.20 Lakh), Financial Charges including Interest During Construction (102.46 Lakh) & the Pre-operative charges (325.91 Lakh).

Cost of Veer HEP (Rs 28 Crore) considered in the tender issued by GoMWRD is at 2012 price level. The same is also acknowledged by GoMWRD in its reply filed in the present case. This estimated cost is excluding the Threshold Premium of Rs. 11.68 Crore and includes the then applicable taxes (Excise Duty on equipment 12.36 %, VAT 4% and Service Taxes 12.36%). If the said estimated capital cost of Rs 28 Crore is adjusted for inflation considering escalation factor of WPI/CPI (with 50% weightage for each) from FY 2012-13 to FY 2020-21, the estimated Capital Cost comes to Rs 40.88 Crore. The Petitioner's estimation of Capital Cost as submitted in the Petition excluding the threshold premium is Rs 32.31 Crore (excluding IDC), which is substantially lower and

extremely reasonable as compared to cost estimated by GOMWRD and adjusted for inflation to arrive at present cost of Rs 40.88 Crore.

MSEDCL in its additional submission dated 9 July, 2021 has now considered the tariff of Rs 3.49/kWh as the reasonable tariff for purchase from Veer HEP. In this regard, MHPVPPL submitted that tariff determination is prerogative of the Commission as per various provisions of Act, Rules and Regulations, made thereunder.

Commission's Analysis & Ruling:

The Commission notes the submissions of all parties. Detailed analysis of capital cost is undertaken in latter part of the Order. Objections of MSEDCL has been addressed appropriately during that analysis.

As far as MSEDCL's submission that it can sign PPA for rate not more than Rs. 3.49/kWh is concerned, the Commission notes that present proceeding is for project specific tariff determination wherein tariff is determined after detailed scrutiny of each of cost and performance component. Hence, instead of mentioning any ad hoc tariff number, it would have been better if MSEDCL would have assisted the Commission in scrutiny process by submitting studied comments and its detailed calculations on each of cost head based on the relevant Regulations.

In earlier part of the Order, the Commission has already ruled on PPA to be signed by MSEDCL at tariff rate determined in this Order.

3.4 Life of Project:

MSEDCL:

Life of the project in question has been quoted to be 25 years on account of being a renovated project as against 35 years set out in MERC RE Tariff Regulations, 2019 and 40 years in CERC RE Tariff Order dated 21 July 2020 for hydro projects commissioned in FY-2020-21. The reduction in life of the project by 10 years would materially affect the tariff.

GOMWRD:

As per the provisions of Clause 6.1 of the Lease Agreement the term of the Lease shall be of 25 years from the date of Commissioning of the Project. After completion lease period of 25 years, the project developer shall transfer back the project to GOMWRD free of cost.

MHPVPPL Reply:

Guidelines issued by Central Electricity Authority (CEA) for Renovation & Modernisation of Hydro Power Stations specify that by refurbishment and modernization, the life of power plant can be enhanced by 20-25 years.

Commission's Analysis & Ruling:

As project under consideration has outlived its technical life (at present 45 years), R&M activities has been proposed. As per CEA Guidelines, life of Hydro project can be extended by 20-25 years post R&M. Hence, the Commission has considered project life of 25 years for tariff determination purpose. Detailed explanation for the same is given in latter part of the Order.

3.5 Capacity Utilisation Factor (CUF):

MSEDCL:

CUF considered by MHPVPPL is 26% as against the normative CUF of 30% upheld by Commission and CERC as well. The lower CUF would also inversely impact the tariff determined.

Further as per RE Tariff Regulations-2019, it is proposed that, for the generation above approved normative CUF of 30%, would be available at 75% of tariff approved by the Commission and penalty is to be levied for lesser generation as compared to approved CUF of 30%.

GOMWRD:

GOMWRD in its submission mentioned that GOMWRD has already certified the annual design generation as 20.46 MUs based on 75 % dependable year working table.

MHPVPPL Reply:

Design generation as per GOMWRD is 20.46 MUs for the Veer Hydro Project which is equivalent to CUF of 25.95% as against the normative CUF of 30% specified in the RE Tariff Regulations-2019.

Commission's Analysis & Ruling:

The Commission notes that CUF of 30% stipulated in Regulations is for new project. However, present case is existing project with proposed R&M activities for extending useful life. Hence, the Commission has decided to use designed generation certified by GOMWRD i.e. 20.46 MU which converts to CUF of 25.95%. Detailed justification for

the same is give in latter part of the Order. Further as per provision of RE Tariff Regulations 2019, under or over generation with respect to approved CUF of 25.95% is subject to compensation (to be paid to MSEDCL) or tariff rate at 75% of the approved tariff.

3.6 Accelerated Depreciation:

MSEDCL:

MHPVPPL has completely ignored the benefit of accelerated depreciation for the project. The impact of availing accelerated depreciation benefit is around Rs. 0.50 per unit which would reduce the tariff that may be determined and would be beneficial to the buyer of such power.

MHPVPPL Reply:

Tariffs have been devised considering provisions of MERC RE Tariff Regulations,2019

Commission's Analysis & Ruling:

As benefit of accelerated depreciation is no more available for Hydro Electric projects, the Commission has not considered the same in tariff determination process.

3.7 Infirm nature of Power:

MSEDCL:

It is also important to mention here that the proposed project will provide infirm power to MSEDCL and generation from this project will be based on the instruction from GoM's Water Resource Department for release of water for irrigation purpose and not as per requirement of MSEDCL. Needless to point out that the power generated by this project will be available to MSEDCL during the low demand period i.e. monsoon season and therefore may not be financially viable for MSEDCL.

MHPVPPL Reply:

Out of total generation of 20.46 MUs, only around 7.5 MUs will be available during monsoon and balance 13 MUs will be available in Rabi Period when demand of MSEDCL is higher. This is unlike wind power which on the contrary will be mainly available during the monsoon period which is low demand period of MSEDCL. Further, though SHP projects operate as per the irrigation cycle, the irrigation rotations (water quantity and discharge rate) are planned on fortnightly basis, to that extent SHPs are much better schedulable as compared to wind and solar projects. MSEDCL can consider

the availability of SHP as per irrigation rotation and plan its other short-term power procurement accordingly.

Commission's Analysis & Ruling:

The Commission notes the objection of MSEDCL and reply filed by MHPVPPL. As against MSEDCL's contention, MHPVPPL has stated that only 37% of energy would be available in Monsoon season and 63% of energy will be available in Rabi period when MSEDCL demand is high. Also, as irrigation cycle is fixed, energy generation from such small hydro project can be predicted with more reliability. Hence, the commission opines that MSEDCL's contention about infirm nature of generation is not correct.

4 PARAMETERS OF TARIFF DETERMINATION

4.1 Background

4.1.1 As mentioned in para 2.3.5, the Commission is adopting the norm of RE Tariff Regulations-2019 for determination of Tariff for Veer HEP.

4.1.2 As per Regulation 9.1 of the RE Tariff Regulations-2019, a Project-specific tariff shall be determined by the Commission on a case-to case basis for the following types of RE Projects:

- (a) Waste to Energy Projects based on the technologies approved by MNRE;
- (b) Solar Thermal Power Projects;
- (c) Small Hydro Projects, Mini Hydro Projects and Micro Hydro Projects;
- (d) Re-powering of Wind Energy Power Projects;
- (e) Projects based on any other RE technologies approved by MNRE after notification of these Regulations;
- (f) Any other RE technology, for which either Generic Tariff is being determined or for which the tariff is to be invariably determined through competitive bidding, in respect of which the Project Entities opt for a project-specific tariff.

Further, as per Regulation 9.2 of the RE Tariff Regulations-2019, the determination of project-specific tariff for generation of electricity from such RE sources shall be in accordance with the ceiling norms specified in these Regulations for the respective technologies and the terms and conditions as may be stipulated in the relevant Orders of the Commission.

4.1.3 Regulation 11 of the RE Tariff Regulations-2019, specifies parameters of the Tariff for RE Projects as single-part tariff consisting of following cost components:

- a) Return on equity;
- b) Interest on loan capital;
- c) Depreciation;
- d) Interest on working capital;
- e) Operation and maintenance expenses;

4.1.4 The technical, project performance and financial parameters are discussed in this Section.

4.2 Project Details

MHPVPPL's submission

- 4.2.1 Veer Hydro Electric Project (2 X 4.5 MW) is situated near village Wathar colony of Taluka Khandala, District Satara. It is a dam foot powerhouse located on the Right bank of Veer dam across river Nira.
- 4.2.2 The Nira river, a southern tributary of Bhima drains a catchment of 2731 sq. miles up to its confluence with Bhima. It rises from Western Ghat and has two main tributaries namely Yelwandi and Gunjawani.
- 4.2.3 Utilisation of water is planned primarily for irrigation and the power generation is incidental. Two reservoirs, one at Bhatghar on river Yelwandi, having live storage capacity of 665.57 MCM and another reservoir on downstream side of river Nira at Veer having live storage capacity of 212.22 MCM are constructed for this purpose.
- 4.2.4 Veer dam was completed in 1965, whereas the Bhatghar dam was completed in British era in 1927. Bhatghar dam has no canals. Water from the Bhatghar dam, after power generation, through its dam foot powerhouse (1x16 MW), is released into the river Nira and is stored on downstream side, in Veer dam. The canals of Nira system, Nira Right Bank Canal and Nira Left Bank Canal originate from Veer dam. Releases from Bhatghar & Veer are being managed in co-ordinated manner for fulfilling irrigation requirement.
- 4.2.5 In 1975, Hydro Electric Powerhouse, on Right Bank of Veer dam was commissioned. This powerhouse has 2 Nos. of 4.5 MW Vertical Kaplan turbines. As per scenario that existed at the time of commissioning of the power plant, in February 1975, the design head was 15 m; maximum and minimum heads being 19.5 m and 9 m, respectively and Rated output and rated voltage were 5625 kVA and 11 kV, respectively.
- 4.2.6 Powerhouse on Right Bank, after commissioning in February 1975 was given on lease basis to the MAHAGENCO for its Operation and Maintenance. The project had completed plant life of 35 years in 2010 and hence, the project was handed over, back to GOMWRD for renovation and modernization. From 1 June 2010 onwards, Operation and Maintenance was being carried out by GOMWRD and electricity generated was sold to MSEDCL.
- 4.2.7 The said plant, since its commissioning in 1975 is continuously in operation for last 45 years. Due to aging of the equipment, plant is frequently shut down for maintenance in recent years. It is submitted that the average generation in last 5 years from 2016-17 to 2020-21 is reduced to 3.04 MUs as against design generation of 20.46 MUs.

Commission's Analysis and Ruling

- 4.2.8 The Commission notes that as per Lease Agreement the discharges available for irrigation are planned to be utilized for generation. The generation will take place as per the rotation schedule planned by Dam authorities/ irrigation requirement.
- 4.2.9 The Commission also notes that earlier MSPGCL was operating the plant and after competition of plant life of 35 years, it has handed over the plant to GOMWRD for R&M works. Since then, the plant has been managed by GOMWRD. The output of the plan has been drastically reduced to 14.85% of design generation.
- 4.2.10 Thus, proposed R&M activities would help in capturing available hydro potential for electricity generation.

4.3 Change in Hydrology:

MHPVPPL's submission

- 4.3.1 Since commissioning, the hydrology of Veer Right Bank Powerhouse has been changed significantly. As per the earlier scenario the discharge required for irrigation of Nira Left Bank Canal was also routed through the Nira Right Bank Powerhouse and after generation, the quota of Nira Left Bank Canal was diverted back to Left Bank Canal through an aqueduct across river Nira.
- 4.3.2 Subsequently, the discharge requirements of both the canals were increased. Accordingly, it was found prudent by GOMWRD to have a separate Hydro Electric Powerhouse on Left Bank. Hence, separate powerhouse (1x4.8 MW) was commissioned in May 2012, on the left bank. As such, now the powerhouse on Left Bank is generating power through releases made available for irrigation of Left Bank Canal and the Powerhouse on Right Bank is generating the power through releases made for irrigation of Right Bank Irrigation Canal.
- 4.3.3 Further, new dams viz. Nira deoghar (2008) on river Nira and Gunjavani (2012) on one of the tributaries of Nira, have also been constructed in the upstream catchment. These dams have independent planned utilization through their own canals. Inflow from the intermediate catchment is sufficient to fill the Veer dam. However, due to abstraction of upstream catchment by these new dams, overflow (spill) period of Veer dam is substantially reduced. This has reduced generation during spill period.
- 4.3.4 Due to changes in hydrology, the discharge now available for the powerhouse has been reduced by about 35 to 40%. As per the water release program for 75% dependable year, the discharge variation is in the range of 17.86 cumecs (in the month of May) to

39.39cumecs (in the month of December), as against maximum design discharge of 51.2 cumecs. Further, for making available land on fringe of submergence, for galper cultivation, the water level at the end of January is maintained at Elevation Level (EL) 569.64 m. Thus, after January, head available for generation is only about 9 to 10 m as against the rated head of 15 m. Hence, except during the spill days which are expected to be about 10 to 15, the installed capacity of machines is underutilized.

- 4.3.5 The Working Table, which is based on certified irrigation release pattern in 75 % dependable year, indicates that, in 75% of dependable yield, the projected power generation is ranging from 0.908 MW to 8.45 MW during the months from June to May (water year). Hence, the existing installed capacity of 2 x 4.5 MW is sufficient to harness the available hydro potential of the site optimally. Further, as per this Working Table, design generation corresponding to 75% of dependable yield, presuming the efficiency of new machine is 20.46 MUs.
- 4.3.6 It is further submitted that generation is dependent on water to be released by concerned authorities based on irrigation requirement and accordingly GOMWRD has certified generation of 20.46 MUS corresponding to 75% of the dependable yield. There is also possibility of drought year which may result in lower generation resulting in loss which will have to be necessarily borne by MHPVPPL. Accordingly, MHPVPPL requested the Commission to consider the design generation of 20.46 MUs for the Veer Hydro Project which is equivalent to CUF of 25.95% as against the normative CUF of 30% specified in the RE Tariff Regulations-2019.

Commission's Analysis and Ruling

- 4.3.7 The Commission notes that after construction of new dams in the upstream catchment area of Veer dam, namely Nira deoghar (2008) on river Nira and Gunjavani (2012); there has been a substantial change in hydrology.
- 4.3.8 Further, initially the discharge required for irrigation of Nira Left Bank Canal was also routed through the Nira Right Bank Powerhouse. Subsequent to increase in the discharge requirements of both the canals, GOMWRD constructed new power house on Nira Left Bank Canal. As of now the Powerhouse on Right Bank, which is project under consideration is generating the power through releases made for irrigation from Right Bank Irrigation Canal only.
- 4.3.9 Above facts clearly indicate that the hydro projects developments in upstream catchment areas and revised water management through canals have substantially reduced the discharges for power Generation. Further, GOMWRD vide its letter dated 31 March 2021 provided clarification to the bidder MIPL that the annual design generation of Veer HEP on Nira Right Bank Canal as per working table in Bid is 20.46 MUs.

4.3.10 Considering the above, as changed hydrology and its impact on generation of electricity has been certified by GOMWRD, the Commission is of the opinion that it would not be possible to achieve 30% CUF as stipulated in RE Tariff Regulation-2019. The Commission notes that in its 'Statements of Reasons' for RE Tariff Regulations-2019 while addressing comments on CUF for Hydro projects, it has stated as follows:

“The minimum CUF of 30% for Small Hydro Projects has been retained from the MERC RE Tariff Regulations, 2015. The Commission is of the view that RE Projects need to meet certain basic minimum eligibility criteria. The Commission to the extent possible would not like to encourage Small Hydro Projects with CUF lower than 30%, in the State of Maharashtra. Hence, no change has been made to this Clause.”

Thus, the Commission has clearly ruled that to the extent possible it would not like to encourage the project with CUF lower than 30%. However, said ruling is with respect of new projects giving guiding principle that to the extent possible, project with lower CUF should not be taken for development. However, in present case, Veer HEP project is existing project that has completed 45 years of life and is not a new project. As existing project is being taken for R&M activity, CUF needs to be decided based on actual conditions.

4.3.11 Therefore, the Commission is exercising its powers to relax under Regulation 74 of RE Tariff Regulations-2019 to adopt the design generation of 20.46 MUs for the Veer Hydro Project which is equivalent to CUF of 25.95% as against the normative CUF of 30%.

4.4 Existing operational status of Veer HEP:

MHPVPPL's submission

4.4.1 The plant is continuously in operation since last 45 years. Due to aging of the equipment, plant operations were frequently shut down for forced maintenance in recent years.

4.4.2 Unit No. 1 has ceased to operate in May 2017. Unit No. 2 was in partial operation till March 2019 with repeated and prolonged forced outages. At present, both the units have ceased to operate. Month wise generation data of Veer Right Bank Powerhouse (2x4.5 MW) since FY 2013-14 upto FY 2020-21 is provided in Table 2 below.

Table 2: Actual Generation (MUs) of NRBC after Commissioning of NLBC powerhouse

Financial Year	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21
Month								
April	1.529	2.4931	1.5196	-0.031	0.6411	0	0.8239	-0.0223
May	0.35	1.0214	1.2541	-0.0068	0.2033	0	0.3478	-0.0255
June	-0.0348	-0.0286	-0.0297	0	-0.0192	-0.0004	-0.0233	-0.0482
July	3.3714	-0.0313	1.8161	0	-0.0214	-0.0004	-0.0241	-0.0178
August	5.2102	4.0715	1.1857	0	-0.0208	0	-0.0247	0
September	2.6573	4.3379	-0.0312	0	-0.0193	0	-0.0233	0
October	0.1107	0.4589	-0.0318	0	-0.0192	0	-0.0244	0
November	2.3178	2.3122	1.0357	0	-0.0162	0.8826	0.1061	0
December	1.8615	0.9026	1.39	0	-0.0179	2.5897	0.5824	
January	2.0095	2.7343	-0.0292	0	-0.0190	1.6495	2.3435	
February	1.0674	0.5791	-0.0251	0	-0.0165	0.8399	2.4541	
March	0.8699	1.2394	-0.0299	0	-0.0182	1.2497	0.9373	
Total	21.3199	20.0905	8.0243	-0.0378	0.6567	7.2106	7.4753	-0.1138

4.4.3 The above data shows that, the annual generation after 2014-15 has reduced significantly due to frequent and prolonged outages. In some year there is negligible generation. Thus, the Veer SHP has outlived its normative life. After performing the proposed R&M activities, the efficiency of Veer HEP would be restored and the annual generation would increase to its design level of 20.46 MUs from the current level of 0 MUs.

Commission’s Analysis and Ruling

4.4.4 The Commission notes the submission of MHPVPPL. Reduced generation in recent years emphasises the need for undertaking R&M of the project.

4.5 Envisaged Renovation and Modernisation Plan

MHPVPPL’s submission

4.5.1 MHPVPPL has carried out assessment of plant equipment for deciding the proposed R&M works. Based on assessment following Renovation and Modernisation activities have been envisaged:

Table 3: Proposed Renovation and Modernisation Activities

Sr. No.	Description of Component	Proposed Renovation and Modernisation Activities
1	Turbine & Auxiliaries	a) The existing runners are designed for 5.62 MW at maximum head. Due to the long non-operational period, Extensive refurbishment of runner and its blade and the systems associated with runner are considered. Protective surface treatment (Plasma coating) will be

Sr. No.	Description of Component	Proposed Renovation and Modernisation Activities
		<p>given to the turbine blades and guide vanes after filling the cavities formed wherever necessary.</p> <p>b) Shaft seals, sleeves, TGB housing pads, shaft guard, couplings and other worn-out parts will be replaced.</p> <p>c) New digital governors will be provided for both the machines with necessary changes in Hydraulics.</p> <p>d) Complete overhauling of turbine parts like servomotors, runner operating mechanism, shaft seal assembly will be done. The seals and worn-out parts will be replaced. Turbine shafts will be tested with Non-Destructive Testing (NDT) for their strength and mechanical disorders developed with ultrasonic testing and necessary repairs will be carried out.</p> <p>e) Oil header assembly piping will be replaced wherever necessary.</p> <p>f) Refurbishment of transmission mechanism for runner blade adjustments will be done wherever necessary.</p>
2	Generator & Auxiliaries	<p>a) All the coolers of upper, lower, thrust and turbine guide bearings and that of stator will be checked and will be repaired or replaced as per the necessity.</p> <p>b) Existing rotary excitation system will be replaced by modern digital static excitation system, which is more compact, efficient, and reliable.</p> <p>c) Units will be dismantled one by one and “B” class insulation system of Stators and Rotors will be replaced with “F” class insulation system. Accordingly, the ventilation and cooling system will be improved to the extent necessary.</p> <p>d) Re-babbiting of thrust, upper and lower bearing pads will be done as per the requirements.</p> <p>e) Complete overhauling of Generator parts will be done. Seals and worn-out parts will be replaced.</p> <p>f) Existing CO₂ firefighting system will be replaced.</p> <p>g) Replacing / upgrading Generator Lubrication Oil System & Jacking System.</p>
3	Transformers	<p>a) Existing 11 MVA / 11 kV Generator transformers will be replaced with New low loss OLTC transformers.</p> <p>b) Existing unit auxiliary transformers will be replaced with cast resin flame retardant dry type 250 kVA transformers.</p>
4	Station Auxiliaries	<p>a) Overhauling of drainage water system will be done.</p> <p>b) Dewatering system including pumps will be replaced with new one.</p> <p>c) Cooling water system will be replaced with new pumps and filters with active bypass.</p>

Sr. No.	Description of Component	Proposed Renovation and Modernisation Activities
		<ul style="list-style-type: none"> d) Complete overhauling of Air Compressor system will be done. e) Existing OPU system will be retrofitted with new modern system with electronic controls and proportional valves. f) Repairs and renovation of leakage water system will be carried out. g) DG Set of 75 kVA will be procured.
5	Station Auxiliaries	<ul style="list-style-type: none"> a) Existing Firefighting system will be replaced along with smoke/heat detectors. b) New Air Conditioning system will be provided for the control room. c) Station lighting system will be replaced as per standard practices ensuring uniform and reliable illumination for safe personnel movements with DC backup.
6	Control and Instrumentation/ Automation	<ul style="list-style-type: none"> a) Existing LAVT & NG cubicles will be replaced. b) Replacement of Generator protection, Turbine and Generator control panels, synchronising panel, Temperature and Braking panels, turbine LCUs, relays etc. will be done. c) Replacement of damaged 11 kV switchgear panels with new 11kV VCB panels along with CT, PT, aluminium bus bars and relay units etc. will be done. d) Renovation and modernisation of existing 132 kV switch yard with provision of new SF6 breaker, New 132 kV CTs (class 0.2s), PTs, LAVs, isolators, conductors, Special Energy Meters (SEM), quadrant energy meters, cabling, earthing, control, and protection panels, etc. will be provided. e) All the 11 kV and LV power cables in the powerhouse and switchyard, control cables, shielded signal cables, terminals etc. will be replaced. f) Existing 220 V and 48 V batteries along with chargers and DCDB will be replaced with new latest batteries and FCBC chargers. g) Replacement of AC distribution boards. h) SCADA compatible sensors, transducers, limit switches, level switches, pressure switches/gauges, flow switches, speed sensors, RTDs will be provided. i) Replacement of damaged/ rusted/ eroded cable trays with new one.
7	Online Monitoring System	<ul style="list-style-type: none"> j) Real time monitoring and coordination system with SLDC Kalwa will be established with satellite connectivity. k) Real time SCADA system will be provided in the powerhouse for Turbine, Generator, Governor, Excitation, 132 kV transformer control, monitoring and communications for management and operation of powerhouse and switchyard.

Sr. No.	Description of Component	Proposed Renovation and Modernisation Activities
8	Civil Works	<ul style="list-style-type: none"> a) The powerhouse area will be isolated from ingress of water from irrigation outlets by construction of suitable cofferdam. Continuous dewatering will be done during the R&M work to keep the area dry. b) Worn out / damaged guide wall portion of the tail channel will be repaired with anchoring, grouting, and concrete jacketing. Wherever, necessary old walls will be dismantled, and new concrete walls will be constructed. c) The draft tube piers will be strengthened by grouting and epoxy mortar coating, as necessary. d) Obstructions / outcrops in the TRC will be removed by chiselling and surface profile treatment will be given to minimise the head loss. e) The debris / silt accumulated in the DT portion, tail pool and Tail race channel will be removed. f) Similarly, the algae layer accumulated in the concrete water conductor system will be removed by scrubbing. Eroded portion of concrete will be suitably repaired with epoxy concrete / mortar and grouting. Surface epoxy treatment will be given to the concrete scroll case and draft tube. g) Grouting will be done in the powerhouse to arrest the dampness. h) Construction of new air-conditioned control room in the powerhouse. i) Other miscellaneous works in the powerhouse such as false ceiling, false flooring, cable trenches, foundations for new equipment. j) New washrooms will be constructed in the powerhouse. k) Replacement of window panels, exhaust fans, doors and rolling shutter. l) Replacement of wiring and powerhouse illumination. m) Dusting and complete repainting of the powerhouse building. n) Switchyard equipment foundations will be strengthened and reconstructed wherever necessary. o) Switchyard drainage system will be reconstructed. p) Approach road to powerhouse will be strengthened. q) The staff quarters will be repaired/reconstructed.
9	Hydro-Mechanical Equipment	<ul style="list-style-type: none"> a) Existing 2 Draft Tube gates will be repaired. Rubber seals will be changed. Gates will be painted after cleaning by sand blasting. Also, 2 new Draft Tube gates will be procured. Hoisting arrangement of the Draft Tube gates will be made operative by necessary repairs and overhauling. (2 DT gates per machine are

Sr. No.	Description of Component	Proposed Renovation and Modernisation Activities
		<p>required and only 2 are available.) Suitable dogging arrangements will be fabricated on site for the two newly procured D.T. gates.</p> <p>b) EOT crane in the powerhouse will be made operative with replacement of all electrical parts and mechanical drives including the motors, drives, brakes, DSL and remote control. New VFD drives and winches would be incorporated including the micro movement capability. Excepting the chassis everything else would be replaced.</p>

Commission's Analysis and Ruling

- 4.5.2 The Commission in data gaps asked MHPVPPL, whether residual life study has been carried out or not. In reply MHPVPPL vide its letter dated 22 May 2021 submitted that it has carried out residual life study. Dam is in good condition and it's residual service life is more than 50 years. Powerhouse structure (Civil part) is also structurally in good condition. Further, MHPVPPL appointed consultant Dr. Hutraew and Partners (India) Ltd., for carrying out AS-IS study of the Veer HEP. The consultant and MHPVPPL have carried out its own component/equipment wise assessment by in-situ inspection of turbine, generator, control equipment, electrical system, switchyard equipment etc. The study also includes inspection of water conductor system and intake gates and draft tube gates.
- 4.5.3 In respect of transformer, MHPVPPL categorically submitted that Transformers are in operation since 1975 and have outlived their life. The breathers and Bucholzh relays are not working properly. In respect of auxiliary Transformers, LT cable terminal is incapable of accepting XLPE cables. Substantial leakage has been observed. Also, as per MYT Regulations, 2019, the useful life of sub-station is considered as 35 years. Further, as per CBIP manuals and standard practices the losses of transformer increase after 25 years of useful life. This transformer being manufactured in 1970 has CRNO (Cold Roll Non-Grain Oriented) core resulting in high losses vis a vis the CRGO (Cold Roll Grain Oriented) core used now. To reduce the Auxiliary losses, it is necessary to replace this transformer with energy efficient low loss transformers to maintain auxiliary consumption within regulatory norms.
- 4.5.4 On Commission's query about recommendations/opinion of original equipment manufacturer of turbine and generator for undertaking R & M activities, MHPVPPL submitted that it has obtained the opinion of M/s GANZ, the manufacturer after sharing our AS-IS findings which indicates probable wear and tear of bearings, and probability of cavitation on the runner blades, development of 'play' in the shaft. Transmission mechanism for runner blade adjustment along with oil head assembly needs to be refurbished. Similarly, all switches and measuring devices need to be replaced.

4.5.5 Considering details submitted by MHPVPPL, the Commission has considered R&M activities/works proposed by MHPVPPL for determining the Project-specific Tariff.

4.6 Present Status of the Plant and Implementation schedule:

MHPVPPL's submission

4.6.1 The time span required for Renovation & Modernisation is only 6 months.

Commission's Analysis and Ruling

4.6.2 Considering short timeline, the Commission in data gap set I sought details about present status of work. In Reply, MHPVPPL submitted that the Project has been handed over by GOMWRD to MHPVPPL between 1-3 June 2021. However, considering the site-specific constraints, with special permission of GOMWRD, following works have been undertaken:

- Construction of Concrete Cofferdam of 4 m height for isolating the work area from adjoining irrigation channel and the strengthening of wall between Tail race and Nira Right Bank Canal. This work was not possible when the canal is flowing. And has to be completed during the canal shutdown period only. There was a canal shutdown of about 10 days in the month of March, during which the said work has been completed.
- Similarly, refurbishment of stoplog gates and its embedment, intake gates and its embedment and hydraulic hoist have been done. This work requires services of divers and hence it preferably done when dam water level is less.

4.6.3 The Commission notes that MHPVPPL has proposed time span of 6 months from date of handing over of site (1 to 3 June 2021). However, it has already undertaken some work-related construction of concrete cofferdam in the month of March 2021. Also, execution of other works has been started which supports MHPVPPL's plan to execute the project within 6 months. The Commission is of the opinion that such short execution period will help in harnessing hydro potential which at present is not being utilised.

4.7 Useful life of Assets:

MHPVPPL's submission

4.7.1 GOMWRD has signed Lease Agreement with the MHPVPPL for 25 years only.

4.7.2 As per Regulations 2 of MERC RE Tariff Regulations, 2019, the useful life of small hydro plants is 35 years.

“

(nn) ‘Useful Life’, in relation to a Unit of a Generating Station, including the evacuation system, means the following duration from the date of commercial operation(‘COD’) of such generation facility, namely:

..

c) Mini/Micro and Small Hydro Power Projects 35 years

Provided further that the Useful Life of other RE Projects shall be as stipulated by the Commission while determining the Project-specific tariff, taking into consideration the norms specified by the Central Commission;

4.7.3 As per the provisions of Clause 6.1 of the Lease Agreement the term of the Lease shall be of 25 years from the date of Commissioning of the Project. After completion lease period of 25 years, the project developer shall transfer back the project to the GOMWRD free of cost.

4.7.4 MHPVPPL further submitted that the guidelines issued by Central Electricity Authority (CEA) for Renovation & Modernisation of Hydro Power Stations also specify that by refurbishment and modernization, the life of power plant can be enhanced by 20-25 years. The relevant extract of CEA guidelines is reproduced herein below:

“

*3.1 In a hydro power plant if machines are properly designed, manufactured, assembled, maintained during service, they can give trouble free service of 30 to 35 years or even more except under water parts of silt affected power plants which may require more extensive repair/early replacement. **By refurbishment and modernization i.e. redesigning & retrofitting some of components of the machines, enhanced power plant life by 20 to 25 years and higher capacity with better efficiency can be achieved with technological developments**” (Emphasis Supplied)*

As mentioned above, the present project being a case of R&M of Veer HEP, it cannot be compared to new project which has useful life of 35 years. The existing project has already outlived its life and R&M is being carried out so that project life is extended by another 25 years and the said project will provide the same benefits as new project and that too at a substantial lower capital cost than required for the new project. Further, it would not be possible to run the project beyond 25 years at the same efficiency after carrying out R&M.

4.7.5 Considering the provisions of the Lease Agreement and the CEA Guidelines, MHPVPPL has considered the extension of Project life by 25 years after R & M and same as has been considered for determination of tariff.

- 4.7.6 Accordingly, MHPVPPL requested the Commission to invoke powers under Regulations governing Power to Relax and Power to remove difficulties under MERC RE Tariff Regulations 2019 and approve tariff period/ useful life of this specific Project as 25 years for determination of Tariff.

Commission's Analysis and Ruling

- 4.7.7 The Commission notes that RE Tariff Regulations 2019 stipulated tariff period of 35 years for small Hydro projects. However, MHPVPPL has considered useful life of 25 years based on provisions of Lease Agreement. As per clause 6.1 of Lease Agreement, the agreement term is of 25 years from date of handing over of the project to the LESSEE, excluding six months meant for R&M. The clause also provides for extension of term, which reads as below:

“

6.1 TERMS AND TERMINATION:

Term of Lease Agreement: The TERM of the leases agreement means the initial term of this Lease Agreement which shall be 25 years from date of handing over of the project to the LESSEE, excluding six months meant for Renovation and Modernisation, unless terminated earlier pursuant to provisions of this Article. The TERM of this Lease Agreement may be extended at the sole discretion of the LESSOR for additional period on such terms and conditions as may be then mutually agreed to by and between the Parties, provided that two (2) years prior to the end of the Term of this lease or subsequent extension period (s), as the case may be, the parties agree in writing to such extension."

- 4.7.8 Thus, as per above quoted provisions of Lease Agreement, initial 25 years period of the agreement can be extended. But any such extension will warrant further residual life assessment. CEA guidelines for Renovation & Modernisation of Hydro Power Stations specify that by R&M, the life of power plant can be enhanced by 20-25 years.
- 4.7.9 As this is R&M project and not a new project, the Commission is of the opinion that considering extension of lease agreement at this stage without any further residual life assessment would be premature. Hence, the Commission has restricted the tariff period up to 25 years, which is extended life of hydro project post R&M activities as per CEA guidelines.

4.8 Capital Cost

MHPVPPL's submission

- 4.8.1 The Regulation 14 of MERC RE Tariff Regulations, 2019, specifies the Capital cost as under:

“

14. Capital Cost

The norms for Capital Cost as specified in the subsequent RE technology-specific Chapters shall be inclusive of all capital works, including land cost, plant and machinery, civil works, erection and commissioning, financing costs, preliminary and pre-operative expenses, interest during construction, and evacuation infrastructure up to the inter-connection point:

Provided that a Petition for project-specific tariff determination shall provide the break-up of Capital Cost items in the manner specified in Regulation 9.”

- 4.8.2 Further, the Regulation 31 of MERC RE Tariff Regulations, 2019 specifies the Capital cost of Small Hydro Project as under:

“31. Capital Cost

The Capital Cost for Small/Mini/Micro Hydro Power Projects shall include the Turbine Generator including its auxiliaries, land cost, site development charges and other civil works, resettlement, and rehabilitation costs, if any, transportation charges, evacuation cost up to interconnection point, financing charges and Interest during Construction:

Provided that the Commission shall approve the Capital Cost in case of project-specific tariff considering the prevalent market conditions.”

- 4.8.3 The head under ‘Capital Cost’ comprises of the cost of R&M of Veer HEP and the Threshold Premium, payable to GOMWRD as per the provisions in the Lease Agreement.

- 4.8.4 The estimated R&M cost of the project as on the date of COD as per the DPR, is as shown in the Table No. 4 below:

Table 4: Estimated Capital Cost for R&M of Veer HEP

Sr. No.	Description	Amount (Rs. Lakh)	Applicable Taxes (Rs. Lakh)	Total (Rs. Lakh)
1	Turbine & auxiliaries	606.70	109.21	715.91
2	Generator & auxiliaries	552.75	99.50	652.25
3	Transformers	142.50	25.65	168.15
4	Station auxiliaries	117.25	21.11	138.36
5	Control and Instrumentation & Automation, 132 kV Switchyard metering etc.	510.16	91.83	601.99
6	Online Monitoring System	80.00	14.40	94.40
7	Civil Works	158.84	28.59	187.43

Sr. No.	Description	Amount (Rs. Lakh)	Applicable Taxes (Rs. Lakh)	Total (Rs. Lakh)
8	Hydro Mechanical Components.	105.00	18.90	123.90
9	Dismantling, Erection, Testing and Commissioning	160.75	28.93	189.68
10	Pre-Operative Expenses	285.30	40.60	325.91
11	Financial Charges Including IDC	99.36	3.10	102.46
12	Threshold Premium (residual cost of existing infrastructure) payable to GOMWRD as per Clause 4.1) of the Lease Agreement read with definition of the Threshold Premium in Section D of Article -I of the Lease Agreement	990	178.20*	1168.20
	Total in Rs	3,808.62	660.01	4,468.63

* GST is payable under reverse charge mechanism as the right to use of the said existing assets gets transferred and as per clause no 2.2.10 of the Lease Agreement, the applicable taxes are to be borne by the LESSEE (Petitioner).

4.8.5 Thus, the total Capital Cost of R&M, including threshold premium and applicable GST is estimated around Rs 4468.63 Lakh. The Per MW Capital Cost works out as Rs 496.51 Lakhs (including IDC).

4.8.6 MHPVPPL submitted that, the Commission, in Generic Tariff Order dated 30 April, 2019 has approved the capital cost as Rs 578.66 Lakhs per MW for SHPs to be commissioned in FY 2019-20. Further, the Hon'ble CERC vide its Order dated 21 July, 2020 has specified the normative capital cost for small hydro projects for FY 2020-21 as Rs 900 Lakhs / MW for new SHP ranging from 5-25 MW. Further, MHPVPPL, presented a comparative table of recently notified capital costs by various Regulatory Commissions in India as mentioned in the Order dated 26 March 2021 in Case No 208 of 2020 of the Commission.

Table 5: Capital Cost of SHP Projects, as approved by other SERCs

Sr. No.	Name of Regulatory Commission	Year	Capital Cost in Rs. Lakh/MW
1	Chhatisgarh ERC	2019	880
2	Haryana ERC	2017	779
3	Gujarat ERC	As per Order	820
4	Madhya Pradesh ERC	2017	650

4.8.7 Further, in the Order dated 26 March 2021 in respect of Morna Hydro Project, the Commission observed that the average capital cost of submitted by IREDA for Small

Hydro Projects is Rs. 11.20 Crore/MW. Which is substantial in comparison to Rs 4.97 Crore/MW as claimed for the Veer HEP.

- 4.8.8 The proposed lower Capital Cost of Veer HEP (being a R&M Project) is resulting in Tariff of Rs. 3.91/kWh which is lower than the Tariff approved by the Commission in Case No. 208 of 2020 for new project and is having a lower gestation period which is in the interest of the consumers of the State.
- 4.8.9 Further, MHPVPPL highlighted that, the estimated Capital Cost of proposed R&M work as indicated by the GOMWRD in Part D of Section I of the Lease Agreement is Rs. 28 Crore. Said cost of Veer HEP is at 2012 price level. This estimated cost is excluding the Threshold Premium of Rs. 1168 Lakhs (Rs 990 lakhs + GST Rs 178 lakhs) and includes the than applicable taxes (Excise Duty on equipment 12.36 %, VAT 4% and Service Taxes 12.36%). If the said estimated capital cost of Rs 2800 Lakh (Rs 28 Crore) is adjusted for inflation considering escalation factor of WPI/CPI (with 50% weightage for each) from FY 2012-13 to FY 2020-21, the estimated Capital Cost comes to Rs 4088 Lakh. MHPVPPL's estimation of Capital Cost as submitted in the Petition excluding the threshold premium is Rs 3231 Lakh (excluding IDC), which is substantially lower and extremely reasonable as compared to cost estimated by GOMWRD and adjusted for inflation.
- 4.8.10 Thus, considering the above details and facts proposed, Capital Cost for R&M of Veer HEP is reasonable and leaves no scope for further reduction.
- 4.8.11 With regards to consideration of threshold premium in the capital cost, MHPVPPL submitted that, it is the exclusive investment of the GOMWRD in the Project which it intends to recover from the successful bidder. MHPVPPL highlighted the relevant provision in the GOMWRD's Policy for development of SHP Projects through Private Sector Participation (GR No. PVT-1204/ (160/2004)/HP dated 15 September 2005), which reads as below:
“
A-3 Procedure for selection of Developers:
... *A-3.3 The bidding procedure shall be as under.*
A-3.3.1 Main bidding documents shall be issued only to pre-qualified developers.
The minimum threshold premium shall be mentioned in the bidding document.
The bidders shall quote a premium payable to GoM over and above threshold premium and support his bid by Earnest money Deposit (EMD). Upfront premium will be the primary consideration for allotment of the project. Upfront premium offered by both IPPs/CPPs will be evaluated. The highest bid so evaluated will be the criteria for selection.”
- 4.8.12 In the Present Case GOMWRD has fixed the Threshold Premium as Rs 990 Lakhs (Section D: Definitions of Article -I of the Lease Agreement) and it is an obligation of

MHPVPPL to pay the same to the GOMWRD as per the Clause 4.1.1 of the Lease Agreement.

- 4.8.13 Further, Commission in its Order dated 27 January 2016 in Case No. 69 of 2015 (In the matter of Petition of Celerity Power Pvt. Ltd. for determination of Tariff of its 6 MW Small Hydro Power Project at Deoghar, Tal. Bhor, Distt. Pune) has ruled as below;

5.6.30 Considering the various dispensations cited above, the Commission is also of the view that Upfront Premium should not form part of the Capital Cost to be considered for determination of Tariff for such Projects. Hence, the Commission has not considered the Upfront Premium of Rs. 351 lakhs paid by CPPL for seeking allotment of the Project from GOMWRD as an allowable expense to be included in the Capital Cost of the Project.

However, the Commission has considered the Threshold Premium of Rs. 300 lakhs (Rs. 50 lakh/MW), which was stipulated as part of the SHP policy notified by the GOM towards recovery of investments on trash rack and penstock already made by GOMWRD, as an allowable component of Capital Cost while determining the Tariff for CPPL's said Project. (Emphasis added)

- 4.8.14 In view of the above, MHPVPPL prayed to allow the Capital cost of Rs 4398.79 Lakhs for the Tariff determination of Veer HEP under R&M.

Commission's Analysis and Ruling

- 4.8.15 The Commission has considered the documents and replies to the data gaps submitted by MHPVPPL. The Commission notes MSEDCL's objection that proposed Capital cost of Rs. 43.99 for 9 MW renovated project is relatively higher compared to cost of new project i.e. Rs. 49.563 Crores, which can be arrived at by multiplying the capacity of the Petitioner's power project - 9MW by the normative Capital Cost of Rs.5.507 Crores/MW for new SHPs for the first year of the Review Period (Base Year) considered by the Commission in the generic tariff Order dated 30 April 2019 passed in Case No. 52 of 2019.

- 4.8.16 In this regard, the Commission notes that in its earlier RE Tariff Regulations, 2015 it was provided for determination of Generic Tariff for small hydro projects based on benchmark capital costs. The RE Tariff Order, which MSEDCL is referring to, has been issued under said RE Tariff Regulations, 2015. Subsequently, while framing of MERC RE Tariff Regulations 2019 the Commission in its Explanatory Memorandum noted following:

“

Further, it has been observed that no small/mini/micro hydro projects are being set up under the Generic Tariff determined by the Commission. Hence, the Commission has included such Projects under Project-specific Tariff.”

The Commission in said Explanatory Memorandum provided that in case of project specific tariff, the Capital Cost of small hydro projects will be decided based on prevalent market conditions. Clearly, comparing benchmark cost with actual cost for small hydro projects under present Petition would not be appropriate.

- 4.8.17 In order to scrutinise capital cost proposed by MHPVPPL, the Commission through data gaps sought rationale for proposed capital cost from the MHPVPPL and GOMWRD.
- 4.8.18 MHPVPPL vide its submission dated 22 May 2021 submitted that the cost of R&M of Veer HEP has been prepared on the basis of Guidelines contained in the Chapter-1.11-General-Renovation, Modernisation and Uprating of Standards / Manuals / Guidelines for Small Hydro Development published by Alternate Hydro Energy Centre, Indian Institute of Technology, Roorkee and Chapter-7 – Renovation and Modernisation and Uprating of Hydro Power Stations published by Central Electricity Authority (CEA) in its document on Best Practices and Bench Marks in Hydro Power Generation.
- 4.8.19 Cost of Rehabilitation of Civil components has been worked out after estimating the quantities of various items required to be executed. The rates are adopted from latest available editions of Maharashtra PWD Schedule of Rates (SSR) and WRD CSR 2019 with 15% rise for lead charges and price rise except for M20 Concrete, which is based on market rates prevailing at nearest RMC plant located at Shirval which are inclusive of the lead charges.
- 4.8.20 The cost provisions of Electro-Mechanical (E&M) Works and Hydro-Mechanical (H-M) Works have been made on the basis of Offers from leading E&M and H-M equipment manufacturers and comparing with the prevailing market rates. MIPL has received offers from the Original Equipment Manufacturer GANZ MAVAG, Hungary, Cummins and other leading manufacturers of EOT crane, Hydro Mechanical works etc.
- 4.8.21 Cost estimates for Switchyard work are based upon the MSETCL Schedule of Rates (S.O.R) 2014 with 15 % escalation, for accounting the price rise.
- 4.8.22 Following LUMP SUM provisions have been made on the basis of Chapter-1.11-General-Renovation, Modernisation and Uprating of Standards/Manuals/Guidelines for Small Hydro Development published by Alternate Hydro Energy Centre, Indian Institute of Technology, Roorkee:

- i. Preliminary Expenses and Financial Costs: 1% of Project Cost as per MNRE guidelines para 8.9, which includes DPR preparation, financial and legal costs cost.
- ii. Audit & Accounts Charges: 0.5% of Project Work Cost as per MNRE guidelines para 8.7(ii).
- iii. Freight & Insurance: 2% of Electro Mechanical Equipment cost as per MNRE guidelines para 9.
- iv. Miscellaneous Charges: 3% of Project Works Cost as per MNRE guidelines para 8.2.9 which includes Power supply and power bills during construction period, Medical, Health & Sanitation, Workmen Compensation, Security arrangements etc.
- v. Supervision and Administrative charges: 2.5% of Project Works cost (as against 8-10% provided in para 8.3 of MNRE guidelines), which includes project management consultant's fees, detailed engineering designs, etc.

Hard Cost

4.8.23 GOMWRD vide its Reply to data gaps dated 28 June 2021 submitted that the total cost of R&M work of Veer HEP was Rs.3000 Lakhs. The said estimation had been done in 2012 and it includes costs for establishment, audit, Secretariate charges etc.

4.8.24 In said estimate the cost of work component was Rs.2749.25 Lakhs. The overall hard cost of R&M project, as estimated by the MHPVPPL is Rs.2872 Lakhs (2021 Price level) which, GOMWRD considers to be reasonable under prevailing tax structure.

4.8.25 The Commission notes that GOMWRD in its affidavit dated 23 June 2021 provided summary sheet for Veer HEP of its administrative approval, summary of cost components are provided in following table:

Table 6: Recapitulation sheet for Veer SHP, as approved by GOMWRD

Sr. No.	Description	R&M works costs in Lakhs
A	Hydro Project	
	Power Plant and Civil Work	
1	Penstock	25.00
2	Power House	20.00
3	Hydro Mechanical Equipment	102.25
4	Building	15.00
5	Plantation	2.00

6	Misc	10.00
7	Maintains	40.00
8	Special T&P	20.00
9	Communication	15.00
10	Generation E&M Equipment	2500
	Total Head Work	2749.28
B	Direct Charges	
1	Establishment @8% on Total Head Work	219.94
2	Secretariate Charges @ 0.35% on Total Head Work	9.62
3	Ordinary Tool & Plants @ 0.1% on Total Head Work	2.75
C	Indirect Charges	
1	Audit Charges @0.1% on Total Head Work	2.74
D	Receipts & Recoveries	
1	80% of Cost of the Special T&P	16
	Net Cost of the Project	3000.31
	~ Say Rs.	3000.00

4.8.26 While, justifying the proposed cost, MHPVPPL in its reply dated 25 June 2021 presented a comparative table of proposed cost vis-à-vis inflation adjusted GoM estimated cost.

4.8.27 In said Reply, MHPVPPL mentioned that the Pre-Operative charges proposed by it get covered up in GoM estimate under heads of Establishment and Audit charges. Apart from the items (B), (C) and (D) (Soft Cost) in table 8 above, GoM has factor in Transportation & Insurance charges to the tune of Rs.48.44 Lakhs under Generation E & M equipment.

4.8.28 If the said the cost towards Transportation & Insurance charges are factored in along with other soft cost of GoM cost estimate, then the contribution of soft cost will be 10.89% of Hard cost.

4.8.29 Further, GOMWRD submitted that it has prepared proposal for Administrative Approval for R&M of Veer HEP. The proposal was framed on the basis of the Guidelines issued by MNRE in 2012 for Renovation, Modernisation and Uprating of the SHPs and Guidelines issued by CEA for formulation of DPR. This cost estimate for civil items was based on the schedule of Rates. The cost estimate of Electro-mechanical works is based the market offers invited in 2012. The average cost of the item wise offers received were considered. The cost of hydro-mechanical works is based on the estimate received from the mechanical organization of the WRD in September 2012. Further, GOMWRD estimate does not include the provision of threshold premium but includes taxes.

4.8.30 The Commission notes that cost estimate of GOMWRD is based on costs considerations in 2012 and are based on offers received and Schedule of Rates. GOMWRD in its Reply to data gaps have stated that cost of capital works proposed by MHPVPPL are reasonable.

4.8.31 The Commission also notes that following Hard cost is proposed by MHPVPPL:

Table 7: Hard Cost proposed by MHPVPPL

(Amount in Lakhs)

Sr.No.	Description	Amount	Applicable Taxes	Total
1	Turbine & auxiliaries	606.70	109.21	715.91
2	Generator & auxiliaries	552.75	99.50	652.25
3	Transformers	142.50	25.65	168.15
4	Station auxiliaries	117.25	21.11	138.36
5	Control and Instrumentation & Automation, 132 kV Switchyard metering etc.	510.16	91.83	601.99
6	Online Monitoring System	80.00	14.40	94.40
7	Civil Works	158.84	28.59	187.43
8	Hydro Mechanical Components.	105.00	18.90	123.90
9	Dismantling, Erection, Testing and Commissioning	160.75	28.93	189.68
	Total in Rs	2,433.95	438.12	2,872.07

The following table depicts the difference between the Hard Cost proposed by MHPVPPL and GOMWRD estimate:

Table 8: Hard Cost, as approved by the Commission

(Amount in Lakhs)

Sr.No.	Description	As proposed by MHPVPPL (a)	As considered by GOMWRD (b)	Difference (c)=(a)-(b)
1	Hard Cost component	2872.07	2749.28	122.79

This increase in cost is to the tune of 4.46%, which seems to be reasonable as GOMWRD's cost estimation was based on cost data of 2012 whereas MHPVPPL has projected the cost based on current market conditions.

4.8.32 Further, this project being R&M project and major equipment are being replaced, the Commission sought the details about the scrap cost which is not considered in costing

of the project. The MHPVPPL in reply to the query submitted that scrap value will be to the tune of Rs.20.15 Lakhs.

4.8.33 Considering list of items identified for handover in lease agreement, nature of proposed work and amount considered for asset dismantling in costing, above scrape value submitted by MHPVPPL seems to be on lower side. The Commission notes that as per settled regulatory principles, salvage value is considered as 10% of asset value which can be monetised by sale of asset after its useful life is over. Depending upon nature of asset and its physical and operational condition, sale of such asset may fetch value more or lower than salvage value.

4.8.34 In present case, value of asset can be assessed through Threshold Premium. This is because, purpose of Threshold Premium has been defined in Article 1 of the Lease Agreement, which reads as below:

“Threshold Premium” means the cost of the project components (Civil and E&M), which will be handed over to LESSEE.

If threshold Premium (Rs.9.9 Crore) is considered as asset value, the scrap value proposed by MHPVPPL i.e. Rs. 20.15 lacs would be just 2% of asset value which is much lower than salvage value of 10%.

4.8.35 Therefore, considering proposed scope of work and type of asset being replaced, the Commission is of the opinion that it will be prudent to consider scrap cost as 5% of threshold premium value. The same has been worked out, as below:

Table 9: Scrap Cost

(Amount in Lakhs)

Description	As proposed by MHPVPPL	As considered by Commission = (5% X Threshold Premium)
Scrape Cost component	20.15	49.50

4.8.36 Accordingly, Following Hard Cost has been considered by the Commission:

Table 10: Hard Cost, as approved by the Commission

(Amount in Lakhs)

Sr. No.	Description	As proposed by MHPVPPL (a)	Less Scrap Cost (b)	As considered by the Commission
1	Hard Cost component	2872.07	49.50	2822.57

Soft Costs:

Pre-operative Expenses:

4.8.37 The Office of the Commission in data gaps sought the write up on types of works involved in pre-operative expenses and cost break up of items considered therein. MHPVPPL in its Reply dated 22 May 2021 provided the following cost break-up:

Table 11:Pre-operative Expenses, as submitted by MHPVPPL

Sr.No	Particulars	Amount in Rs	GST in Rs	Total Amount in Rs
a	Preliminary Expenses including DPR preparation & Financial Cost as per MNRE guidelines	24,33,949	4,38,111	28,72,060
b	Audit & Accounts Charges	12,16,975	2,19,055	14,36,030
C	Freight & Insurance	40,18,720	7,23,370	47,42,090
d	Miscellaneous Charges including Power supply and power bills during construction period, Medical, Health & Sanitation, Workmen Compensation, Security arrangements etc.	73,01,848	13,14,333	86,16,180
e	Supervision and Administrative charges including Project Management Consultant charges	60,84,873	10,95,277	71,80,150
f	Stamp Duty Lease agreement	46,00,000		46,00,000
g	Ministry of Corporate Affairs for Increase in the equity capital to 12 Crore	12,69,000		12,69,000
h	MERC petition filing charges	1,05,000		1,05,000
i	Legal Fees	15,00,000	2,70,000	17,70,000
	Total	2,85,30,365	40,60,146	3,25,90,510

4.8.38 The Commission notes that pre-operative expenses have two components. Firstly, lumpsum provisions as per MNRE Guidelines for Project Cost Estimation of SHP and second is Statutory and Regulatory Payments. MHPVPPL on one side making lumpsum provisions as per guidelines and on other hand explicitly claiming expenses on individual heads such as Legal fees, stamp duty and Petition filing fees. Ideally these statutory and regulatory payments get covered up under Supervision and Administrative charges.

4.8.39 Further, it is evident from the cost estimate that pre-operative expenses claimed by MHPVPPL is 11.34 % of Hard cost. Whereas GOMWRD in its the summary sheet has considered direct charges, indirect charges and receipts & recoveries over and above

total head work costs which contributes to 9.13% of the Hard Cost considered by GOMWRD.

4.8.40 As mentioned in para 4.8.27,

4.8.41 if the cost towards Transportation & Insurance charges are factored in along with other soft cost of GoM cost estimate then the contribution of soft cost will be 10.89% of Hard cost. Considering lumpsum provision made by MHPVPPL for pre-operative expenses, the Commission restricts soft cost contribution to the extent of 10.89% of Hard Cost.

Table 12 :Pre-operative Expenses, as approved by the Commission

(Amount in Lakhs)

Sr.No.	Description	As proposed by MHPVPPL	As approved by the Commission
1	Pre-operative expenses	325.905	312.77

Financial charges excluding IDC

4.8.42 MHPVPPL has claimed following financial charges for capital cost of the Veer HEP:

Table 13: Financial Charges excluding IDC, as submitted by MHPVPPL

(Amount in Lakhs)

Sr.No.	Description	As proposed by MHPVPPL
1	Stamp Duty on Hypothecation and Mortgage	12.32
2	Processing Fees for Term Loan & Bank Guarantee @ 0.50%	20.30
	Total	32.62

4.8.43 While replying to data gaps, MHPVPPL has submitted the documentary evidence for the amount claimed under financial charges. It is evident from the Union Bank email dated 26 June 2021; Processing Fees for Term Loan & Bank Guarantee works out to be Rs.17.29 Lakhs instead of Rs.20.30 Lakhs. Similarly, empanelled Advocates of Union Bank of India vide letter dated 26 June 2021 certified that Stamp Duty of Rs.9,34,600/- is payable for deed hypothecation and indenture of Mortgage each. Accordingly, The Commission approves following Financial Charges excluding IDC:

Table 14: Financial Charges excluding IDC, as approved by the Commission

(Amount in Lakhs)

Sr.No.	Description	As approved by the Commission
1	Stamp Duty on Hypothecation and Mortgage	18.70
2	Processing Fees for Term Loan & Bank Guarantee @ 0.50%	17.29
	Total	35.99

Threshold Premium:

4.8.44 The Commission notes that MHPVPPL has paid Threshold premium and upfront premium, as a part of bidding and Lease Agreement conditions. Amounts presented in financial model are depicted in table below:

Table 15: Details of Premium Paid by MHPVPPL

(Amount in Lakhs)

Sr.No.	Description	As proposed by MHPVPPL
1	Threshold Premium along with GST	1168.20
2	Upfront Premium along with GST	80.00
	Total	1248.20

4.8.45 It is apparent from the financial model that, MHPVPPL has not considered the upfront premium payment for tariff calculation. Threshold Premium is the amount to be paid as per tender condition to GOMWRD, whereas Upfront Premium is the award criteria and is the amount which is quoted by the bidder for award of the project over and above Threshold Premium.

4.8.46 The Commission notes that GOMWRD's Policy for development of SHP Projects through Private Sector Participation (GR No. PVT-1204/ (160/2004)/HP dated 15 September 2005) mentions that the minimum threshold premium shall be mentioned in the bidding document. The relevant portion is reproduced as below:

“
A-3 Procedure for selection of Developers:
 ...
A-3.3 The bidding procedure shall be as under.
A-3.3.1 Main bidding documents shall be issued only to pre-qualified developers.
The minimum threshold premium shall be mentioned in the bidding document.
The bidders shall quote a premium payable to GoM over and above threshold premium”

and support his bid by Earnest money Deposit (EMD). Upfront premium will be the primary consideration for allotment of the project. Upfront premium offered by both IPPs/CPPs will be evaluated. The highest bid so evaluated will be the criteria for selection.”

4.8.47 In the Present Case, GOMWRD has fixed the Threshold Premium as Rs 990 Lakhs. Being a successful bidder, it is an obligation of MHPVPPL to pay the same to the GOMWRD as per the Clause 4.1.1 of the Lease Agreement. GST is payable under reverse charge mechanism as the right to use of the said existing assets gets transferred and as per clause no 2.2.10 of the Lease Agreement, the applicable taxes are to be borne by the LESSEE (MHPVPPL).

4.8.48 The Commission in its Order dated 27 January 2016 in Case No. 69 of 2015 (In the matter of Petition of Celerity Power Pvt. Ltd. for determination of Tariff of its 6 MW Small Hydro Power Project at Deoghar, Tal. Bhor, Distt. Pune) has ruled as below;

“

5.6.30 Considering the various dispensations cited above, the Commission is also of the view that Upfront Premium should not form part of the Capital Cost to be considered for determination of Tariff for such Projects. Hence, the Commission has not considered the Upfront Premium of Rs. 351 lakhs paid by CPPL for seeking allotment of the Project from GOMWRD as an allowable expense to be included in the Capital Cost of the Project.

However, the Commission has considered the Threshold Premium of Rs. 300 lakhs (Rs. 50 lakh/MW), which was stipulated as part of the SHP policy notified by the GOM towards recovery of investments on trash rack and penstock already made by GOMWRD, as an allowable component of Capital Cost while determining the Tariff for CPPL's said Project.” (Emphasis added)

4.8.49 Based on the Commission's Order in Case No. 69 of 2015 dated 27 January 2016, MHPVPPL has not included the Upfront Premium of Rs. 63 Lakhs paid to GOMWRD, in the estimated Capital Cost. On the same line, the Commission has not considered the upfront premium for Tariff computation.

4.8.50 The Commission in data gaps sought documentary evidence for payment of the Threshold Premium. MHPVPPL vide its Reply to data gaps dated 28 June 2021 submitted the same. Based on that the Threshold Premium approved by the Commission is depicted in table below:

Table 16: Threshold Premium, as approved by the Commission

(Amount in Lakhs)

Sr.No.	Description	As submitted by MHPVPPL	As approved by the Commission
1	Cost of existing Infrastructure (Threshold premium)	990	990
2	GST Applicable	178.20	178.20
	Total	1168.20	1168.20

Interest during Construction:

4.8.51 The Commission notes that MHPVPPL has capitalised the Interest during construction (IDC) to calculate the total project cost. The IDC is calculated considering the phasing of the capital expenditure. The computation of IDC is shown in the below Table:

Table 17: IDC computation, as submitted by MHPVPPL

IDC Calculation	Units	Months						Total
		1	2	3	4	5	6	
Opening		-	513	1,026	1,540	2,053	2,566	-
Loan Disbursement	Rs. in Lakhs	513	513	513	513	513	513	3,079
Closing		513	1,026	1,540	2,053	2,566	3,079	3,079
Interest Rate	%	9.07%	9.07%	9.07%	9.07%	9.07%	9.07%	
Interest Payment	Rs. in Lakhs	1.94	5.82	9.70	13.58	17.46	21.34	69.84

4.8.52 As per Lease Agreement, MHPVPPL is required to complete the project in 6 months after handing over of project site. Further, MHPVPPL has considered interest rate of 9.07%, which is interest rate for long term loan.

4.8.53 Based on revision in cost considerations, revised IDC Computation, as approved by the Commission is depicted in table below:

Table 18: IDC computation, as approved by the Commission

IDC Calculation	Units	Months						Total
		1	2	3	4	5	6	
Opening		-	506	1,013	1,519	2,025	2,531	-
Loan Disbursement	Rs. in Lakhs	506	506	506	506	506	506	3,038

Closing		506	1,013	1,519	2,025	2,531	3,038	3,038
Interest Rate	%	9.07%	9.07%	9.07%	9.07%	9.07%	9.07%	
Interest Payment	Rs. in Lakhs	1.91	5.74	9.57	13.40	17.22	21.05	68.90

Summary of Capital Cost:

4.8.54 Based on rationale provided in aforementioned paras, the Commission has considered following capital cost for determination of the tariff:

Table 19 : Capital Cost of Veer HEP considered by the Commission

Sl. No.	Parameters	Capital Cost as Claimed by MHPVPPL (Rs. Lakh)	Capital Cost as approved by the Commission (Rs. Lakh)
1	Hard Cost	2872.07	2822.56
2	Pre-operative Expenses	325.905	312.77
3	Threshold Premium	1168.20	1168.20
4	Financial Charges excluding IDC	32.62	35.99
5	IDC	69.84	68.90
	Grand Total	4468.64	4408.42

4.8.55 In view of the above, the Commission approves Rs. **4408.42** Lakhs towards Capital Cost of MHPVPPL's Veer HEP for determination of Tariff as against Rs. 4468.64 Lakhs proposed by MHPVPPL.

4.8.56 A comparative table of recently notified (in Regulation) capital costs for Mini/Small Hydro projects by various Regulatory Commissions in India is presented in the Table below:

Table 20: Capital cost of Mini/Small Hydro Projects

Sr. No	Name of Regulatory Commission	Regulation	Capital Cost (in Rs. Lakh/MW)
1	CERC (Below 5MW)	2020	Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union 1100

Sr. No	Name of Regulatory Commission	Regulation	Capital Cost (in Rs. Lakh/MW)	
			Territory of Ladakh and North Eastern States	
			Others States	780
2	Chhattisgarh Electricity Regulatory Commission	2019	880	
3	Haryana Electricity Regulatory Commission	2017	779	
4	Gujrat Electricity Regulatory Commission#	As per Order	820	
5	Arunachal Pradesh Electricity Regulatory Commission	2018	1400	
6	Madhya Pradesh Electricity Regulatory Commission	2017	650	

As per Order in Case No.5 of 2016

4.8.57 Ideally, the cost structure of Veer HEP cannot be compared with the cost structure of newly constructed projects. But from Distribution Licensee and consumer's perspective realised tariff is of prime importance. The Commission notes that the per MW cost of proposed R&M project works out to be Rs.489.82. Same is much lower than above cited projects costs for new projects. The Veer HEP, which has outlived its technical life rightfully qualify for renovation and modernisation works for operationalising the same.

4.8.58 Considering above details, the Commission has considered capital cost of Rs. **4408.42** Lakh for purpose of tariff determination.

4.9 Eligible Subsidy Component:

MHPVPPL's submission

4.9.1 MHPVPPL submitted that, being an R&M project, as per the prevailing policies, it is not entitled for any grant/subsidy either from the State Government or Central Government.

Commission's Analysis and Ruling

4.9.2 The Commission notes the submission of MHPVPPL.

4.10 Debt-Equity Ratio

MHPVPPL's submission

4.10.1 As per Regulation 15.2 of MERC RE Tariff Regulations 2019:

“

15.2 For project-specific tariff determination, if the equity actually deployed is more than 30% of the Capital Cost, the equity in excess of 30% shall be treated as normative loan:

Provided that, where the equity actually deployed is less than 30% of the Capital Cost, the actual equity shall be considered for determination of tariff:

Provided further that the equity invested in foreign currency shall be denominated or designated in Indian rupees as on the date of each investment.”

4.10.2 Thus, for the purpose of determination of the proposed tariff, a debt equity ratio of 70:30 has been considered.

Commission's Analysis and Ruling

4.10.3 As submitted, Commission has considered the debt-equity ratio of 70:30 for the Capital cost of Rs.4408.42 Lakhs as per Re Tariff Regulations-2019.

4.11 Depreciation

MHPVPPL's submission

4.11.1 In line with Regulations 17.3 of MERC RE Tariff Regulations, 2019, the depreciation rate for the first 12 years of the Tariff Period has been considered as 5.83% per annum. Further, considering the useful life of Veer HEP as 25 years, the balance depreciation has been spread for the remaining 13 years of the useful life of the project.

4.11.2 As per Regulation 17.2 of MERC RE Tariff Regulations, 2019, the salvage value of the assets has to be considered as 10% and depreciation up to a maximum of 90% of the Capital Cost is required to be considered for computation of the Tariff of the project. However, as per the clause 6.1 of the Lease Agreement, at the end of the term of the Lease, the project has to be handed over to GOMWRD on “As Is where Is basis”, without any compensation and therefore, MHPVPPL is not entitled to any salvage value. Accordingly, MHPVPPL in its Petition has claimed 100% of total depreciation. In view of the same, the depreciation rate of 2.31% has been considered from the 13th year onwards up to 25 years.

4.11.3 Accordingly, MHPVPPL requested the Commission to approve the claim of total depreciation of 100% without considering any salvage value while determining project specific tariff for Veer HEP.

Table 21: Computation of Depreciable amount, as submitted by MHPVPPL

Sr. no.	Particulars	Amount in Rs. Lakhs
1	Capital Cost	4357.07
2	Depreciable Amount (100% of S.no 1)	4357.07

Commission's Analysis and Ruling

4.11.4 Regulation 17 of the MERC RE Tariff Regulations, 2019, pertaining to depreciation is as follows:

“

17.1 The value base for the purpose of depreciation shall be the capital cost of the asset as admitted by the Commission.

17.2 The salvage value of the asset shall be considered as 10%, and depreciation shall be allowed up to a maximum of 90% of the capital cost of the asset, excluding the cost of freehold land, if any.

17.3 The depreciation rate for the first 12 years of the Tariff Period shall be 5.83% per annum, and the remaining depreciation shall be spread over the remaining useful life of the project from the 13th year onwards.

17.4 Depreciation shall be chargeable from the first year of commercial operation.”

4.11.5 The Commission notes that it is well settled regulatory principle to consider 10% as salvage value and allow 90% as depreciation. The Commission is not inclined to deviate from the same on account of provisions of lease agreement. It is upto MHPVPPL and GOMWRD to mutually decide on any financial implication of this issue. Accordingly, the Commission has considered the depreciation rate of 5.83% for the first 12 years as per the Regulation 17.3 of MERC RE Tariff Regulations, 2019. The remaining depreciation amount (up to 90% of capital cost) spread over the remaining Useful Life of the Project (13 years).

Table 22: Depreciation Rate considered by the Commission

Particulars		As considered by MHPVPPL (Rs. Lakh)	As considered by the Commission (Rs. Lakh)
Time Period	a	25 Years	25 Years
Debt	b	70%	70%
Repayment Period	c	12 Years	12 Years
Depreciation for 1 st 12 Years	d = (b/c)	5.83%	5.83%
Depreciation for 13 Years onwards	e	(100%-(dxc))/(a-c)	(90%-(dxc))/(a-c)
		2.31%	1.54%

4.12 Operation and Maintenance (O&M) expenses

MHPVPPL's submission

4.12.1 As per Regulation 34 of MERC RE Tariff Regulations, 2019:

*“The ceiling normative O&M expenses for the base year of the Review Period for the purpose of tariff determination shall be as follows:
Greater than 5 MW and up to and including 25 MW - 2.80% of the Capital Cost”*

4.12.2 The normative operation and maintenance charges i.e. 2,80% of the Capital Cost as proposed, have been considered for calculation of O&M charges.

4.12.3 Further, as per Regulations 20.3 of the MERC RE Tariff Regulations, 2019, normative O&M expenses has been escalated at the rate specified for Generating Companies in the MERC (Multi Year Tariff) Regulations, 2019, as amended from time to time, for computation of the levelized tariff. It is submitted that calculations based on the approach provided in Regulation 20.3 of RE Tariff Regulations, 2019 read together with Regulation 49.1(a) and 49.2 of Multi Year Tariff regulations 2019 which further refers to 47.1(c) of the same regulations yields an 3.28% escalation rate. MHPVPPL submitted that it has not considered efficiency factor of 1% in view of the fact that the present project being R&M project and one of its kind will certainly require higher O&M cost as compared to the new hydro project. Also, the technology will not have any efficiency gain as apparent in other RE projects as this being one of the R&M project. Further, in view of it being an R&M project, there is substantial reduction in Capital Cost requirement and since the O&M cost is linked to the Capital cost, the benefit of the lower CAPEX and lower O&M expenses is being passed through reduction in tariff.

4.12.4 Accordingly, MHPVPPL requested the Commission to allow escalation rate at 3.28% without considering any efficiency factor for determination of project specific tariff for Veer HEP.

Table 23: O&M Expenses for Base Year (in Rs. lakhs) and Escalation factor, as submitted by MHPVPPL

Particulars	As per MHPVPPL
O&M Expenses (Rs.Lakhs) per MW	125.12
Escalation Factor (%)	3.28

Commission's Analysis and Ruling

4.12.1 The regulatory framework for determination of O&M expenses is specified in RE Tariff Regulations-2019. Regulation 34 provides for ceiling on the normative O&M Expenses for projects with a capacity Greater than 5 MW and up to and including 25 MW for the base year (FY2020-21), which is 2.80% of Capital Cost.

4.12.2 Further, escalation rate has been derived as per provisions in MYT Regulation-2019 Regulation 47.1(c) of MYT Regulations, 2019 reads as below:

“
47.1 (c)The Operation and Maintenance expenses for each subsequent year shall be determined by escalating these Base Year expenses of FY 2019-20 by an inflation factor with 50% weightage to the average yearly inflation derived based on the monthly Wholesale Price Index of the past five financial years as per the Office of Economic Advisor of Government of India and 50% weightage to the average yearly inflation derived based on the monthly Consumer Price Index for Industrial Workers (all-India) of the past five financial years as per the Labour Bureau, Government of India, as reduced by an efficiency factor of 1% or as may be stipulated by the Commission from time to time, to arrive at the permissible Operation and Maintenance expenses for each year of the Control Period:..... .”

4.12.3 Accordingly, the Commission has analyzed the last 5 year average WPI and CPI indices from FY 2015-16 to FY 2019-20 considering 50% weightage to WPI and CPI, which works out to 3.28% per annum.

4.12.4 On the issue of reducing efficiency factor of 1%, the Commission is of the opinion that this project being already outlived its technical life and its life being extended by undertaking R&M activities, it would not be appropriate to reduce O&M expenses of such plant by 1% efficiency factor. Hence, by using inherent powers under Regulation 74 of MERC RE Tariff Regulations-2019, the Commission has decided to not deduct 1% efficiency factor form O&M escalation for Veer HEP.

Table 24: O&M escalation rate, as considered by the Commission

Particulars	Value
Average WPI rates for FY 2015-16 to FY 2019-20	1.39%
Weightage of WPI	50.00%
Effective Wt. avg. Value of WPI	0.70%
Average CPI rates for FY 2015-16 to FY 2019-20	5.17%
Weightage of WPI	50.00%
Effective Wt. avg. Value of WPI	2.58%
WPI (50%) + CPI (50%) for FY 2015-16 to FY 2019-20	3.28%
Less: Efficiency Factor	Relaxed
Escalation factor as per MERC MYT Regulations, 2019	3.28%

4.12.5 As per the above Clause, WPI and CPI index of preceding 5 years need to be considered for computation of O&M escalation rate. Accordingly, escalation rate works out to be 3.58% as claimed by MHPVPPL.

4.12.6 Accordingly, the Commission has considered Rs. 123.44 Lakhs towards Operation and Maintenance expenses of the 1st year of the operation.

4.13 Charges for maintenance of Intake Structure, Penstock etc

MHPVPPL's submission

4.13.1 As per bidding conditions the responsibility of maintenance of Intake Structure & Penstock was on GOMWRD and the bidder was supposed to pay annual maintenance charges to GOMWRD. The relevant clause is as below:

“

6.2.2 In addition to Premium, the successful bidder shall have to pay to GOMWRD after allotment of Veer Hydro Electric Project, following as annual charges:

(C) Maintenance charges for penstock, intake structure etc at the rate of Rs. 0.05 / lwh generation per year to be paid quarterly before 10th day of every January, April, July, and October. The basis for the payment shall be joint reading by authorised representatives of the LESSEE and LESSOR on each of 1St January, April, July and October”

4.13.2 However, subsequently, considering some project specific features, ease of operation and modernisation scheme proposed it was found prudent that the responsibility of maintenance of the intake structure and penstock be with the LESSEE (MHPVPPL) and consequently the LESSEE need not pay any maintenance charges to the GOMWRD. The project specific facts and advantages which made this change necessary are as enumerated below:

- Generally, there are common irrigation- cum- power intakes and steel penstocks are embedded in the earthen body of the dam and GOMWRD as a policy, keep the operation and maintenance of such components with itself and recover the operation and maintenance cost from the power generating company. However, in VEER HEP, irrigation and power intakes are independent. Further, instead of steel penstock there exists concrete penstock.
- In VEER HEP, there are concrete penstocks and there exist no Main Intake Valves (MIV). The only upstream control is in the form of quick closing intake gates. These intake gates are hydraulically operated to close in 90 seconds. These hydraulic hoists require frequent maintenance to keep them operative all the time to meet the emergency operations of intake gates. Intake gates being the only upstream control available, the safety of the turbines depends on prompt action of the intake gates. At present these gates are operated by switches provided in the hoist room outside the powerhouse. However, if the intake gates are handed over to the generating company, during renovation & Modernisation, the operations of intake gates can be taken on SCADA system.
- There will be single point responsibility.

4.13.3 In light of above, the necessary provisions have been incorporated in the Lease Agreement which are legally binding on MHPVPPL. The relevant clauses in the lease Agreement are:

“

2.2.6 The LESSEE shall operate and maintain the intake structure like trash rack, stoplog, gate and crane provided for operation of trash rack and penstock which is essential for functioning of the project at it's own cost and in coordination with civil authorities.

....

4 Terms of Payments

4.2 (c) Maintenance charges for penstock an, intake structure etc: Intake Maintenance charges are not payable to LESSEEE under this agreement as it is the responsibility of the LESSEE to operate and maintain the intake structure at its own cost.”

4.13.4 In view of the above, MHPVPPL is required to incur additional expenses on operation and maintenance of intake structure which otherwise would have been spent by GOMWRD and recovered from the generating company at the rate of Rs. 0.05/kWh in the first year and with annual escalation in the subsequent years. The generating company is allowed to recover these charges as pass through from the distribution licensee as per actuals paid to the GOMWRD. Accordingly, MHPVPPL has included

the said maintenance charge of 5 paise per unit with escalation of 3.28% for determination of proposed tariff.

- 4.13.5 It is also submitted that Commission in its Order dated 26 March 2021 in Case No 208 of 2020 has allowed the aforesaid maintenance charges to be recovered at actuals. Accordingly, MHPVPPL requests Commission to allow the said charges while determining the tariff.

Commission's Analysis and Ruling

- 4.13.6 The Commission notes that in bid document the responsibility of maintenance of Intake Structure & Penstock was on GOMWRD and the bidder was supposed to pay annual maintenance charges to GOMWRD. On the other hand, in Lease Agreement, it has categorically been mentioned that MHPVPPL shall operate and maintain the intake structure like trash rack, stoplog, gate and crane provided for operation of trash rack and penstock at its own cost. Further maintenance charges on account of that are not payable.
- 4.13.7 The Commission in its Order in Case No.208 of 2020 dated 26 March 2021 in respect of Morna Hydro Electric Project allowed recovery of maintenance charges for intake structure and penstock etc. to be payable to GOMWRD based on actual on reimbursement basis. The rates of Maintenance charges from second year onwards shall be increased in every subsequent year by 5%.
- 4.13.8 Now, MHPVPPL has claimed maintenance charge of 5 paise per unit with escalation of 3.28% for determination of proposed tariff. The Commission notes that such claim is deviation from the bidding conditions wherein it is stated that maintenance charge of 5 paise per unit with escalation of 5% is to be paid to the GOMWRD. However, based on provision of lease agreement signed after bidding process, MHPVPPL has proposed to include such charges in tariff computation but at lower escalation rate of 3.28% as compared to 5% escalation rate envisaged in bidding document. The Commission notes that there is an option of asking MHPVPPL to claim such charges on actual basis as envisaged in bidding document without including it in tariff computation. However, under such option, levelized tariff would be reduced by Rs 0.06/kWh, but as 5 paise per unit charge is to be escalated by 3.28% in each year, such charges will increase upto Rs. 0.11/kWh at the end of the 25th year of the PPA. Thus, effective tariff would be levelized tariff plus 5 to 11 paise per unit. Further, only during initial 3 years, such charges is lower than levelized impact of 6 paise/unit and in rest of 22 years it is 6 to 11 paise/unit. Therefore, out of 25 years of PPA, benefit of excluding such maintenance charges from tariff computation in terms of reduced tariff is limited only for initial 3 years, whereas for rest of 22 years, resultant tariff (tariff determined by Commission excluding maintenance charges + per unit maintenance charges with applicable escalation) would be equal or more than the levelized tariff determined by including

maintenance charges in tariff computation. Hence, it would be beneficial if such charges are included in tariff determination process. Therefore, the Commission finds the proposal as prudent and incorporates the said maintenance charge in proposed tariff.

4.14 Interest on Term Loan

MHPVPPL's submission

4.14.1 With respect to Loan Tenure, in line with Regulation 16.1 of MERC RE Tariff Regulations 2019, the loan tenure of 12 years is considered for the determination of the proposed tariff:

“

16.1 Loan Tenure:

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

4.14.2 With respect to Interest rate, Regulation 16.2 of MERC RE Tariff Regulations 2019 states as follows:

“

16.2 Interest Rate:

(a) The quantum of loan arrived at as specified above shall be considered as the gross normative loan for computation of the interest on loan;

(b) The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to 31st March of the previous year from the gross normative loan;

(c) For the purpose of computation of tariff, the average of the one-year Marginal Cost of Funds-based Lending Rate ('MCLR') as declared by the State Bank of India for the previous year plus 200 basis points, shall be considered as the normative interest rate;

(d) Notwithstanding any moratorium period availed, the repayment of loan shall be considered from the first year of commercial operation of the Project and shall be equal to the annual depreciation allowed.”

4.14.3 The average of one-year MCLR as declared by State bank of India for FY 2020-21 is derived as 7.07%. Accordingly, the normative interest rate considered is equivalent to the average of the one-year Marginal Cost of Funds-based Lending Rate ('MCLR') as declared by the State Bank of India for the previous year plus 200 basis points i.e. 9.07% as specified in Regulations 16.2 (c) of MERC RE Tariff Regulations, 2019.

Table 25: SBI MCLR Rate, as submitted by MHPVPPL

From	To	MCLR (one Year)	Days
1-Apr-20	9-Apr-20	7.75%	9.00

10-Apr-20	9-May-20	7.40%	30.00
10-May-20	9-Jun-20	7.25%	31.00
10-Jun-20	9-Jul-20	7.00%	30.00
10-Jul-20	9-Aug-20	7.00%	31.00
10-Aug-20	9-Sep-20	7.00%	31.00
10-Sep-20	9-Oct-20	7.00%	30.00
10-Oct-20	9-Nov-20	7.00%	31.00
10-Nov-20	9-Dec-20	7.00%	30.00
10-Dec-20	9-Jan-21	7.00%	31.00
10-Jan-21	9-Feb-21	7.00%	31.00
10-Feb-21	9-Mar-21	7.00%	28.00
10-Mar-21	31-Mar-21	7.00%	22.00
Total		7.07%	365.00

Commission's Analysis and Ruling

4.14.4 The Commission observes that Regulation 16.2 (c) of RE Tariff Regulations-2019 provides interest rate to be considered for determination of interest on loan. The relevant extract of the Regulation is reproduced below:

“
*(c) For the purpose of computation of tariff, the average of the one-year Marginal Cost of Funds-based Lending Rate ('MCLR') as declared by the State Bank of India for the **previous year** plus 200 basis points, shall be considered as the normative interest rate;*”

4.14.5 Accordingly, the Commission considers the average of 1-year MCLR of SBI for FY 2020-21 (i.e., from April 2020 to March 2021), which works out to be 7.07%. Hence, the Commission has considered the Interest on term Loan as $7.05\% + 2.00\% = 9.05\%$ for the purpose of determination of Tariff in this Case.

4.14.6 The Commission also notes that MHPVPPL in its financial model has added following financial charges without providing any details in the Petition:

1. Annual Term Loan Review Charges;
2. Annual BG Limit Review Charges;
3. Annual Inspection Charges;
4. Bank Commission on Bank Guarantee; and
5. GST @ 18% on above mentioned charges.

As per MHPVPPL's computation, on an average Rs. 9.28 Lakhs/annum is impact of all above charges. In this regard, the Commission notes that all these cost are normally categorised under Administrative Expenses which is part of O&M Expenses being allowed on normative basis. Hence, there is no need to allow such expenses as over an above the O&M Expenses. Accordingly, the Commission has not allowed such expenses separately.

4.15 Interest on Working Capital

MHPVPPL's submission

4.15.1 Regulation 19.1 of MERC RE Tariff Regulations 2019, reads as:

“

19.1 The Working Capital requirement in respect of Wind Energy Projects and Small Hydro, Solar PV, Solar Thermal, and Solar Rooftop PV Power Projects, shall consist of:

- a) O&M expenses for one month;*
- b) Receivables equivalent to two months of tariff for sale of electricity calculated on the normative CUF;*
- c) Maintenance spares @ 15% of O&M expenses.”*

4.15.2 Accordingly, annual working capital has been calculated based on the factors mentioned in the Regulations. Further, Interest on Working Capital has been calculated according to Regulation 19.3 of MERC RE Tariff Regulations 2019 which reads as:

“

19.3 Interest on Working Capital shall be the average of the one-year Marginal Cost of Funds based Lending Rate ('MCLR') as declared by the State Bank of India for the previous year plus 150 basis points.”

4.15.3 The average of one-year MCLR as declared by State bank of India for FY2020-21 is 7.07% plus 150 basis points yields an interest rate of 8.57% on working capital requirement. The same has been considered for determination of the proposed tariff.

Commission's Analysis and Ruling

4.15.4 As discussed earlier in Para 4.14.5, the Commission has considered the average of 1-year MCLR of SBI (from April, 2020 to March 2021) as 7.07%.

4.15.5 Accordingly, the Commission has considered the rate of interest on Working Capital as 8.57% (7.07%+1.50%) for the purpose of determination of Tariff in this Case.

4.16 Return on Equity

MHPVPPL's submission

4.16.1 Regulation 18.2 of RE Tariff Regulations-2019 reads as follows:

“ 18.2 The Return on Equity shall be computed at the base rate of 14%, to be grossed up as per the Minimum Alternate Tax (‘MAT’) rate applicable as on 1st April of the previous Financial Year.”

4.16.2 However, MHPVPPL submitted that, the aforementioned Regulation was relevant in the context of the tax holiday of 10 years under Section 80-IA of the Income tax Act which was then available to infrastructure projects meeting certain criteria. In such cases, MAT was required to be paid during the years when the tax holiday was availed and then the MAT credit could be claimed in later years when the entity is liable to pay tax. However, the validity of the said provision under Section 80-IA was applicable only for projects commissioned up till 31 March 2017 as stated in second proviso of Section-80-IA(4)(i).

“Provided further that nothing contained in this section shall apply to any enterprise which starts the development or operation and maintenance of the infrastructure facility on or after the 1st day of April 2017”

4.16.3 Moreover, through Finance Act, 2020, dated 27 March 2020, the Government of India has reduced the rates of corporate tax structure for domestic as well as manufacturing companies. This was effected with the introduction of Section 115BAA, which provides for 22% tax rate to be availed by domestic companies meeting certain criteria:

[Tax on income of certain domestic companies.

*“115BAA. (1) Notwithstanding anything contained in this Act but subject to the provisions of this Chapter, other than those mentioned under section 115BA and section 115BAB, the income-tax payable in respect of the total income of a person, being a domestic company, for any previous year relevant to the assessment year beginning on or after the 1st day of April, 2020, shall, at the option of such person, be computed at the rate of **twenty-two per cent**, if the conditions contained in sub-section (2) are satisfied:”*

4.16.4 Also, the domestic companies opting for section 115BAA will not be able to claim MAT credits for taxes paid under MAT during the tax holiday period. The companies would not be able to reduce their tax liabilities under section 115BAA by claiming MAT credits.

[Section 115 JD - Tax credit for alternate minimum tax.

Following sub-section (7) shall be inserted after sub-section (6) of section 115JD by the Finance Act, 2020, w.e.f. 1-4-2021:

(7) The provisions of this section shall not apply to a person who has exercised the option referred to in section 115BAC or section 115BAD.

- 4.16.5 Accordingly, considering the provision of Section 115BAA read with 7th proviso of Section 115 JD, Minimum Alternate Tax is not applicable when the corporate tax of 22% is availed U/s. 115BAA. Therefore, MHPVPPL while grossing up the RoE, has considered the Income Tax rate of 22% along with the applicable surcharge of 10% and cess of 4% which results in an effective tax rate of 25.168% as against the MAT rate as specified in the above Regulation.
- 4.16.6 Accordingly, MHPVPPL requested the Commission to approve the tax rate of 25.168% for grossing up the RoE, for determination of project specific tariff for Veer HEP.

Commission's Analysis and Ruling

- 4.16.7 The Commission notes that issue of Tax Rate under RE Tariff Regulations 2019 has been decided by the Commission in Order dated 3 July 2021 in Case No. 48 of 2021 as follows:

“11.5. The Commission notes that the grossing up of RoE with MAT rate is as per the Regulation 18 of the MERC RE Tariff Regulations, 2019. While justifying such provisions, the Commission in its Statement of Reasons has stated as follows:

“4.5.3 Analysis and Commission's Decision

The Commission has already clarified this aspect in the Explanatory Memorandum published along with the Draft MERC RE Tariff Regulations, 2019, as under:

.....

This rate of return needs to be grossed up with applicable tax rate. Regarding the applicable tax rate, the existing approach provides for consideration of MAT rate for first 10 years and applicable tax rate for remaining period. However, the effective tax rate for remaining period is also coming out close to MAT rate. It is proposed not to consider differential treatment over useful life. Hence, it is proposed to consider MAT rate prevailing as on 1st April of the previous financial year for the entire useful life of the project for grossing up Rate of Return.”

Hence, no change has been made to the Regulation on this account.”

Thus, commission's decision of applying MAT rate for grossing-up of RoE was based on analysis that not only for first 10 years but most of the years of project life, MAT rate would be applicable if various exemptions in Income Tax Act are considered.

11.6. However, PBESPL has pointed out that 10-year tax holiday granted under Section 80IA of the Income Tax Act, because of which MAT become applicable for these 10 years, was no more applicable. The Commission notes that such exemption

was applicable only for the projects to be commissioned till FY 2016-17. Hence, such benefit would not be applicable to project under consideration and in the absence of such benefit, project would be eligible for payment of Corporate Tax and not MAT. This situation has created difficulty in giving effects to the provisions of the Regulations in its letter and spirit. Hence, the Commission deems it fit to invoke its power under following Regulation 77 of RE Tariff Regulations, 2019 for removing this difficulty:

“77. Power to remove difficulties If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific Order, make such provisions, not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.”

11.7. Accordingly, the Commission rules that RoE will be grossed up by applicable Corporate Tax rate. Having ruled as above, the Commission notes that through Finance Act, 2020, the Government of India has introduced Section 115 BAA which ultimately provides options to eligible companies to either opt for lower corporate tax of 22% and forgo all exemptions/deductions available including MAT or continue with regular corporate tax rate of 30% and avail applicable deductions/exemptions whenever become applicable.

11.8. In present submission, PBESPL has stated that MAT would not be applicable to it. Under such circumstance, the Commission decides to consider lower corporate tax rate of 22% (effective tax rate is 25.17% after applying applicable cess) for grossing up of RoE. Same rate will also be used for arriving at WACC.”

4.16.8 Thus, the Commission in above quoted Order has allowed use of Corporate Tax (25.17%) instead of MAT rate for Income Tax computation. Same ruling is equally applicable in present matter.

4.16.9 Accordingly, the Commission notes the submission of the MHPVPPL and considers tax rate of 25.168% for grossing up the RoE, for determination of project specific tariff for Veer HEP.

4.16.10 Therefore, in accordance with the MERC RE Tariff Regulations, 2019 the Commission has considered the RoE as 14% and grossed up the same with 25.168% for the purpose of determination of Tariff for this project.

Table 26: Grossed up Return on Equity (%), considered by the Commission

Income Tax (in %)	Base rate of RoE (in %)	Grossed up RoE (Base Rate/1-t) (in %)
25.168%	14%	18.71%

4.17 Discount Rate

MHPVPPL's submission

4.17.1 As per 25.5(c) of MERC RE Tariff Regulations, 2019:

“

b. Per-unit benefit shall be derived on levelized basis at a discounting factor equivalent to the post-tax weighted average cost of capital.”

4.17.2 Accordingly, for computation of levelized tariff, MHPVPPL has considered the discounting rate of 8.95% which is equivalent to the normative post-tax weighted average cost of capital as specified in Regulations 12.2 of RE Tariff Regulations, 2019.

4.17.3 Also, for calculation of discounting factor, MHPVPPL has considered the Corporate Tax as applicable U/s. 115BAA.

Commission's Analysis and Ruling

4.17.4 With regards to determination of levelised Tariff, Regulation 12.2 of RE Tariff Regulation-2019 specifies as below:

“12.2 For the purpose of computation of levelised tariff, a discount factor equivalent to the normative post-tax weighted average cost of capital shall be considered.”

4.17.5 In accordance with above Regulations, levelised tariff computation, the Commission has taken the discount rate as equivalent to the weighted average cost of capital, which works out to 8.95% considering the interest rate of 9.05% and post-tax RoE of 14% as approved in this Order, the same is depicted in following table:

Table 27: Discount Rate, considered by the Commission

Particulars		As considered by MHPVPPL (Rs. Lakh)	As considered by the Commission (Rs. Lakh)
Debt	a	70%	70%
Equity	b	30%	30%
Interest Rate	c	9.07%	9.07%
Return on Equity	d	14%	14%
Applicable corresponding Corporate Tax Rate	e	25.168%	25.168%
Discount rate	= (dxb)/((cxa)(1-e))	8.95%	8.95%

4.18 The summary of various parameters and assumptions

4.18.1 Following table covers capital cost, financial parameters, operating parameters and performance parameters, as considered for the Project-specific Tariff determination in this Order, as summarized below:

Table 28: Summary of Project Specific Parameters

Assumption Head	Sub Head	Sub Head (2)	Unit	MHPVPPL (submission)	Approved by Commission
Power Generation	Capacity	Installed Power Generation Capacity	MW	9.00	9.00
		Capacity Utilization Factor	%	25.95%	25.95%
		Auxiliary Consumption	%	1%	1%
		Useful Life	Years	25	25
Project Cost	Capital Cost	Total Capital Cost	Rs. Lakhs	4468.63	4357.07
		Plant Capital Cost (Hard Cost)		2872.06	2822.56
		Pre-operative Expenses		325.91	262.22
		Threshold Premium		1168.20	1168.20
		Financial Charges excluding IDC		32.62	35.99
		IDC for 6 Months		69.84	68.10
Sources of Fund	Debt / Equity	Tariff Period	Years	25.00	25.00
		Debt	%	70%	70%
		Equity	%	30%	30%
		Total Debt Amount	Rs. Lakhs	3128.04	3049.95
		Total Equity Amount	Rs. Lakhs	1340.59	1307.12
	Debt	Loan Amount	Rs. Lakhs	3128.04	3049.95

Assumption Head	Sub Head	Sub Head (2)	Unit	MHPVPPL (submission)	Approved by Commission
	Component	Repayment Period (incl Moratorium)	Years	12.00	12.00
		Interest Rate	%	9.07%	9.07%
	Equity Component	Equity Amount	Rs. Lakhs	1340.59	1307.12
		Return on Equity (RoE)	% p.a.	14.00%	14.00%
		RoE Period	Year	25	25
		Weighted average of RoE	% p.a.	18.71%	18.71%
	Discount rate	%	8.95%	8.95%	
Financial Assumptions	Fiscal Assumptions	Income Tax	%	25.168%	25.168%
	Depreciation	Depreciation Rate for first 12 years	%	5.83%	5.83%
		Depreciation Rate for 13 year onwards	%	2.31%	1.54%
Working Capital	O&M expense		Months	1.00	1.00
	Maintenance Spare	(% of O&M expenses)	%	15%	15%
	Receivables for Debtors		Months	2.00	2.00
	Interest on Working Capital		% p.a.	8.57%	8.57%
Operation & Maintenance	Powe Plant-Base Year		Rs. Lakh/MW	125.12	122.00
	Escalation Factor		%	3.28%	3.28%
Operation & Maintenance of Intake Structure & Penstock	Maintenance Charge for 1St Year		Rs/Unit	0.05	0.05
	Escalation in Maintenance charges		%	3.28%	3.28%

Assumption Head	Sub Head	Sub Head (2)	Unit	MHPVPPL (submission)	Approved by Commission
Finance Charges	Annual Term Loan Review charges - % of Term Loan		%	0.035%	Being Administrative in nature and covered under O&M Expenses. Not Approved
	Annual BG Limit Review charges - 10% of Term Loan		Rs. / Lac	350.00	
	Annual Inspection Charges		Rs./Quarter	4,000.00	
	Bank Commission on Bank Gurantee - 10% of Term Loan		%	2.00%	
	GST on above Charges		%	18%	

4.19 Tariff and Other Conditions

4.19.1 Based on the parameters, assumptions and methodology outlined in earlier paragraphs, **the Commission has determined the Levelised Tariff of Rs. 3.75/kWh.** The directives of the Commission regarding applicability of the Tariff has been dealt under Section 5 of the Order.

4.19.2 The Commission notes that MSEDCL in its reply has opposed mandating it to sign EPA with MHPVPPL on the ground that it can procure relatively cheaper RE power for meeting its RPO targets. In this regard, the Commission notes that tariff determined in present case i.e. Rs. 3.75/kWh is lower than its APPC and hence such power procurement may not have any adverse impact on MSEDCL's power purchase expenses. Further, such rate is lower than other sources of Renewable Energy (except competitively discovered rate for Wind and Solar Energy) for which MSEDCL is entering into EPA. Hence, the Commission directs MSEDCL to sign EPA with MHPVPPL at tariff determined above. In case, MSEDCL still feels that such tariff determined is relatively higher than other RE sources, it has option to share the same with other distribution licensees in the State as per methodology stipulated in Commission's Order dated 22 March 2021 in Case No. 162 of 2019. In case MSEDCL wishes to exercise this liberty, a separate petition limited to sharing only could be filed by MSEDCL.

4.19.3 MSEDCL in its submission emphasised on incorporating the conditionalities for under generation and over generation in accordance with Regulation 10.3 and Regulation 10.4 of MERC RE Tariff Regulations, 2019. Said Regulations are reproduced below:

“

10.3 In case the RE Project fails to generate energy up to the guaranteed CUF, then the RE Project proponent shall compensate the concerned Distribution Licensee to the extent of under-generation at 75 percent of the tariff approved by the Commission:

Provided that the above compensation shall not be applicable for RE technologies having single-part tariff with two components, viz., fixed cost component and fuel cost component:

Provided further that in case the above under-generation is on account of transmission/distribution constraints, then such under-generation shall be considered as deemed generation by the RE Project and be compensated accordingly.

10.4 In case the RE Project generates energy in excess of the guaranteed CUF, then the RE Project proponent shall be entitled to receive compensation from the concerned Distribution Licensee for such excess generation at 75 percent of the tariff approved by the Commission.”

The risk on account of the nature or technology of the SHP will have to be borne by MHPVPPL. Accordingly, the risk of lower generation cannot be passed on to the Distribution Licensee/consumers at later stage. As per Regulation 10.3, if MHPVPPL's Project fails to generate energy up to the guaranteed CUF (25.95%) then it shall compensate Distribution Licensee to the extent of under-generation at 75 percent of the tariff approved by the Commission. Similarly, the benefit of excess generation over and above approved CUF shall be available to MHPVPPL. The Tariff for such excess generation above approved CUF shall be 75 percent of the approved Tariff.

4.19.4 The Commission hereby directs MHPVPPL to submit the detailed break up of actual Capital Cost incurred on R&M project as on date of operationalization of plant duly certified by Statutory Auditor within six months from operationalization of the Project.

4.20 Other Commercial aspects

Land lease rent, water royalty charges and charges for 13% of Gross Generation

MHPVPPL's submission

4.20.1 As per Regulation 26 of MERC RE Tariff Regulations, 2019 the tariff determined shall be exclusive of taxes and duties on the generation and sale of electricity from a RE Project as may be levied by the appropriate Government. Also, the taxes and duties levied by the appropriate Government on generation, and sale of electricity from such RE Project, such as Electricity Duty and Water Royalty, shall be allowed as a pass-through to the extent actually incurred.

4.20.2 Accordingly, MHPVPPL submitted that following expenses which are payable to Government as per the relevant provisions in the Lease Agreement:

- Land Lease: As per the Clause 4.2 (a) of the Lease Agreement the Land Lease charges at Rs 1 /kW/year towards lease charge in the first year, for use of government land, with 10% annual escalation for subsequent years to be allowed at actuals.
- Royalty Charges: As per the Clause 4.2 (b) of the Lease Agreement, the Royalty Charges of Rs 0.05/kWh in the first year with 10% annual escalation for subsequent years to be allowed at actual.
- Charges for 13% of Gross Generation to GOMWRD: As per Clause 4.2 (d) of the Lease Agreement, the Petitioner is required to pay GOMWRD Charges for 13 % (including 1 % Local Area Development Fund) of the gross units generated per year at the applicable Tariff for the year as per signed EPA. MHPVPPL quoted and relied on provisions of National Hydro Policy 2008, Tariff Policy 2016 and the CERC MYT Tariff Regulations, 2019 for substantiating the claim of the charges for the 13% of energy. Accordingly, MHPVPPL requested the Commission to allow the charges payable to GOMWRD equivalent to 13% of the gross generation at actuals. MHPVPPL also would like to state that since the above charges are to be paid to GOMWRD, it also attracts GST of 18% on the said charges and therefore in line with the Regulation 26 of MERC RE Tariff Regulations, 2019, the same may also be allowed as a pass-through to the extent actually incurred.

4.20.3 MHPVPPL requested the Commission to allow aforementioned charges to be claimed based on actual payment made during the year and the recovery of these charges to be made on reimbursement basis during tariff period.

Commission's Analysis and Ruling

4.20.4 The Commission notes that as per Regulation 26 the taxes and duties levied by the appropriate Government on generation, and sale of electricity from such RE Project, such as Electricity Duty and Water Royalty, shall be allowed as a pass-through to the extent actually incurred.

- 4.20.5 As per article 4.2 (a) MHPVPPL is liable to pay the annual lease charges for Government land at the rate of Rs.1 / kW / year for the first year with further annual escalation considering 10% per year is to be paid in advance every year in the first week of April. As per article 4.2 (b) Royalty charges for water at the rate of INR 0.05/ kWh generation for the first year with further annual escalation considering 10% per year is to be paid quarterly. Further, GoM will be paid out equivalent charges for 13 % (including 1 % Local Area Development Fund) of the gross units generated per year at the applicable Tariff for the year as per signed EPA. These charges are applicable till the expiry of Lease Agreement period.
- 4.20.6 The Commission notes that provision for payment of charges for 13% of gross energy generated is made by the Govt. of Maharashtra in bidding document based on Ministry of Power's Hydro Policy 2008 wherein it is mandated that 13% of power generated needs to be provided to the State Government free of cost. Here, the Govt of Maharashtra has thought it appropriate to take charges of such 13% of energy at tariff determined by the Commission instead of free power. In case, the GoM would have opted for 13% free power, said energy would have been deducted from energy considered for tariff determination which will ultimately have increased tariff from Hydro Project. Hence, as per bidding conditions, MHPVPPL has to pay such charges equivalent to 13% of energy generated at tariff determined by the Commission to GOMWRD.
- 4.20.7 Annual lease rent is applicable from the year in which site is handed over to the MHPVPPL for development of the project.
- 4.20.8 Further, the project under consideration is irrigation-based project and generation is dependent on water released from dam as per decisions of Competent Authorities in irrigation department. Factoring above mentioned charges in tariff model which considers CUF of 25.95% will consider payment of such charges against fixed assumed generation which is not prudent as actual generation may vary and hence these charges. Hence, the Commission allows recovery of Annual Lease Charges, Royalty Charges and Annual charges for 13% of the annual net units exported to Grid per year at the applicable tariff on actual reimbursement basis. For the said purposes, MHPVPPL shall submit documentary evidence to Distribution Licensee for reimbursement of such expenses along with applicable taxes after making payment to the concerned Government authorities and Distribution Licensee shall reimburse the same. Further, Distribution Licensee shall not be liable to reimburse any interest charged payable to GOMWRD on account of default in payment by MHPVPPL.

5 SUMMARY OF COMMISSION'S DIRECTIVES AND APPLICABILITY OF ORDER

- 5.1.1 In pursuance of Regulation 9 of RE Tariff Regulations-2019, the Commission hereby determines the project specific levelised Tariff for the Veer SHP of MHPVPPL as Rs. 3.75/ kWh. As such tariff rate is lower than Average Power Purchase Cost, MSEDCL is directed to sign PPA with MHPVPPL.
- 5.1.2 Recovery of charges such as charges for land lease rent, water royalty charges, 13% of Gross Generation to be paid to Government of Maharashtra on reimbursement basis is allowed. Distribution Licensee shall not liable to reimburse any interest charges payable to GOMWRD on account of default/delay in payment by MHPVPPL.
- 5.1.3 MHPVPPL shall submit a copy of the PPA to the Commission within 15 days of entering into it.
- 5.1.4 The power purchased from this Project at the Tariff determined in this Order shall be considered for meeting its RPO target.
- 5.1.5 All other conditions including rebate, late payment surcharge etc. as stipulated in MERC (Terms & Condition for determination of Renewable Energy Tariff) Regulations 2019 shall be applicable in the matter.

In view of above, the Petition of M/s Mahati Hydro Power Veer Project Pvt. Ltd (MHPVPPL) in Case No. 63 of 2021 stands disposed of accordingly.

Sd/-
(Mukesh Khullar)
Member

Sd/-
(I.M. Bohari)
Member

Sd/-
(Sanjay Kumar)
Chairperson


(Abhijit Deshpande)
Secretary



Appendix – 1: List of persons at the Public Hearing held on 29 June 2021

Sr. No.	Name	Organisation
1	Advocate Deepa Chavan (for MHPVPPL)	MHPVPPL
2	Shri Sujay Shah	Director, MHPVPPL
3	Shri. Ghynashyam Thakkar, Consultant (for MHPVPPL)	Energy Optimaa
4	Adv.Ravi Prakash	MSEDCL
5	Mrs.Kavita Gharat, Chief Engineer (Renewable Energy)	MSEDCL
6	Shri V.R.Sonar, Chief Engineer (Electrical)	Water Resource Department, Government of Maharashtra
7	Shri. Arif Sheikh	MEDA

Annexure – 1: Summary of Levellised Tariff

Determination of Cost Of Generation for Veer HEP																											
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00	9.00
Net Generation	MU		20.25	20.25	20.25	20.31	20.25	20.25	20.25	20.31	20.25	20.25	20.25	20.31	20.25	20.25	20.25	20.31	20.25	20.25	20.25	20.31	20.25	20.25	20.25	20.31	20.25
		Year-->																									
Fixed Cost	Unit	Levelised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	INR Lac.	163	123	127	132	136	140	145	150	155	160	165	170	176	182	188	194	200	207	214	221	228	235	243	251	259	268
Depreciation	INR Lac.	206	257	257	257	257	257	257	257	257	257	257	257	257	68	68	68	68	68	68	68	68	68	68	68	68	68
Interest on term loan	INR Lac.	117	264	241	218	195	172	149	126	103	80	57	34	11	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	INR Lac.	14	16	15	15	15	15	15	15	14	14	14	14	14	11	11	12	12	12	12	13	13	13	13	14	14	14
Return on Equity	INR Lac.	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247	247
Maintenance Charges of Intak	INR Lac.	13	10	10	11	11	12	12	12	13	13	14	14	14	15	15	16	16	17	18	18	19	19	20	21	21	22
Total Fixed Cost	INR Lac.	760	918	899	881	862	844	826	808	790	772	755	737	720	523	530	537	544	551	559	566	575	583	592	600	610	619
Per unit Fixed Cost	INR/kWh		4.53	4.44	4.35	4.25	4.17	4.08	3.99	3.89	3.81	3.73	3.64	3.55	2.58	2.62	2.65	2.68	2.72	2.76	2.80	2.83	2.88	2.92	2.96	3.00	3.06
Levllised tariff corresponding to 25 Years																											
Per Unit Cost of Generation	Unit	Levelised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M expn	INR/kWh	0.80	0.61	0.63	0.65	0.67	0.69	0.72	0.74	0.76	0.79	0.81	0.84	0.87	0.90	0.93	0.96	0.99	1.02	1.05	1.09	1.12	1.16	1.20	1.24	1.28	1.32
Depreciation	INR/kWh	1.01	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Int. on term loan	INR/kWh	0.58	1.31	1.19	1.08	0.96	0.85	0.74	0.62	0.51	0.40	0.28	0.17	0.06	-	-	-	-	-	-	-	-	-	-	-	-	-
Int. on working capital	INR/kWh	0.07	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07
RoE	INR/kWh	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22
Maintenance Charges of Intak	INR/kWh	0.07	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.10	0.11
Total COG	INR/kWh	3.75	4.53	4.44	4.35	4.25	4.17	4.08	3.99	3.89	3.81	3.73	3.64	3.55	2.58	2.62	2.65	2.68	2.72	2.76	2.80	2.83	2.88	2.92	2.96	3.00	3.06
Levllised Tariff	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Discount Factor			1.00	0.92	0.84	0.77	0.71	0.65	0.60	0.55	0.50	0.46	0.42	0.39	0.36	0.33	0.30	0.28	0.25	0.23	0.21	0.20	0.18	0.17	0.15	0.14	0.13
Fixed Cost	INR Lac.		760	760	760	762	760	760	760	762	760	760	760	762	760	760	760	762	760	760	760	762	760	760	760	762	760
Levllised Tariff	3.75	INR/kWh																									