

BEFORE
MEGHALAYA STATE ELECTRICITY REGULATORY
COMMISSION, SHILLONG

PETITION

FOR

DETERMINATION OF PROVISIONAL GENERATION
TARIFF

OF

GANOL SMALL HYDRO PROJECT

(3x7.5 MW)

FOR

FY 2023-24

Filed By



Meghalaya Power Generation Corporation Ltd.

Lum Jingshai, Short Round Road, Shillong - 793 001

BEFORE THE HON'BLE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION

FILE / PETITION NO: _____

IN THE MATTER OF

DETERMINATION OF PROVISIONAL GENERATION TARIFF FOR GANOL SMALL HYDRO ELECTRIC PROJECT (3X7.5 MW) OF THE MEGHALAYA POWER GENERATION CORPORATION LIMITED (MePGCL) FOR THE FY 2023-24 UNDER THE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION (MULTI YEAR TARIFF) REGULATIONS, 2014 AND UNDER SECTION-62 READ WITH SECTION 86 OF THE ELECTRICITY ACT 2003.

AND IN THE MATTER OF

MEGHALAYA POWER GENERATION CORPORATION LIMITED, SHORT ROUND ROAD, LUMJINGSHAI, SHILLONG – 793001, MEGHALAYA

PETITIONER

IT IS RESPECTFULLY SUBMITTED BY THE PETITIONER THAT:

1. In exercising its powers conferred under sections 131 and 133 of the Electricity Act 2003, the State Government of Meghalaya notified “The Meghalaya Power Sector Reforms Transfer Scheme 2010” on 31st March 2010 leading to restructuring and unbundling of erstwhile Meghalaya State Electricity Board (MeSEB) into four entities namely
 - a. Meghalaya Energy Corporation Limited (MeECL): the Holding Company;
 - b. Meghalaya Power Distribution Corporation Limited (MePDCL): the Distribution Utility;
 - c. Meghalaya Power Generation Corporation Limited (MePGCL): the Generation Utility;
 - d. Meghalaya Power Transmission Corporation Limited (MePTCL): the Transmission Utility.
2. However, the holding company – MeECL - carried out the functions of distribution, generation and transmission utilities from 1st April 2010 onwards, even after restructuring. Therefore, through notification dated 31st March 2012, the State Government notified an amendment to The Power Sector Reforms Transfer Scheme leading to effective unbundling of MeECL into

MeECL (Holding Company), MePDCL (Distribution Utility), MePGCL (Generation utility) and MePTCL (Transmission Utility) from 1st April 2012.

3. On 23rd December 2013, the Government of Meghalaya issued the transfer scheme notifying the Assets and Liabilities as on 1st April 2010 to be vested in MeECL. Subsequently, the Government of Meghalaya notified the 4th Amendment to the Transfer Scheme on 29th April 2015, wherein the opening balances of all the four entities namely, MeECL, MePGCL, MePTCL and MePDCL as on 1st April 2012 were notified.
4. MePGCL has begun segregated commercial operations as an independent entity from 1st April 2013 onwards.
5. The Meghalaya State Electricity Regulatory Commission (hereinafter referred to as “MSERC” or “the Hon’ble Commission”) is an independent statutory body constituted under the provisions of Part – X (Sections 76 to 109) of the Electricity Act , 2003. The Hon’ble Commission is vested with the authority of regulating the power sector in the State, inter alia, including determination of tariff for electricity consumers.
6. The Ganol Small Hydro Electric Project (Ganol SHP) with an installed capacity of 3x7.5 MW, is expected to achieve Commercial Operation Date (COD) on March, 2023. The generating plant would supply power to the Meghalaya Power Distribution Corporation Limited (MePDCL) for which the Power Purchase Agreement (PPA) has been executed on 20th September, 2022. A copy of the PPA is enclosed as **Annexure - I**.
7. Since the project is not yet commissioned, its completion cost is not yet available and thus MePGCL is filing this present petition for a provisional tariff based on the estimated capital cost. MePGCL will file a fresh petition before the Hon’ble Commission for approval of capital cost and final tariff once the completion cost is available.
8. The present petition has been prepared in accordance with The Meghalaya State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Generation from RE Sources) Regulations, 2014 which have been amended and notified by the Hon’ble Commission on 23rd June, 2022 and is being filed for determination of Provisional Generation tariff for the remaining period of the third MYT control period for FY 2023-24.
9. While filing the present petition, MePGCL, to the best of its ability, has endeavoured to discharge its obligations and comply with the various applicable legal and regulatory provisions, directions and stipulations.
10. The Board of Directors of MePGCL has accorded approval and authorized the undersigned to file this petition accordingly. The copy of the Board’s resolution is enclosed as **Annexure – II**.

The applicant, therefore, humbly prays before the Hon'ble Commission to:

- a. approve the provisional tariff for Ganol SHP as submitted in this petition.
- b. pass such orders, as Hon'ble Commission may deem fit and proper and necessary in view of the facts and circumstances of the case.
- c. condone any inadvertent omissions, errors & shortcomings and permit the applicant to add/change/modify/alter this filing and make further submissions as required.

(Smti MARKORDOR LYNGDOH)
SUPERINTENDING ENGINEER
(PROJECT & MONITORING),i/c
FOR AND ON BEHALF OF
MEGHALAYA POWER GENERATION CORPORATION LIMITED

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1. Background

1.1. Introduction

The Project area lies in the Garo Hills district of Meghalaya and is in the heart of the district, very close to Tura (7 km to the west of Tura town), the district headquarters. Ganol Small Hydro Project is a runoff the river scheme with installation of 3x7.5 MW Power station on the Ganol River, also called the Kalu river having / joined by a tributary of the Rongram river.

The project has been evolved after detailed field investigations, planning and design studies. The revised project as conceived in this Detailed Project Report with proposed installation of 22.5 MW involves the following features.

1. A concrete dam of 35 m height above the deepest foundation with 3 Sluices as Spillway with radial gates to pass a PMF of 1750 cumecs and to also function as scouring sluices to remove silt during flood season
2. A Power Intake on the left bank, about 30 m upstream of the dam axis, leading into a Power tunnel of 3.20 m dia to carry a discharge of 17.64 cumec.
3. Head Race Tunnel of 3.20 m D-Section concrete lined to carry a design discharge of 16.86 cumecs (including additional discharge to run the power station with 10 % over load during the high flow season) and of length 1984.27m leading into the Surge Shaft. Since the finished diameter of tunnel is only 3.20 m and the excavated section is around 3.90 m, the tunnel provides ease of construction. It provides more working space at the invert during tunnel excavation.
4. Surge Shaft of 8 m diameter and 47 m height, with RCC lining, to cater to sudden load rejection and acceptance.
5. Pressure shaft of 2.20 m diameter and about 707.24 m long and double bifurcation into 1.27 m diameter penstocks connecting three units of the 7.5 MW capacity each .
6. Surface Powerhouse to house three turbo-generating units, each of 7.5 MW capacity with all auxiliary equipment and step up transformers.
7. Tail Race channel from the tail pool leading into the river .
8. Open Switch yard of size 45.65 m x 63.30 m located at the entry of the powerhouse on a excavated terrace at EL 200.00 m on the left bank of the Ganol River.
9. 132 KV S/C transmission line – 6.41 km in length connecting to the existing 132 kV Sub station at Rongkhon, Tura.

1.2 Salient features of the project

- Hydrology
 - Catchment Area 113 Sq.Km
 - PMF Design 1750 cumecs
 - 75 % Dependable in flow 1810 mm
- Reservoir
 - Full Reservoir Level EL 352.00m
 - Minimum Draw Down Level EL 346.00m
 - Live Storage volume 0.85 Million Cumecs
 - Maximum Stretch of reservoir 2.45 Km
 - Area of submergence at FRL 19.59 hectare
- Dam
 - Type Concrete Gravity
 - Dam Height from Foundation Level 35.00 m
 - Total Length of dam 96.50 m
- Spillway
 - Spillway Type Radial Gated Sluice Spillway
 - Crest Elevation EL 330.00 m
 - No. of Sluices 3 nos
 - Size of Sluice 8.145 m x 7.50 m
- Intake
 - Inlet Elevation EL .340.00 m
 - Design Discharge 17.64 cumec
 - Gate Type (at the Tunnel entrance) Vertical Fixed Wheel Type
- Headrace Tunnel (HRT)
 - Shape (D shaped; hxd) 3.20m dia
 - Length 1984.27 m
 - Slope 1:138.33
 - Excavation Diameter 3.90 m dia
 - Internal Diameter 3.20 m dia
 - Discharge 16.86 cumecs
- Surge Shaft
 - Type Restricted Orifice Vertical Shaft

- Top Elevation EL 368.00m
- Bottom Elevation of Main Shaft EL 321.00 m
- Height of Shaft 47 m
- Internal Diameter 8 m
- Pressure Shaft
 - Total Length 707.24 m
 - Pressure shaft 2.20 m dia
 - Steel Liner thickness upto Varies from 10mm to 25mm
 - double bifurcation Point
 - Diameter after double bifurcation 1.27 m
 - Velocity for Nominal Discharge 6.0 m/sec
- **Power house**
 - Type Surface Powerhouse
 - Dimensions (l x w) 30m x 14.1m
 - Turbine Type Francis, Horizontal
 - Number of units Three (3)
 - Rated Discharge per Unit 5.56 Cumec
 - Turbine Speed 750 rpm
 - Net Rated Head 148 m
 - Installed Capacity 3x7.5 MW
 - Plant Load Factor 0.56
- **Switch Yard (Area)** 45.00m x 63.30m
 - Voltage/Busbar 132Kv/11Kv
- **Energy Benefits**
 - Design Energy (75% dependable Year) 67.09 GWh

Construction Period

Construction Period in months 28 months

1.3 Cost estimates

The detailed cost estimates for the GANOL Small Hydro Project are based on the rates of various items of works adopted for several projects under implementation now in Meghalaya.

The approved revised cost of the Project at 2019 Price Level is Rs.507.71 crore, which is based on the designs and drawings received after review from Central Water Commission. The Revised cost estimate has been approved by the Board of Directors.

Table 1: Abstract of Revised Cost Estimate of Ganol SHP

ABSTRACT OF REVISED COST ESTIMATE FOR GANOL SMALL HYDRO PROJECT (3X7.5 MW), TURA, MEGHALAYA.			
Sl. No.	Description of works	Approved Estimate 2014 (Rs in Lakhs)	Corrected Projected Cost as per 2019 Price level (Rs in Lakhs)
1	2	3	4
A	CIVIL WORKS		
I	Direct Charges		
1	A. Preliminary	452.76	312.24
2	B. Land	2766.07	467.22
3	C. Works –		
	- River Diverstion	377.80	610.50
	- Dam	5146.13	8132.04
	- Intake	605.27	897.74
	- Hydro Mechanical Works	987.16	1226.49
	- Instrumentation	20.34	87.16
	Total of C - Works	7136.70	10953.93
4	J. Power Plant Civil Works		
	- Head Race Tunnel i/c Desilting Chamber & Adit	1868.82	3816.76
	- Surge Shaft	756.31	2041.26
	- Pressure Shaft & Penstock	4131.94	9141.31
	- Power House & Tail Race	1722.75	3624.37
	- Switchyard	82.92	1283.88
	- Hydro-Mechanical Works	224.47	136.49
	Total of J - Power Plant Civil Works	8787.21	20044.08
5	K. Buildings	540.00	641.02
6	M. Plantation	20.79	7.46
7	O. Miscellaneous	330.07	639.97
8	R. Communication	1194.88	1838.62
9	Q. Special T&P	127.41	147.64
10	X. Environment & Ecology	375.90	453.25
11	P. Maintenance during construction Actual	105.69	158.00

12	Y. Losses on stock @ 0.25% (of I - Works less A, B & Q)	26.42	26.42
	Total of I - Works	21863.90	35689.85
ii	Establishment		
		987.07	2558.00
iii	Tools & Plants		
		128.70	10.00
iv	Receipts & Recoveries	-43.67	-133.99
	Total Direct Charges	22936.00	38123.86
II	INDIRECT CHARGES		
	(i) Audit & Accounts	64.35	25.00
	Direct Charges	22936.00	38123.86
	Indirect Charges	64.35	25.00
	Total cost of civil works	23000.35	38148.86
B.	ELECTRICAL & MECHANICAL WORKS	7953.00	7769.12
	Total of A & B	30953.35	45917.98
C.	Escalation	2321.50	3000.00
D.	IDC	2368.50	1853.00
	TOTAL	Rs. 35,643.35	Rs. 50,770.98

1.4 Provisions of Law

The Hon'ble Commission has notified the MSERC (Terms and Conditions for Determination of Tariff for RE Sources), Regulations, 2014 on 12th November, 2014 and was amended on June, 2022. As per Regulation 3, 12 of the Regulations, the Hon'ble Commission will determine ARR for the Generation Company for small hydro projects. The relevant regulations are reproduced below for reference:

“3 Scope and extent of application”

These regulations shall apply in all cases where tariffs, for supply of electricity from Renewable Energy Sources to the distribution licenses within the state of Meghalaya, is to determine by the Commission under Section 62 read with Section 86 of the Act.

Provided that in cases of wind, small hydro projects, biomass power based on Rankine cycle, solar PV, solar Thermal power projects, and Biomass gasifier power project, these regulations shall apply subject to the fulfillment of eligibility criteria specified in Regulation 4 of these regulations.

“12 Petition and proceedings for determination of generation tariff”

- (1) *The RE based Generating Stations, opting for project specific tariff, shall make an application for fixation of Project Specific Tariff based on actual Capital Cost and along with such information as the Commission may require from time to time.*

Provided that for the project specific Tariff determination, the RE based Generating stations shall submit the break-up of Capital cost items along with the petition.

- (2) *A petition for determination for project specific tariff shall be accompanied by such fee as may be determined by regulations and shall be accompanied by*
- a) *Information in Forms 1.1,1.2, 2.1 and 2.2 as the case may be, and as appended to these regulations:*
 - b) *Detailed Project Report outlining technical and operational details, site specific aspects, premise for capital cost 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 full detail of calculation of any subsidy and incentives received, due or assumed to be due from the Central Government and/or State Government. This statement shall also include the proposed tariff calculated without consideration of the subsidy and incentive.*
 - e) *Any other information that the Commission requires the Petitioner to submit.*
- (3) *The proceedings for determination of tariff shall be in accordance with the conduct of Business Regulations of the Commission.*

Based on the above, MePGCL is filing the petition for provisional tariff in advance of the anticipated Date of Commercial Operation.

1.4.1 Submissions before the Honourable Commission

MePGCL hereby submits the petition under section 61 & 62(a) of the Electricity Act, 2003 and the MSERC (Terms and Conditions for Determination of Tariff for Generation from Renewal Energy Sources) Regulations, 2014 as amended from time to time for approval of Provisional Generation tariff of Ganol SHP w.e.f 1st April, 2023 till the final tariff approved by the Hon’ble Commission.

2 Financial Details

The Chapter 4 of the Regulations provide the Financial Principles of the RE sources.

2.1 Estimated Capital Cost and Funding Pattern of Ganol SHP

The estimated capital cost of Ganol SHP, as mentioned in Section 1.3 above, is **Rs.507.71 Crore**. Since the tentative date of completion of the project is on March, 2023. Therefore, the estimated amount of Rs.507.71 Crore is calculated for arriving the provisional tariff of the project. Further, the completion cost of the project will be available once the project is commissioned and its accounts are finalized and audited.

2.1.1 Funding Pattern of Ganol SHP

The project was planned to be funded by loan, grant and equity. However, the entire amount of loan and equity as envisaged, has not been availed yet. The summary of capital funding availed is as shown below:

Table 2 : Funding pattern of Ganol SHP (INR Crore)

Capital funding planned	Loan	Grant	Equity	Total
	223.11	229.98	54.62	507.71

The loan of Rs. 173.11 Crore has been planned/earmarked from Power Finance Corporation. Another loan of Rs. 50.00 crore is earmarked from the State Government as State Development Loan. The total amount of loan is Rs.223.11 crore. Out of Rs.54.62 crore of equity, Rs.24.00 crore has been infused as equity from the excess amount of funding released to NUHEP (**Annexure-III**).

Table 3 : Details of amount sanction and amount received (INR Crore)

Loan (INR Crore)			Grant (INR Crore)				Equity(INR Crore)		
Particular	Sanction	Amount received	Particular	Sanction	Amount received		Particular	Sanction	Amount received
					Central	State			
PFC	173.11	80.00	DONER	36.72	23.14	2.56.	State Govt.	5.62	9.21
SDL	50.00	50.00	SCA	58.26	58.00	5.89	To be Infuse from NUHEP	24.00	
Total	223.11	130.00	MNRE	20.00	18.00	NA	State Govt.	25.00	
			NABARD	115.00	NA	115.00	Total	54.62	9.21
			Total	229.98	99.14	123.45			

3 Technical details

3.1 Operational Norms and Design Energy

3.1.1 Norms of Operation

The Chapter-6 of the MSERC (Terms and Conditions for Determination of Tariff for Generation from Renewable Sources) Regulations, 2014, provides the norms for operation of Small Hydro Generating stations. The regulation is reproduced below for ready reference:

“31 Capital Cost

(1) Small Hydro Projects for the purpose of these Regulations cover those projects which are located at the sites approved by the State Nodal Agency/ State Government using new plant and machinery and with installed power plant capacity lower than or equal to 25 MW.

(2) The normative capital cost for small hydro projects shall be as follows:

<i>Size of the project</i>	<i>Capital Cost (Rs. Lakh/MW)</i>
<i>Below 5MW</i>	<i>1500</i>
<i>5 MW to 25 MW</i>	<i>1200</i>

“32. Capacity Utilization Factor

The capacity utilization factor would be considered on the basis of CUF of small hydro projects in the state while approving the tariff. The benchmark capacity utilization factor for small hydro projects shall be 45 %.

The normative CUF shall be net of free power to the home state if any, and any quantum of free power if committed by the developer over and above the normative CUF shall not be factored into tariff.

Calculation of CUF of Ganol SHP

$$\begin{aligned}\text{CUF (\%)} &= (\text{DE} * 10^6) / (\text{I.C} * (100 - \text{Aux.})\% * 24 * 365) \\ &= (67 * 10^7) / (22.5 * 99 * 24 * 365) \\ &= 34.33 \% \text{ say } 34\%\end{aligned}$$

Therefore, the CUF of Ganol SHP is 34%

“33. Auxiliary consumption:

Normative auxiliary consumption for small hydro projects shall be 1%.

“34. operation and Maintenance Expenses

(1) The Normative O&M expenses for small hydro projects for the first year control period shall be given below:

<i>Size of the project</i>	<i>O&M (Rs. Lakh/MW)</i>
<i>Below 5MW</i>	<i>45.96</i>
<i>5 MW to 25 MW</i>	<i>34.47</i>

(2) Normative O&M expenses allowed under these regulations shall be escalated the rate of 5.72% per annum for the tariff period for the purpose of determination of levellised tariff.

3.1.2 Design Energy

The plant is designed to generate 67 Million Units of electricity in a year. The plant is expected to be operational from the month of December, 2022 for Unit-III and Mar, 2023 for Unit-I and Unit-II. The estimated gross and net energy generation for Ganol SHP for the remaining period of FY 2022-23 is shown below:

Table 4: Estimated Energy Generation from Ganol SHP

Particulars	Quantum
Design Energy for entire year (MU)	67

3.1.3 Auxiliary Consumption and Transformation Losses

The Ganol SHP is a surface hydroelectric power generating station with static excitation system. Therefore, based on MSERC Regulations for Renewable Sources, 2014 quoted above, the normative auxiliary consumption and transformation losses applicable for Ganol SHP are as shown below:

Table 5: Auxiliary Consumption and Transformation Losses of Ganol SHP

Particulars	Rate
Auxiliary consumption for surface hydroelectric power generating stations with static excitation system	1.00%
Transformation losses from generation voltage to transmission voltage	0.50%

4 Provisional Tariff for FY 2023-24

4.1 Preamble

The Ganol Small Hydro Electric Project (GaSHP) is envisaged to be commissioned on March, 2023, and, therefore, the final completion cost of the project is not yet available. Based on the estimated amount of Rs.507.71 Crore, MePGCL has prepared this petition for determination of provisional tariff which will be applicable till such time when the final financials of the project are available. The generating plant would supply power to the Meghalaya Power Distribution Corporation Limited (MePDCL) for which the Power Purchase Agreement (PPA) has been executed on 20th September, 2022. A copy of the PPA is enclosed as **Annexure –I**.

4.2 Components of Tariff

The Regulation 13 of the MSERC (Terms and Conditions for Determination of Tariff for Generation from Renewable Energy Sources) Regulations, 2014, provides the Components of tariff for MePGCL. The relevant regulation is reproduced below for ready reference:

“13. Tariff Structure

- (1) The Tariff for sale of energy from renewable energy technologies shall be single part tariff (in Rs. / kwh) and ex-bus consisting of the following fixed cost components:*
- (2) supply of electricity from a hydro power generating station shall comprise of two parts, namely, annual capacity charges and energy charges to be in the manner provided hereinafter.*
 - (a) Interest on Loan Capital;*
 - (b) Depreciation;*
 - (c) Return on equity;*
 - (d) Interest on Working Capital;*
 - (e) Operation and maintenance expenses;*

Provided that for renewable energy technologies having fuel cost components, like biomass power projects and non-fossil fuel based co-generation projects, singlepart tariff with two components, viz, fixed cost component and fuel cost component shall be determined.

Based on above provisions, MePGCL computes and provides herewith various cost elements for determination of tariff.

4.3 Interest on Loan and Finance Charges

Regulation 18 of the MSERC (Terms and Conditions for Determination of Tariff for Generation from RE Sources) Regulations, 2014, provides the guidelines for computation of interest and finance charges on loan capital and the relevant sections of the regulations are reproduced below:

“18 Interest and finance charges on loan capital

1) *Loan tenure*

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

2) *Interest rate*

a) *The loans arrived at in the manner indicated above in Regulation 17 shall be considered as gross normative loan for calculation of interest on loan. The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.*

b) *For the purpose of computation of tariff, the normative rate shall be considered as average State Bank of India Base Rate prevalent during the first six months of the previous year plus 150 basis points.*

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

As detailed in the section 2.1.1 above, MePGCL availed a loan of Rs. 173.00 Crore from PFC and Rs. 50.00 crore as State Development Loan (SDL) for the Ganol SHP. The salient details of the loan is as shown below:

Table 6: Loan details of Ganol SHP

Particulars	Amount
Principal Amount (INR Crore)	173.00
Amount from State Govt.	50.00
Lending institution	PFC, State Govt.
Repayment start date	FY 2023-24
No. of instalments	48
No. of instalments	40
Instalment frequency	Quarterly

The detailed loan agreement for the above is furnished as **Annexure - IV**.

Based, on the above, it is estimated that there would be repayment of one instalment in the remaining part of the year and accordingly the interest on loan has been worked out for the remaining months when the plant would be operational (1st April, 2023) as shown below:

Table 7: Interest and Finance Charges of Ganol SHP

Particulars	Loan Amount (Rs. Crore)	Interest rate (%)	FY 2023-24 (Crore)
PFC	173.00	10.50	18.16
State Development Loan (SDL)	50.00	To be adjusted	0.00
Interest on Loan (INR Crore)			18.16

MePGCL prays before the Hon'ble Commission to approve the Interest and Finance Charges for Ganol SHP as computed above.

4.4 Depreciation

Depreciation is computed as per Regulation 19 of the MSERC (Terms and Conditions for Determination of Tariff for Generation from RE Sources) Regulations, 2014. The depreciation is computed on the final gross value of the assets by straight line method using depreciation rates as per Regulation.

- (a) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.
- (1) The salvage value of the asset shall be considered as 10% and Depreciation shall be allowed up to maximum of 90% of the Capital cost of the asset.
- (2) Annual Depreciation shall be based on "Differential Depreciation Approach" using Straight Line Method over two distinct period comprising loan tenure and period beyond loan tenure over useful life. 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.
- (3) Depreciation shall be chargeable from the first year of commercial operation.

Provided that in case of commercial operation of the asset for part of the year depreciation shall be charged on pro rata basis.

Based on the above, the depreciation of Ganol SHP when the plant is functional is computed below:

Table 8: Depreciation of Ganol SHP

Particulars	FY 2023-24
Capital Cost Incurred (INR Crore) (a)	507.71
Depreciation@ 5.83% on 90% of capital cost (b)	26.64
Grant amount (INR Crore) (c)	229.98
Depreciation on Grant i.e 229.98/507.71*26.64 (d)	12.06
Net Depreciation (b-d) (e)	14.58

MePGCL submits before the Hon'ble Commission to kindly approve the Depreciation for Ganol SHP as computed above.

4.5 Return on Equity (RoE)

As shown in section 2.1.11 above, the Govt. of Meghalaya vide Notification dated 26th November, 2021 states that unspent amount of Rs 24.00 crore be infused as equity for Ganol SHP. Copy of notification to this effect is provided as **Annexure – III**.

'17 Debt-Equity Ratio

(1) For determination of generic tariff, the debt-equity ratio shall be 70:30.

(2) For determination of project specific tariff, the following provisions shall be apply:-

If the equity actually deployed is more than 30% of the capital cost, the amount of equity for the purpose of tariff determination shall be limited to 30% and the balance equity in excess of 30% shall be treated as normative loan.

Provided further that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff.

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

(3) The debt and equity amounts arrived in accordance with the above clauses shall be used for calculating interest on loan and return on equity.

'20 Return on Equity

.....

(3) The normative Return on Equity shall be 16%

Since the actual equity infused till date is less than 30% of the estimated project cost, the actual equity infused is being considered for the computation of return on equity.

The RoE of GaSHP for FY 2023-24 when the plant will be functional by 31st March, 2023 are works out as shown below:

Table 9: Return on Equity (RoE) of Ganol SHP

Particulars	FY 2023-24
Project cost (a)	507.71
Opening Equity (INR Crore) (30% of a)	54.62
Additions During the Year (INR Crore)	0.00
Closing Equity (INR Crore)	54.62
% RoE as per Regulation	16%
Period considered	12 months
RoE Claim	8.73

MePGCL submits before the Hon'ble Commission to kindly approve the Return on Equity as computed in the above table for GaSHP.

4.6 Operation and Maintenance Expenses

As per Regulation 34 of the MSERC (Terms & Conditions for Determination of the Generation Tariff for Renewable Energy Sources) Regulations, 2014, the Operation and Maintenance Expenses reproduced below:

“34. Operation and Maintenance Expenses

(1) The Normative O&M expenses for small hydro projects for the first year control period shall be given below:

<i>Size of the project</i>	<i>O&M (Rs. Lakh/MW)</i>
<i>Below 5MW</i>	<i>45.96</i>
<i>5 MW to 25 MW</i>	<i>34.47</i>

(2) Normative O&M expenses allowed under these regulations shall be escalated the rate of 5.72% per annum for the tariff period for the purpose of determination of levelled tariff.

Since GaSHP will achieve its CoD on March, 2023, its O & M expenses have been computed as per Regulation 34 above.

Table 10: O & M Expenses of Ganol SHP

Particulars	FY 2023-24
Normative O&M Cost	Rs. 34.47 lakh per MW
O&M Cost Incurred (INR Crore)	7.76
Period considered	12 months
O&M Expenses for the period (INR Crore)	7.76

MePGCL submits before the Hon’ble Commission to kindly approve the O&M expenses of Ganol SHP as computed above.

4.7 Interest on Working Capital

As per Regulation 21 of the MSERC (Terms and Conditions for determination of generation tariff from renewable energy sources) Regulations, 2014, working capital will be:

“21 Interest on Working Capital

The Working Capital requirement in respect of small hydro power shall be computed as under:

- *Operation and maintenance expenses for one (1) month;*
- *Receivables equivalent to two (2) month of energy charges for sale of electricity calculated on the normative Capacity Utilisation Factor (CUF);*
- *Maintenance spares at the rate of 15% of O & M expenses*

Rate on Interest on working capital shall be at interest rate equivalent to average State Bank of India Base Rate prevalent during the first six months of previous year plus 100 basis points.

The interest on working capital shall be on normative basis notwithstanding that the generating company has not taken working capital loan from any outside agency.

As per the above mentioned regulation, the computation of Interest on Working Capital for GaSHP is shown below:

Table 11: Interest on Working Capital of Ganol SHP

Particulars	FY 2023-24
O&M expenses for one month (INR Crore)	0.65
Maintenance spares @ 15% of O&M expenses (INR Crore)	1.16
Receivables equivalent to two months of Fixed cost (INR Crore)	8.39
Total Working Capital Requirements (INR Crore)	10.21
SBI PLR as on 15.6.2022 (%)	12.75%
Interest on Working Capital (INR Crore)	1.30

MePGCL submits before the Hon'ble Commission to kindly approve the Interest on Working Capital for GaSHP as computed above.

4.8 Taxes and Duties

Regulation 27 of the MSERC (Terms and Conditions for determination of Generation tariff from Renewable Energy Sources), Regulations, 2014, shall be exclusive of taxes and duties on generation and sale of electricity from renewable energy project as may be levied by the appropriate Government.

Provided that the taxes and duties levied by the appropriate government on generation and sale of electricity from renewable energy project shall be allowed as pass through on actual incurred basis subject to production of documentary evidence by the generating company.

As per the above regulation, taxes and duties are not applicable for Ganol SHP as of now.

4.9 Summary of Fixed cost of Ganol Small Hydro Electric Plant

Based on the submissions in the previous sections, the summary of the total fixed cost of Ganol SHP for the 3rd MYT Control period for FY 2023-24 when the plant is functional is provided in the table below:

Table 12: Total Fixed Cost of Ganol SHP

Particulars	Amount (INR Crore) FY 2023-24
Interest on Loan Capital	18.16
Depreciation	14.58
Return on Equity	8.73
O&M Expenses	7.76
Interest on working Capital	1.30
Gross Fixed Cost	50.53
(-) Other Income	-
Net Fixed cost	50.53

MePGCL prays before the Hon'ble Commission to kindly approve the Fixed Cost of Ganol SHP for FY 2023-24 as submitted above.

5 Computation of Generation Tariff

“13 Tariff Structure

“(1) The tariff for sale of energy from renewable energy technologies shall be single part tariff (Rs./ Kwh) and ex-bus consisting of the following fixed cost components:

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

MePGCL submits that based on the Fixed Cost approved by Hon’ble Commission, it will calculate the tariff rate based on the provisions of the Regulations.

Table 13: Capacity and Energy Charges for Ganol SHP

Particulars	FY 2023-24
Net A FC for Computation of Tariff (INR Crore)	50.53
Design Energy (MU)	67
Less: Auxiliary Consumption @ 1% (MU)	0.67
Less: Transformation Loss @ 0.5% (MU)	0.335
Net Energy (MU)	65.995
Tariff rate (Rs/kwh)	7.65

Based on all the above submissions, the petitioner humbly prays before the Hon’ble Commission to kindly approve the provisional tariff of Ganol Small Hydro Electric Project as computed in the above table.

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