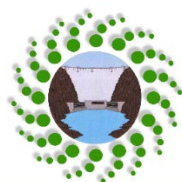

BEFORE
MEGHALAYA STATE ELECTRICITY REGULATORY
COMMISSION SHILLONG

PETITION
FOR
GENERIC TARIFF
FOR GANOL SMALL HYDRO PROJECT (22.5 MW)
UNDER
MSERC (TERMS AND CONDITIONS FOR DETERMINATION
OF TARIFF FOR GENERATION FROM RENEWABLE ENERGY
SOURCES) REGULATIONS, 2014.

FILED BY



MePGCL

Generating Clean And Green Energy

MEGHALAYA POWER GENERATION CORPORATION LTD.
Lum Jingshai, Short Round Road, Shillong-793001

BEFORE THE HON'BLE MEGHALAYA STATE ELECTRICITY REGULATORY COMMISSION

FILE/ PETITION NO.....

IN THE MATTER OF

APPROVAL OF GENERIC TARIFF FOR GANOL SMALL HYDRO PROJECT (3X7.5 MW) OF MEPGCL UNDER REGULATION 11 OF MSERC (TERMS AND CONDITIONS FOR DETERMINATION OF TARIFF FOR GENERATION FROM RENEWABLE ENERGY SOURCES) 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, LUMJINGSHAI, SHILLONG- 793001- MEGHALAYA.

..... **PETITIONER**

IT IS RESPECT SUBMITTED BY THE PETITIONER THAT:

1. In exercising the powers conferred to it under Section 131 and 133 of the Electricity Act 2003, the State Government of Meghalaya notified "The Meghalaya Power Sector Reforms Transfer Scheme 2010", notified on 31st March 2010. The Scheme paved path for the restructuring and unbundling of the erstwhile Meghalaya State Electricity Board (MeSEB). As per the provisions of the aforesaid transfer scheme MeSEB was un-bundled into four entities which are:
 - a) Meghalaya Energy Corporation Limited (MeECL) which is the holding company;
 - b) Meghalaya Power Distribution Corporation Limited (MePDCL) – Distribution Utility;
 - c) Meghalaya Power Generation Corporation Limited (MePGCL)- Generation Utility;
 - d) Meghalaya Power Transmission Corporation Limited (MePTCL)– Transmission Utility.
2. Though the transfer scheme was notified on 31st March 2010, the holding company MeECL continued to carry out the functions of distribution, generation and transmission utilities till 31st March 2012. After notification of amendment to the Power Sector Reforms Transfer Scheme by the State Government on 1st April 2012, the un-bundling of MeECL into MePDCL, MEPGCL and MePTCL came into effect.
3. The Government of Meghalaya notified the vesting order of the Assets and Liabilities as on 1st April 2010, in the books of MeECL. Subsequently, the State Government notified the 4th amendment to the Notified Transfer Scheme on 29th April 2015, wherein the opening balances of assets and liabilities of all the four entities namely, MePDCL, MePGCL, MePTCL and MeECL as on 1st April 2012 were ascertained.

4. The instant Petition is being filed by MePGCL in compliance with the Regulation 11 of MSERC (Terms and Conditions for determination of Tariff for Generation from Renewable Energy Sources) Regulations, 2014.
5. The Board of Directors of MePGCL have accorded the approval for filing the instant Petition and authorized the undersigned to file the Petition. The copy of the Board's resolution dated 20/12/2023 is annexed to this Petition as **Annexure A**.
6. The auditor certified cost incurred upto June 2023 is annexed to this Petition as **Annexure B**.
7. The Petitioner, therefore humbly prays Hon'ble Commission to:
 - a. To approve the Generic Tariff for Ganol SHP as per the provisions of the Regulation 11 of the MSERC (Terms and Conditions for determination of Tariff for Generation from Renewable Energy Sources) Regulations, 2014.
 - b. Allow the Petitioner to recover the charges for the power sold to MePDCL from the date of COD of the project upto the date of order.
 - c. Allow addition/ modification of the Petition during the course of the proceedings of the Petition.
 - d. To condone any inadvertent omissions, errors and shortcomings and permit the rectification of the same during the course of proceedings of the Petition.
 - e. To pass such order, as the Hon'ble Commission may deem fit and proper and necessary in view of the facts and circumstances of the case.

(Smti MARKORDOR LYNGDOH)
SUPERINTENDING ENGINEER (P&RM)
FOR AND ON BEHALF OF
MEGHALAYA POWER GENERATION CORPORATION LIMITED

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1. BACKGROUND

1.1 Description of Parties

The Power Supply Industry in the state of Meghalaya has been under the governance of erstwhile Meghalaya State Electricity board (MeSEB) since 21st January 1975. The State Government on 31st March, 2010 notified "The Meghalaya Power Sector Reforms Transfer Scheme 2010" paving path for the un-bundling of the MeSEB into

- Meghalaya Energy Corporation Limited (the holding company),
- Meghalaya Power Distribution Corporation Limited (Distribution Utility),
- Meghalaya Power Generation Corporation Limited (Generation Utility)
- Meghalaya Power Transmission Corporation Limited (Transmission Utility).

The aforesaid scheme was further amended on 31st March, 2012, which led to the transfer of assets and liabilities including all rights and obligation and contingencies with effect from 1st April, 2012 to the aforementioned four companies.

The MSERC is an independent statutory body constituted under the provisions of the Electricity Regulatory Commissions (ERC) Act, 1998, which was superseded by Electricity Act (EA), 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.

2. METHODOLOGY ADOPTED FOR THE PETITION

MePGCL would like to submit that the Ganol Hydro Project has a total capacity of 22.5 MW which has been commissioned on 01st of August 2023. As per the Regulation 2 (33) of MSERC (Terms and Conditions for determination of Tariff for Generation from Renewable Energy Sources) Regulations, 2014, (referred herein as 2014 RE Tariff Regulations) Small Hydro Project is defined as follows:

‘Small Hydro’ means Hydro Power projects with a station capacity upto and including 25 MW”

Since, Ganol Hydro Project has a capacity of 22.5 MW it qualifies as small hydro project as per the aforesaid definition.

Further, Regulation 4 of the 2014 RE Tariff Regulations defines the eligibility for applicability of these Regulations. As per Regulation 4:

“(1) For the purposes of these regulations, generation from all types of Renewable Energy Sources, as approved by Ministry of New and Renewable Energy (MNRE), Government of India shall be considered and such generating stations shall be collectively referred to as “RE based Generating Stations”.

(2) At present, generation from the following sources and technologies shall qualify to be covered under these regulations:

(a) Wind Power project – using new wind turbine generators

(b) Small hydro Project – located at the sites approved by State Nodal Agency / State Government using new plant and machinery and installed power plant capacity to be lower than or equal to 25 MW at single location.

(c) Biomass power project based on Rankine Cycle technology - Biomass power projects using new plant and machinery based on Rankine Cycle technology and using biomass fuel sources, provided use of fossil fuel is restricted only to 15% of total fuel consumption on annual basis;

(d) Solar PV and Solar Thermal Power Projects – Based on Technologies approved by MNRE.

(e) Biomass Gasifier based Power Project – The project shall qualify to be termed as a biomass gasifier based power project, if it is using new plant and machinery and having a Grid connected system that uses 100% producer gas engine, coupled with gasifier technologies approved by MNRE.”

Thus relying on the above eligibility criteria MePGCL has prepared the instant Petition as per the provisions of the 2014 RE Tariff Regulations.

MePGCL would like to further submit that as per the provisions of the 2014 RE Tariff Regulations, the developer can file Petition either for Generic Tariff or the Project Specific Tariff.

MePGCL would like to submit that the procedure adopted in the instant Petition is for approval of the Generic Tariff for the Ganol SHP, in line with the Provisions of the Regulations 11 of the 2014 RE Tariff Regulations.

"11. Generic Tariff

(1) Generic tariff shall be determined on the petition filed by eligible RE generator for such renewable energy technologies indicated in Regulation 4.

(2) The Generic Tariff would be based on normative parameters as per the norms specified in these regulations for each type of renewable energy source and the year of commissioning of the plant.

(3) The tariff determined being normative, no true up of any parameter, including additional capitalization, for what so ever reasons shall be taken up during the validity of the tariff; any short fall or gain due to performance or other reasons is to be borne / retained by the RE based generating stations"

3. BACKGROUND AND TECHNICAL DETAILS OF THE PROJECT

3.1 BACKGROUND

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 an 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 Substation at Rongkhon, Tura.

3.2 SALIENT FEATURES OF THE PROJECT

The Salient Features of the Ganol Project as depicted as under:

Table 1 Technical Parameters of Ganol SHP

Parameter	Value (Unit of Measurement)
A. Hydrology	
Catchment Area	113 Sq Km.
PMF Design	1750 Cusec
75% Dependable in Flow	1810 mm
B. Reservoir	
Full Reservoir Level	EL 352.00 m
Minimum Draw Down Level	EL 346.00 m
Live Storage volume	0.85 Million Cumecs
Maximum Stretch of reservoir	2.45 Km
Area of submergence at FRL	19.59 hectare
C. Dam	
Type	Concrete Gravity
Dam Height from Foundation Level	35.00 m
Total Length of dam	96.50 m
D. 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
E. Intake	
Inlet Elevation	EL .340.00 m

Parameter	Value (Unit of Measurement)
Design Discharge	17.64 cumec
Gate Type (at the Tunnel entrance)	Vertical Fixed Wheel Type
F. Head Race 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
G. 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
H. Pressure Shaft	
Total Length	707.24 m
Pressure shaft	2.20 m dia
Steel Liner thickness upto	Varies from 10mm to 25mm
Diameter after double bifurcation	1.27 m
Velocity for Nominal Discharge	6.0 m/sec
I. Power House	
Type	Surface Powerhouse
Dimensions (l x w)	30m x 14.1m
Turbine Type	Francis, Horizontal
Number of units	Three (3)

Parameter	Value (Unit of Measurement)
Rated Discharge per Unit	5.56 Cumec
Turbine Speed	750 rpm
Net Rated Head	148 m
Installed Capacity	3x7.5 MW
Plant Load Factor	56%
J. Switch Yard	
Area	45.00m x 63.30m
Voltage/Bus bar	132Kv/11Kv
K. Energy Benefits	
Design Energy (75% dependable Year)	67.09 GWh

3.3 COST ESTIMATES FUNDING PATTERN AND COST TO COMPLETION

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.

The bifurcation of the revised approved capital cost of the project is as under:

Table 2 Breakup of Approved Capital Cost for 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 Diversion	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

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)
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

However, there has been increase in the approved cost. The Audited Cost as on June 2023 (prior to COD) is tabulated below:

Table 3 Actual Expenditure Incurred Upto June 2023 (Prior to COD)

S No.	Description of Works	Revised Estimate (2019) (Rs in Lakhs)	Expenditure Upto June 2023 (Rs in Lakhs)
1	2	3	4
I	Direct Charges		
1.	A. Preliminary	312.24	328.80
2.	B. Land	467.22	425.67
3.	C. Works		

PETITION FOR APPROVAL OF GENERIC TARIFF FOR GANOL SMALL HYDRO PROJECT (22.5) MW AS PER THE PROVISIONS OF MSERC (TERMS AND CONDITIONS FOR DETERMINATION OF TARIFF FOR GENERATION FROM RENEWABLE ENERGY SOURCES) REGULATIONS, 2014.

S No.	Description of Works	Revised Estimate (2019) (Rs in Lakhs)	Expenditure Upto June 2023 (Rs in Lakhs)
	-River Diversion		
	-Dam	9640.28	8927.09
	-Intake		
	-Hydro Mechanical Works	1226.49	819.22
	-Instrumentation	87.16	0.00
	Total C Civil Works	10953.93	9746.31
4.	Power Plant Civil Works		
	- Head Race Tunnel I/C Desilting Chamber and Adit	3816.76	3952.07
	- Surge Shaft	2041.26	2016.53
	- Pressure Shaft and Penstock	9141.31	9152.82
	- Power House & Tail Race	3624.37	3828.75
	- Switchyard	1283.88	1363.91
	- Hydro Mechanical Works	136.49	9.45
D	Total Power Plant Civil Works	20044.07	20323.53
5	Buildings	641.02	549.32
6	Plantation	7.46	5.21
7	Miscellaneous	639.97	604.01
8	Communication	1838.62	1742.13
9	Special T&P	147.64	92.91
10	Environment and Ecology	453.25	398.62
11	Maintenance during Construction Actual @1% (D-5,6,7,8,9,10)	158.00	178.87
12	Losses on Stock@0.25% (D-A,B and 9)	26.42	0.00
13	Total Works	35689.95	34395.38
14	Establishments	2558.00	3718.06
15	Tools and Plants	10.00	0.00

S No.	Description of Works	Revised Estimate (2019) (Rs in Lakhs)	Expenditure Upto June 2023 (Rs in Lakhs)
16	Receipts and Recoveries	(-) 133.99	0.00
	Total Direct Charges	38123.86	38113.44
II	Indirect Charges		
	Audit and Accounts	25.00	0.00
	Direct Charges	38123.86	38113.44
	Indirect Charges	25.00	0.00
	Total Cost of Civil Works	38148.86	38113.44
	Electrical and Mechanical Works	7769.12	6194.34
	Cost of Construction without IDC	45917.98	44307.78
	Escalation/ Price Variation	3000.00	6726.85
	Project Cost Excluding IDC	48917.98	51034.63
	IDC	1853.00	2499.72
	Total Project Cost Including IDC	50770.98	53534.35

It is submitted that though the project has been declared under Commercial Operation since August 2023, however billing for certain enabling works which are completed or on verge of completion on COD is still pending due to lack of administrative approval. MePGCL is in the process of obtaining the administrative approval. The expected cost to completion is Rs.602 Cr. (approximately)

3.4 FUNDING PATTERN

The project was planned to be funded by loan, grant and equity. The summary of capital funding availed is as shown below:

Table 4 Funding Patter Approved for Ganol Small Hydro Project

Capital funding planned	Loan	Grant	Equity	Total
	223.11	229.98	54.62	507.71

Further funding pattern balance billing which is proposed to be billed after administrative approval is still not decided. Considering the balance billing to be met through debt equity ratio of 70:30 the funding pattern for cost to completion would be as follows:

Table 5 Tentative Funding Pattern of Cost to Completion

	Loan	Grant	Equity	Total
Capital funding planned	215.70	314.00	72.30	602.00

Thus as per the funding the total cost for the purpose of tariff comes out to be Rs.288.00 Cr. (Rs.602- Rs.314.00), and the per MW cost turns out to be Rs. 12.80 Cr./MW

4. CALCULATION OF GENERIC TARIFF FOR GANOL

As explained earlier MePGCL has adopted the methodology of generic tariff for the Ganol Project under this Petition. All the provisions of the 2014 RE Tariff Regulations have been followed for the purpose of calculation of the components of AFC. The assumptions adopted for the purpose of calculation are as under:

4.1 ASSUMPTIONS

Assumptions	Legend	Value	Remarks
Project Capacity	MW	22.5	
Project Cost			
Normative Project Cost	Rs Lakh/MW	1200	Regulation 31(2) Amended
Normative Project Cost	Rs. Cr	270	
Debt (%)	%	70%	Regulation 15 (b)
Equity (%)	%	30%	Regulation 15 (b)
Debt Amount	Rs. Cr	189	
Equity Amount	Rs. Cr	81	
Useful Life	Years	40	Regulation 2.1(37 b)
Rate of Interest	%	9.28%	Base Rate for First 6 months of 2022-23- Regulation 18 (b)
Loan Tenure	Years	12	Regulation 18
Depreciation	%	5.83%	Regulation 19(2)
Return on Equity	%	16%	Regulation 20(2)
WACC	%	9.03%	
CUF	%	45%	Regulation 32
Aux Consumption	%	1%	Regulation 33
O&M Expenses	Rs. Lakh/MW	34.47	Regulation 35(1)
O&M Escalation	%	6%	
Hours for Operation	Nos	8760	
O&M Expenses for WC	Months	1	Regulation 21 (1)
Receivables	Months	2	Regulation 21 (1)
Maintenance Spares	%	15%	Regulation 21 (1)
Interest on Working Capital	%	9%	Regulation 21 (3)

The detailed calculation of individual component has been computed separately in the subsequent sections of this chapter.

4.2 CAPACITY UTILIZATION FACTOR AND AUXILIARY CONSUMPTION

As per Regulation 32 of the 2014 RE Tariff Regulations:

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 the tariff."

In line with the provisions of the above Regulations the Normative CUF for Ganol SHP has been considered as 45% for the purpose of calculation of Levellized Tariff.

Further, Regulation 33 of the 2014 RE Tariff Regulations:

"33. Auxiliary Consumption

Normative auxiliary consumption for Small hydro projects shall be 1.0 %."

Accordingly, the auxiliary consumption has been considered as 1% for the purpose of calculation of levellized tariff for Ganol SHP.

4.3 CAPITAL COST

As per the Regulation 31(2) of the 2014 RE Tariff Regulations as amended vide notification dated 23rd June 2022.

"32(2) The normative capital cost for Small Hydro Projects shall be as follows:

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

(b) The normative capital cost shall be increased annually by an escalation factor equal to the annual rate of inflation on the Wholesale Price Index for all commodities from 2023-24 onward."

Since, Ganol Project has been Commissioned in August 2023, no escalation on normative capital cost in the above Regulations has been considered and accordingly the normative capital cost of Rs. 12 Cr./MW has been considered for the purpose of calculation of the fixed cost components. The normative project cost for Ganol Project in terms of Rs. Crore comes out to be Rs. 270 cr.

MePGCL prays the Hon'ble Commission to approve the normative capital cost of the Ganol Project as Rs. 270 Cr.

4.4 DEBT EQUITY RATIO

Regulation 15 of the 2014 RE Tariff Regulations states that:

15. Levellized Tariff

"a. Levellized tariff is calculated by carrying out levellisation for 'useful life' of each technology considering the discount factor for time value of money.

b. The discount factor considered for this purpose is equal to the Post Tax weighted average cost of the capital on the basis of normative debt: equity ratio (70: 30) specified in the Regulations. Considering the normative debt equity ratio and weighted average of the post-tax rates for interest and equity component, the discount factor is calculated."

Accordingly, MePGCL has considered the debt: equity ratio of 70:30 for the purpose of calculation of the levellized tariff for Ganol SHP. MePGCL requests Hon'ble Commission to approve the same.

4.5 LOAN TENURE AND RATE OF INTEREST ON LOAN

Regulation 18 of the 2014 RE Tariff Regulations specifies that:

"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 interest 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 annual depreciation allowed.

”

Accordingly, MePGCL has considered 70% of the normative project cost as loan amount for a tenure of 12 years and the depreciation calculated as per the provisions of 2014 RE Tariff Regulations has been considered as normative Repayment.

Further, the average State Bank of India base rate during the first six months of previous years comes out to be 7.78% hence the rate of interest has been considered as 9.28% i.e., (SBI base rate plus 150 basis points).

MePGCL humbly prays the Hon'ble Commission to approve the tenure, loan amount and rate of interest as stated above.

4.6 RETURN ON EQUITY

Regulation 20 of the 2014 RE Tariff Regulations specifies that:

“20. Return on Equity

(1) The value base for the equity shall be 30% of the capital cost for generic tariff determination or actual equity (in case of project specific tariff determination) as determined under Regulation 17.

(2) The normative Return on Equity shall be: 16% Provided that in case of projects commissioned after notification of these regulations an additional return of 1.0% shall be allowed if such projects are completed within the timeline approved in the sanctioned Detail Project Report and within the original sanctioned project cost without cost overrun.”

Accordingly, MePGCL has considered the 30% of the normative project cost as Equity component and has considered the rate of return on equity of 16%. MePGCL humbly prays the Hon'ble Commission to approve the same.

4.7 DEPRECIATION

Regulation 19 of 2014 RE Tariff Regulation specifies the following:

"19. Depreciation

For the purpose of tariff determination, depreciation shall be computed in the following manner,

(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 periods 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 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."

Accordingly, MePGCL has considered the rate of depreciation of 5.83% for the first 12 years of operation and the balance depreciation has been spread over the balance useful life of the project.

MePGCL requests Hon'ble Commission to approve the methodology adopted which is in line with the Regulations.

4.8 OPERATION AND MAINTENANCE EXPENSES

As Per Regulation 35(1) of 2014 RE Tariff Regulations as amended vide notification dated 23rd June 2022:

35(1) The normative O&M expenses for small hydro projects shall be as given below:

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

(2) The normative O&M expenses shall be escalated at the rate of 5.72% per annum over the tariff period for the determination of levellized tariff.

Accordingly, the normative O&M expenses for the first year has been claimed as Rs. 34.37 lakh/MW and the escalation of 5.72% has been considered over the next 40 years.

MePGCL prays the Hon'ble Commission to approve the O&M expenses as claimed in the Petition.

4.9 INTEREST ON WORKING CAPITAL

Regulation 21(1) of the 2014 RE Tariff Regulations prescribes the methodology of calculation of working capital as below:

21. Interest on Working Capital

(1) The Working Capital requirement in respect of wind energy projects, small hydro power, solar PV and Solar thermal power projects shall be computed as under:

- a) Operation & Maintenance expenses for one month;*
- b) Receivables equivalent to 2 (Two) months of energy charges for sale of electricity calculated on the normative Capacity Utilisation Factor (CUF);*
- c) Maintenance spare @ 15% of operation and maintenance expenses;*

Further Regulation 21(3) states that:

“(3) Rate of 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.”

Accordingly, the rate of interest on working capital comes out to Rs. 8.78%.

5. CALCULATION OF GENERIC TARIFF FOR GANOL

Table 6 Calculation of Levelized Tariff

AFC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Depreciation	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74	15.74	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Interest on Loan	16.81	15.35	13.89	12.43	10.97	9.50	8.04	6.58	5.12	3.66	2.20	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Return on Equity	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96
O&M Expenses	7.76	8.20	8.67	9.16	9.69	10.24	10.83	11.45	12.10	12.79	13.53	14.30	15.12	15.98	16.90	17.86	18.89	19.97	21.11	22.32
Interest on Working Capital	0.95	0.95	0.94	0.94	0.93	0.93	0.93	0.93	0.93	0.94	0.94	0.95	0.76	0.79	0.82	0.86	0.89	0.93	0.97	1.02
Total AFC	54.22	53.19	52.20	51.23	50.29	49.38	48.51	47.66	46.86	46.09	45.37	44.69	30.77	31.67	32.61	33.61	34.67	35.79	36.97	38.22
AFC Rs./kWh	6.17	6.06	5.94	5.83	5.73	5.62	5.52	5.43	5.34	5.25	5.17	5.09	3.50	3.61	3.71	3.83	3.95	4.08	4.21	4.35
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	0.35	0.33	0.30	0.27	0.25	0.23	0.21	0.19
PV of AFC	54.22	48.79	43.91	39.53	35.59	32.06	28.88	26.03	23.47	21.18	19.12	17.27	10.91	10.30	9.73	9.20	8.70	8.24	7.80	7.40
PV of Generation	87.81	80.54	73.87	67.75	62.15	57.00	52.28	47.95	43.98	40.34	37.00	33.94	31.13	28.55	26.19	24.02	22.03	20.21	18.53	17.00
AFC	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Depreciation	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Interest on Loan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Return on Equity	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96	12.96
O&M Expenses	23.59	24.94	26.37	27.88	29.47	31.16	32.94	34.82	36.81	38.92	41.15	43.50	45.99	48.62	51.40	54.34	57.45	60.73	64.21	67.88
Interest on Working Capital	1.06	1.11	1.16	1.21	1.27	1.33	1.40	1.46	1.53	1.61	1.69	1.77	1.86	1.95	2.05	2.16	2.27	2.39	2.51	2.64
Total AFC	39.55	40.94	42.42	43.98	45.64	47.38	49.23	51.18	53.24	55.42	57.73	60.16	62.74	65.47	68.35	71.39	74.61	78.01	81.61	85.41
AFC Rs./kWh	4.50	4.66	4.83	5.01	5.20	5.40	5.61	5.83	6.06	6.31	6.57	6.85	7.15	7.46	7.78	8.13	8.50	8.88	9.29	9.73
Discount Factor	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03

PETITION FOR APPROVAL OF GENERIC TARIFF FOR GANOL SMALL HYDRO PROJECT (22.5) MW AS PER THE PROVISIONS OF MSERC (TERMS AND CONDITIONS FOR DETERMINATION OF TARIFF FOR GENERATION FROM RENEWABLE ENERGY SOURCES) REGULATIONS, 2014.

PV of AFC	7.02	6.67	6.34	6.03	5.74	5.46	5.20	4.96	4.74	4.52	4.32	4.13	3.95	3.78	3.62	3.47	3.32	3.19	3.06	2.94
PV of Generation	15.59	14.30	13.12	12.03	11.04	10.12	9.28	8.52	7.81	7.16	6.57	6.03	5.53	5.07	4.65	4.27	3.91	3.59	3.29	3.02
Levellized Tariff (Rs./kWh)				5.40																

The detailed calculation of the components is being submitted in soft copy (excel format) along with the Petition.

6. LIST OF ANNEXURES

1. RESOLUTION OF BOARD
2. AUDITOR'S CERTIFICATE FOR CAPITAL COST AS ON JUNE 2023.