

HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION, SHIMLA

Petition No.: 76/2020 (Suo-Motu)

CORAM

Sh. Devendra Kumar Sharma
Chairman

Sh. Bhanu Pratap Singh
Member

Date of Order: 17.10.2020

IN THE MATTER OF

Determination of Generic Levellised Tariffs for Small Hydro Projects for 3rd control period (i.e. 01.04.2020 to 30.09.2023) under Regulation 14 of the Himachal Pradesh Electricity Regulatory Commission (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017.

ORDER

1. The Commission notified the Himachal Pradesh Electricity Regulatory Commission (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017, on 23rd November, 2017 in the Rajpatra, Himachal Pradesh and carried out the 4th amendment of said regulations on 8th September, 2020 as notified in the Rajpatra, Himachal Pradesh on 15th September, 2020 wherein financial principles and technology specific parameters for small hydro projects for 3rd control period (i.e. 01.04. 2020 to 30.09.2023) have been specified (hereinafter jointly referred to as “RE Tariff Regulations, 2017”).
2. The regulation 14 of the RE Tariff Regulations, 2017 provides that the Commission shall determine separate generic levellised tariffs and associated terms and conditions for each category of SHPs within 90 days from the date of commencement of the said regulations by taking into account the norms specified thereunder.
3. The Commission, in due discharge of the mandate under aforesaid RE Tariff Regulations, 2017 proposes to determine the Generic Levellised Tariff of SHPs for 3rd control period alongwith other associated terms and conditions, as per the proposal, enclosed as **Annexure-“I”**.
4. Comments and suggestions of the stakeholders on the above proposal are invited by **17th November, 2020**. A public hearing on the above proposal will be held on **27th November, 2020**.

Sd/-
(Bhanu Pratap Singh)
Member

Sd/-
(Devendra Kumar Sharma)
Chairman

Annexure-I

Generic Levellised Tariffs for Small Hydro Projects (SHPs) exceeding 100 kW.-

1. The Generic Levellised Tariffs and associated terms and conditions for various categories of Small Hydro Projects in respect of 3rd control period are proposed to be determined in accordance with the RE Tariff Regulations, 2017 as discussed in the following paragraphs:-
2. **Useful Life.-**
Clause (ac) of sub-regulation (1) of regulation 2 of the RE Tariff Regulations, 2017 specifies that the 'useful life' in relation to SHP shall mean a duration of 40 years from the date of commencement of operation of the project.
3. **Control Period or Review Period.-**
2nd proviso of sub-regulation (1) of regulation 9 of the RE Tariff Regulations, 2017 provides that the 3rd control period for determination of tariff for SHPs shall start from 1st April, 2020 and shall end on the 30th September, 2023. In accordance with sub-regulation (2) of regulation 9 thereof the tariff(s) determined under these Regulations for the renewable energy generation project(s) or for a category thereof, to which these regulations are applicable, shall, unless amended or revised under regulations 20, continue to be applicable till the expiry of the tariff period as specified in regulation 10.
4. **Tariff Period.-**
In terms of regulation 10 of the RE Tariff Regulations, 2017, the tariff period of 40 years has been considered for working out the generic levellised tariffs for various categories of SHPs.
5. **Tariff Structure.-**
Regulation 12 of the RE Tariff Regulation, 2017 stipulates that single part levellised tariff structure comprising of the following fixed cost components shall be followed in case of SHPs:
 - (a) Return on equity;
 - (b) Interest on loan capital;
 - (c) Depreciation;
 - (d) Interest on working capital; and
 - (e) Operation and maintenance expenses.
6. **Levellised Tariff.-**
The generic tariff shall be determined on levellised basis for the tariff period as per sub-regulation (3) of the regulation 12 of the RE Tariff Regulations, 2017.

7. Debt Equity Ratio.-

The normative debt equity ratio has been considered as 70:30 in accordance with regulation 23-B of the RE Tariff Regulations, 2017.

8. Capital Cost.-

The per MW capital costs for various categories of SHPs exceeding 100 kW have been considered in accordance with regulation 34-B of the RE Tariff Regulations, 2017 which stipulates that, in case of SHPs, the normative capital cost inclusive of all its components as specified in regulation 21-B of the RE Tariff Regulations, 2017, for the control period shall be as under:-

Sr. No.	Category of small hydro project	Rupees in Lac per MW
(i)	Above 100 kW to 2 MW capacity	1100
(ii)	Above 2 MW but below 5 MW capacity	1100
(iii)	5 MW to 25 MW capacity	1100

9. Return on Equity.-

Regulation 26-B of the RE Tariff Regulations, 2017 provides that the value base for the equity (on which return on equity shall be calculated) shall be equal to the equity component computed in accordance with the provisions of regulation 23-B.

The normative Return on Equity shall be 14%. The normative Return on Equity shall be grossed up by the latest available notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the latest available notified Corporate Tax rate for the remaining Tariff Period.

(i) Interest on Loan.-

The sub-regulation (1) of regulation 24-B of the RE Tariff Regulation, 2017 provides that the loan tenure of 15 years shall be considered for the purpose of determination of tariff for RE projects. Sub-regulation (2) of the said regulation provides for computation of rate of interest of loan as under:-

“(2) Interest Rate.-

(a) *The loan amount (i.e. the debt component) arrived at in the manner indicated in the regulation 23-B shall be considered as gross normative loan for calculation of interest on loan. 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 previous year from the gross normative loan.*

(b) *For the purpose of computation of tariff(s) under these Regulations, normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) prevalent during the last available six months, prior to the respective date(s) from which such tariff(s) the respective generic levellised tariffs are to be made applicable, shall be considered:*

Provided that in case where the project specific tariff

- (c) *Notwithstanding any moratorium period availed by the renewable energy generator, the repayment of loan shall be considered from the first year of the tariff period and shall be equal to the annual depreciation allowed.*
- (d) *The loan repayment for a financial year or the relevant part period thereof shall be considered to have been done in the middle of that financial year or the relevant part period thereof, as the case may be.”*
- (ii) In view of above, the interest rate has been worked out as 9.91% per annum by adding 200 basis points above the average of Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) of State Bank of India (SBI) prevalent during the last available six months preceding the date of commencement of the RE Tariff Regulations, 2017, as shown in the table below:-

Month	Tenor-wise MCLR of SBI
October, 2019	8.05
November, 2019	8.00
December, 2019	7.90
January, 2020	7.90
February, 2020	7.85
March, 2020	7.75
Avg. for last available 6 months.	7.91

11. Depreciation.-

- (i) Regulation 25-B of the RE Tariff Regulations, 2017 provides as under:

“For the purpose of tariff determination, depreciation shall be computed in the following manner, namely:-

- (a) *the value base for the purpose of depreciation shall be equal to sum total of the debt and equity components as per the provisions of regulation 23-B;*
- (b) *the salvage value shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the value base as per clause (a) of this regulation:*

Provided that no depreciation shall be allowed to the extent of incentive, grant and capital subsidy available for the project.

- (c) *depreciation per annum shall be based on ‘Differential Depreciation Approach’. For tariff purposes, the depreciation shall be allowed @ 4.67% per annum of the value base as per clause (a) of this regulation till such time the requirement for repayment of loan component of the capital cost as per regulations 21-B, 23-B and 24-B is fully provided and the remaining depreciation shall be spread over the residual useful life of the project on straight line method;*
- (d) *depreciation shall be chargeable from the first year of commencement of operation of the project:*

Provided that purposes of project specific determination of tariff.”

- (ii) In accordance with the above, the rate of depreciation has been considered as 4.67 % per annum for meeting the requirements of loan repayment and balance amount of depreciation has been equally spread over the remaining tariff period. For the year in which the loan gets totally repaid, the depreciation has been provided to the extent of the actual requirement for loan repayment or the average value of balance period whichever is higher.

12. Interest on working capital.-

- (i) In accordance with the regulation 27-B of the RE Tariff Regulations, 2017, the working capital requirement of the SHPs has been considered by including the following:-

“(a) operation and maintenance expenses for one month;

(b) receivables equivalent to 45 days of energy charges for sale of electricity calculated on the net saleable energy corresponding to the CUF considered for tariff determination on normative basis;

(c) maintenance spare @ 15% of operation and maintenance expenses.”

- (ii) Interest rate on working capital has been worked out as 11.41 % per annum by the adding 350 basis points above the average of Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) of State Bank of India (SBI) prevalent during the last available six months prior to the respective date(s) from which the generic tariff(s) are to be made applicable.

13. Operation and Maintenance Expenses.-

- (i) In accordance with regulation 39-B of RE Tariff Regulations, 2017, the normative annual O&M expenses for the first year of the tariff period have been specified as under:-

Sr. No.	Category of Project	Annual O&M expenses Rupees in Lac per MW
(i)	Above 100 kW to 2 MW capacity	41.78
(ii)	Above 2 MW but below 5 MW capacity	41.78
(iii)	5 MW to 25 MW capacity	31.34

- (ii) These normative O&M expenses have been escalated at the rate of 3.84% per annum over the tariff period in accordance with the regulation 28-B of the RE Tariff Regulations, 2017.

14. Incentive and/or subsidy and/or grant/budgetary support by the Central/ State Government.-

- (i) The sub-regulation (1) of regulation 22-B of the RE Tariff Regulations, 2017 provides as under:-

“ (1) While determining the generic levellised or project specific levellised tariff, as the case may be, for the renewable energy project(s) under these Regulations, the Commission shall take into consideration any incentive and/or subsidy and/or grant available under the schemes of the Central or State Government or their agencies, but excluding accelerated depreciation benefit under the Income Tax Act:

Provided that the capital subsidy under the schemes of the Central or State Government or their agencies shall be adjusted in the normative capital cost and the cost so arrived, after such adjustment, shall be considered for computing Debt-Equity Components for the purposes of determination of generic levellised tariffs:

Provided further that where the Central Government or the State Government notifies, or has notified, any generation based incentive (GBI) scheme for a particular kind of renewable technology, such technology based generating station shall be assumed to have availed the benefit of such a scheme and their tariffs shall be reduced by the amount of generation based incentive (GBI) per unit for the period during which such incentive remains applicable.

(2) Where any additional project specific grant or budgetary support is available to any project, apart from the incentive and/or subsidy and/or grant available under sub-regulation (1) of this regulation, the Commission shall account for such budgetary support also, while determining project specific levellised tariff.

(3) The amount of subsidy shall be considered for each renewable source as per the applicable policy of the MNRE/State Government/Central Government and if the amount and/or mechanism of subsidy is changed by the MNRE/State Government/Central Government, consequent corrections in tariffs may be carried out by the Commission in accordance with regulation 20.”

- (ii) No adjustment of incentive and/or subsidy and/or grant is being made in the tariff calculations being carried out in this order. However, adjustment to be made in the rate on per Crore of subsidy for each MW capacity have been worked out and mentioned in the attached calculation sheets for each category of the project and adjustment, if any, on account of the same shall be made at appropriate stage while applying the tariff after taking into account the eligibility conditions in each case. Similarly, adjustment on account of subsidy available under the Ministry of Commerce & Industry, Government of India and/or any other subsidy scheme(s) of Government (Central/State) shall also be made at appropriate stage(s) after taking into account the extent of subsidy(ies) available under such scheme(s). The adjustments on account of subsidies, where available, are to be made at the rates indicated in the calculation sheets on normative basis by considering the provisions of regulations 20-B, 23-B, 24-B, 25-B and 26-B.

15. Normative Net Saleable Energy.-

The annual normative net saleable energy at the interconnection point has been computed in line with the provisions of regulation 35-B of the RE Tariff Regulations, 2017 which specifies that the normative annual Capacity Utilisation Factor (CUF), net of 13% free power [including 1% contribution towards Local Area Development Fund], shall be 47.85% and also stipulates the procedure for computing the normative year wise net saleable energy. The normative auxiliary consumption and transformation losses has been taken @1% of the gross generation as per regulation 37-B and the energy losses in the project line have been taken as 0.7% of the gross generation as per regulation 38-B. The free power structures as discussed in para-16(iii) of the order have been taken into account. In order to take into account the effect of leap year, the number of hours in a year has been taken as 8766.

16. Free power (Energy) structure and adjustment in tariff for variations.-

- (i) The sub-regulation (1) of regulation 36-B of the RE Tariff Regulations, 2017 stipulates that the Commission shall consider appropriate structure(s) of free power for determination of generic levellised tariffs for various categories of SHPs, duly keeping in view the provisions of the State Hydro Policy for allotment of sites for SHPs, National Hydro Policy, Tariff Policy and the limits specified under sub-regulation (3).
- (ii) In accordance with clause (iii) of sub-regulation (1) of regulation 35-B and sub-regulation (3) of regulation 36-B of the RE Tariff Regulations, 2017, the free energy to be taken into account for any part of the tariff period shall not exceed 13.00% (free energy), which includes 12.00% free power to the Home State and 1.00% additional free power for local area development fund as stipulated in National Hydro Policy/ Tariff Policy.
- (iii) Based on above and the free power structure presently being followed by the State Government, the generic levellised tariffs for various categories of SHPs have been determined by accounting for free energy, as per following structure:-

Sr. No.	Category of small hydro project	Free power structure
(i)	Above 100 kW to 2 MW capacity	3% for first 12 years and 13% for the remaining 28 years.
(ii)	Above 2 MW but below 5 MW capacity	7% for first 12 years and 13% for the remaining 28 years .
(iii)	5 MW to 25 MW capacity	13% for the entire tariff period of 40 years

- (iv) In case where the free power structure applicable for a SHP for which Power Purchase Agreement (PPA) is to be approved by the Commission is different from that considered in the tariff, the generic levellised tariff for such a project shall be computed by adjusting the generic levellised tariff determined by the Commission in inverse proportion to be levellised values of net saleable

energy under two structures i.e. by multiplying the generic levelled tariff of that category by the corresponding levelled net saleable energy (per annum per MW) as per the Sheet-II of the tariff calculations of respective categories and dividing the same with the levelled net saleable energy (per annum per MW) worked out at discount rate of 9.12% per annum, corresponding to the permissible free power structure for which the levelled tariff is to be computed for inclusion in the PPA to be approved by the Commission. It shall be ensured that the free power (energy) to be accounted for in the tariff does not exceed the permissible limits, as specified in the RE Tariff Regulations, 2017 during any part of the tariff period. However, for any variations in the structure of free energy after execution of PPA, the adjustment shall be computed in accordance with other relevant provision of the RE Tariff Regulations, 2017.

17. Discount Factor.-

In accordance with sub-regulation (4) of regulation 12 of the RE Tariff Regulations, 2017, the discount factor equivalent to the post tax weighted average cost of capital has been considered for the purpose of levelled tariff computation. The discount factor has been calculated on this basis of the normative debt equity ratio (70:30) and weighed average of the post tax rates for debt and equity component. For this purpose, the interest rate on the loan component (i.e. 70%) of capital cost is 9.91%. For equity component (i.e. 30%), rate of Return of Equity (RoE) is considered as post tax rate of 14%. The discount factor has been calculated as 9.12%. The Corporate tax has been taken as 29.12% (25% IT rate+ 12% Surcharge+ 4% Health and Education cess).

18. Rounding.-

- (i) The tariffs worked out for various categories of SHPs are proposed to be rounded to nearest paise/kWh. The fraction of 0.5 paise/kWh or above has been rounded to next higher and fraction of less than 0.5 has been ignored.
- (ii) Adjustment for fraction of a MW of the installed capacity:- The installed capacity shall be rounded to one decimal place by ignoring the fraction of less than 0.05 MW and by considering the fraction of 0.05 MW and above as 0.1 MW.

19 Generic Levelled Tariff and Associated Terms and Conditions for 3rd control period (i.e. 01.04.2020 to 30.09.2023).-

In light of the discussion made in the preceding paragraphs, the Generic Levelled Tariffs and the associated terms and conditions for various categories of SHPs are determined as under:-

- A. The Generic Levelled Tariffs for various categories of SHPs shall be as under:-

Category	Capacity	Generic Levelled Tariff in Rs./kWh of net saleable energy without considering subsidy.
Col. 1	Col. 2	Col.3
(i)	Above 100 kW to 2 MW capacity	4.56
(ii)	Above 2 MW but below 5 MW capacity	4.69
(iii)	5 MW to 25 MW capacity	4.51

B. The tariff applicable as per item A above shall be subject to adjustment as applicable for relevant category of SHPs in accordance with the following sub-paragraph (a) to (c):-

(a) Adjustment(s) on account of incentive and/or subsidy and/or grant available:

These tariffs do not take into account any adjustment(s) on account of incentive and/or subsidy and/or grant available. The adjustment(s) on account of subsidy(ies) available, or as may become available, under various applicable scheme(s) of Government (Central/ State) shall be carried out at appropriate stage(s) in accordance with para **14(ii)** of this order and provisions of applicable regulations.

(b) Variation in free power structure:

The above tariffs account for free energy at the following rates.

Sr. No.	Category of small hydro project	Free power structure
(i)	Above 100 kW to 2 MW capacity	3% for first 12 years and 13% for the remaining 28 years.
(ii)	Above 2 MW but below 5 MW capacity	7% for first 12 years and 13% for the remaining 28 years .
(iii)	5 MW to 25 MW capacity	13% for the entire tariff period of 40 years

In case the structure of free power applicable for a SHP for which the PPA is to be approved by the Commission is different from that considered in the tariff for that category of SHPs, the adjustment shall be carried out in accordance with the para 16(iv) of this order. However, it shall be ensured that free power (energy) to be accounted for in the tariff does not exceed the permissible limits, as specified in RE Tariff Regulations, 2017 during any part of the tariff period. The adjustment if required, on this account shall, be carried out after carrying out the adjustment(s), if any, under sub-para(a) above.

(c) **Rounding:** (i) The tariffs worked out for various categories of SHPs are proposed to be rounded to nearest paise/kWh. The fraction of 0.5 paise/ kWh or above has been rounded to next higher and fraction of less than 0.5 has been ignored.

(ii) Adjustment for fraction of a MW of the installed capacity:- The installed capacity shall be rounded to one decimal place by ignoring the fraction of less than 0.05 MW and by considering the fraction of 0.05 MW and above as 0.1 MW.

C. These tariffs shall be subject to the RE Tariff Regulations, 2017 and the orders as may be issued by the Commission thereunder.

The detailed computations for generic levelled tariff without considering subsidy(ies) for the SHPs for 3rd control period under the three categories i.e. Above 100 kW to 2 MW capacity, Above 2 MW but below 5 MW capacity and 5 MW to 25 MW capacity are enclosed as per Appendices A, B and C respectively.

Tariff for SHP of Capacity above 100kW upto 2MW(Withoust subsidy)		Appendix-A Sheet-I
Assumptions for Small Hydro Power		
Generating Capacity (MW)	MW	1
Project Cost		
Cost/MW	Rs Lacs/MW	1100.00
Project Cost	Rs Lacs	1100.00
MNES Subsidy	Rs Lacs (at 1MW Capacity)	0
Term	Years	40
Project Financing		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	770.00
Equity	Rs Lacs	330.00
Term of Debt	Years	15
Moratorium	Years	0
Interest Rate	%	9.91%
Depreciation		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 15 Years)	%	4.67%
Rate of Depreciation (Last 25years)	%	0.80%
Operating Norms		
CUF	%	47.85%
Availability	%	100%
Auxiliary Consumption	%	0.50%
Transformation Losses	%	0.50%
Transmission losses		0.70%
O&M Expenses	Rs. In Lacs/ MW	41.78
O&M Expenses w.r.t Capital Cost	%	
Annual Escalation Factor	%	3.84%
Tax		
Tax Rate	%	29.12%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
Effective ROE		16.96%
Effective ROE		21.52%
Working Capital Norms		
Recievables	Months	1.5
Spares	% of O&M Cost	15%
O&M Expenses	Months	1
Interest on Working Capital	%	11.41%
Discount Factor	%	9.12%
Depreciation amount		90.00%
Income Tax (MAT)		17.47%
Income Tax (Normal Rates)		29.12%

GENERIC LEVELLISED TARIFF OF CATEGORY -I (Above 100 KW to 2 MW) without subsidy

DETERMINATION OF TARIFF COMPONENT	UNIT	YEAR→	Y 01	Y 02	Y 03	Y 04	Y 05	Y 06	Y 07	Y 08	Y 09	Y 10	Y 11	Y 12	Y 13	Y 14	Y 15	Y 16	Y 17
Net Saleable Energy at the Interconnection point after the adjustment of Free Power, Project Line Losses and Auxiliary Consumption (Levellised/ Annual)	(MU)	4.441	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.60	4.12	4.12	4.12	4.12	4.12
Fixed Cost																			
RoE	Rs Lacs.		55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97
Depreciation	Rs Lacs.		51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	50.82	8.80	8.80
O&M	Rs Lacs.		41.78	43.38	45.05	46.78	48.58	50.44	52.38	54.39	56.48	58.65	60.90	63.24	65.67	68.19	70.81	73.53	76.35
WC Interest	Rs Lacs.		4.31	4.30	4.30	4.30	4.30	4.30	4.31	4.32	4.33	4.35	4.37	4.39	4.42	4.45	4.48	3.96	4.07
Interest on long Term loans	Rs Lacs.		73.76	68.68	63.59	58.50	53.41	48.33	43.24	38.15	33.07	27.98	22.89	17.80	12.72	7.63	2.54	0.00	0.00
Advance Against Dep.	Rs Lacs.		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
Total	Rs Lacs.		227.19	223.70	220.27	216.92	213.63	210.41	207.27	204.20	201.22	198.31	195.50	192.78	190.14	187.61	184.62	142.25	145.19
Fixed Cost Rs Crores)																			
RoE	Rs./ kWh		1.318	1.22	1.12	1.02	0.94	0.86	0.79	0.72	0.66	0.61	0.55	0.51	0.47	0.48	0.44	0.40	0.37
Depreciation	Rs./ kWh		0.904	1.12	1.02	0.94	0.86	0.79	0.72	0.66	0.61	0.56	0.51	0.47	0.43	0.44	0.40	0.36	0.06
O&M	Rs./ kWh		1.473	0.91	0.86	0.82	0.78	0.75	0.71	0.67	0.64	0.61	0.58	0.55	0.53	0.56	0.53	0.51	0.48
WC Interest	Rs./ kWh		0.103	0.09	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.04	0.03	0.03	0.02
Interest on long Term loans	Rs./ kWh		0.758	1.60	1.37	1.16	0.98	0.82	0.68	0.56	0.45	0.36	0.28	0.21	0.15	0.11	0.06	0.02	0.00
Total Cost of Generation	Rs./ kWh		4.557	4.94	4.46	4.02	3.63	3.28	2.96	2.67	2.41	2.18	1.97	1.78	1.61	1.62	1.46	1.32	0.93
Disc factor		9.12%		1.00	0.92	0.84	0.77	0.71	0.65	0.59	0.54	0.50	0.46	0.42	0.38	0.35	0.32	0.29	0.27
Discounted Rate	Rs./ kWh			4.94	4.46	4.02	3.63	3.28	2.96	2.67	2.41	2.18	1.97	1.78	1.61	1.62	1.46	1.32	0.93
Generic Levellised Tariff Without Subsidy	Rs./ kWh	4.557																	

Generic Levellised Tariff (without Subsidy) at Capital Cost of Rs 1100 Lac/MW = Rs. 4.56 /kWh
Indicative Generic Levellised Tariff by considering Subsidy/Incentive/Grant of Rs 100 Lac/MW = Rs. 4.28 /kWh
Adjustment to be made per Crore of Subsidy/Incentive/Grant per MW= Rs. 0.28/kWh

GENERIC LEVELLISED TARIFF OF CATEGORY -I (Above 100 KW to 2 MW) without subsidy

DETERMINATION OF TARIFF COMPONENT	UNIT	Y 18	Y 19	Y 20	Y 21	Y 22	Y 23	Y 24	Y 25	Y 26	Y 27	Y 28	Y 29	Y 30	Y 31	Y 32	Y 33	Y 34	Y 35	Y 36	Y 37	Y 38	Y 39	Y 40
Net Saleable Energy at the Interconnection point after the adjustment of Free Power, Project Line Losses and Auxiliary Consumption (Levellers/ Annual)	(MU)	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12
Fixed Cost																								
RoE	Rs Lacs.	55.97	55.97	55.97	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02
Depreciation	Rs Lacs.	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
O&M	Rs Lacs.	79.28	82.33	85.49	88.77	92.18	95.72	99.39	103.21	107.17	111.29	115.56	120.00	124.61	129.39	134.36	139.52	144.88	150.44	156.22	162.22	168.45	174.91	181.63
WC Interest	Rs Lacs.	4.20	4.32	4.45	4.80	4.94	5.09	5.24	5.40	5.56	5.73	5.91	6.09	6.28	6.48	6.68	6.90	7.12	7.35	7.58	7.83	8.09	8.36	8.63
Interest on long Term loans	Rs Lacs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Advance Against Dep.	Rs Lacs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	Rs Lacs.	148.24	151.41	154.71	173.39	176.94	180.62	184.45	188.42	192.55	196.84	201.29	205.91	210.70	215.69	220.86	226.23	231.81	237.60	243.62	249.87	256.35	263.09	270.08
Fixed Cost Rs Crores)																								
RoE	Rs./ kWh	0.31	0.28	0.26	0.30	0.28	0.25	0.23	0.21	0.19	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
Depreciation	Rs./ kWh	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
O&M	Rs./ kWh	0.44	0.41	0.39	0.38	0.36	0.34	0.32	0.31	0.29	0.28	0.27	0.25	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.15
WC Interest	Rs./ kWh	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Interest on long Term loans	Rs./ kWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Cost of Generation	Rs./ kWh	0.82	0.76	0.71	0.73	0.69	0.64	0.60	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.34	0.32	0.30	0.28	0.26	0.25	0.23	0.22
Disc factor		0.23	0.21	0.19	0.17	0.16	0.15	0.13	0.12	0.11	0.10	0.09	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03
Discounted Rate	Rs./ kWh	0.82	0.76	0.71	0.73	0.69	0.64	0.60	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.34	0.32	0.30	0.28	0.26	0.25	0.23	0.22
Generic Levellised Tariff Without Subsidy	Rs./ kWh																							

Tariff for SHPs 2MW and below 5MW capacity (Without subsidy)		Appendix-B Sheet-I
Assumptions for Small Hydro Power		
Generating Capacity (MW)	MW	1
Project Cost		
Cost/MW	Rs Lacs/MW	1100.00
Project Cost	Rs Lacs	1100.00
MNES Subsidy	Rs Lacs/MW	0
Term	Years	40
Project Financing		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	770.00
Equity	Rs Lacs	330.00
Term of Debt	Years	15
Moratorium	Years	0
Interest Rate	%	9.91%
Depreciation		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 15 Years)	%	4.67%
Rate of Depreciation (Last 25 years)	%	0.80%
Operating Norms		
CUF	%	47.85%
Availability	%	100%
Auxiliary Consumption	%	0.50%
Transformation Losses	%	0.50%
Transmission losses		0.70%
O&M Expenses	Rs. In Lacs./ MW	41.78
O&M Expenses w.r.t Capital Cost	%	
Annual Escalation Factor	%	3.84%
Tax		
Tax Rate	%	29.12%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
Effective ROE		16.96%
Effective ROE		21.52%
80IA Exemption	Years	0
Working Capital Norms		
Receivables	Months	1.5
Spares	% of O&M Cost	15%
O&M Expenses	Months	1
Interest on Working Capital	%	11.41%
Discount Factor	%	9.12%
Depreciation amount		90.00%
Income Tax (MAT)		17.47%
Income Tax (Normal Rates)		29.12%

Generic Levellised Tariff (without Subsidy) at Capital Cost of Rs 1100 Lac/MW = Rs. 4.69 /kWh
Indicative Generic Levellised Tariff by considering Subsidy/Incentive/Grant of Rs 100 Lac/MW = Rs. 4.41/kWh
Adjustment to be made per Crore of Subsidy/Incentive/Grant per MW= Rs. 0.28/kWh

[illegible]

Tariff for SHPs 5MW to 25MW (Without subsidy)		Appendix-C Sheet-I
Assumptions for Small Hydro Power		
Generating Capacity (MW)	MW	1
Project Cost		
Cost/MW	Rs Lacs/MW	1100.00
Project Cost	Rs Lacs/MW	1100.00
MNES Subsidy (For 5MW)	Rs Lacs/MW	0
Term	Years	40
Project Financing		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	770.00
Equity	Rs Lacs	330.00
Term of Debt	Years	15
Interest Rate	%	9.91%
Depreciation		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 15 Years)	%	4.67%
Rate of Depreciation (Lats 25years)	%	0.80%
Operating Norms		
CUF	%	47.85%
Availability	%	100%
Auxiliary Consumption	%	0.50%
Transformation Losses	%	0.50%
Transmission losses		0.70%
O&M Expenses	Rs. Lacs/ MW	31.34
O&M Expenses w.r.t Capital Cost	%	
Annual Escalation Factor	%	3.84%
Tax		
Tax Rate	%	29.12%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
Effective ROE		16.96%
Effective ROE		21.52%
80IA Exemption	Years	0
Working Capital Norms		
Recievables	Months	1.5
Spares	% of O&M Cost	15%
O&M Expenses	Months	1
Interest on Working Capital	%	11.41%
Discount Factor	%	9.12%
Depreciation amount		90.00%
Income Tax (MAT)		17.47%
Income Tax (Normal Rates)		29.12%

GENERIC LEVELLISED TARIFF OF CATEGORY -III (5 MW to 25 MW) without subsidy

DETERMINATION OF TARIFF COMPONENT	UNIT	YEAR→		Y 01	Y 02	Y 03	Y 04	Y 05	Y 06	Y 07	Y 08	Y 09	Y 10	Y 11	Y 12	Y 13	Y 14	Y 15	Y 16	Y 17	Y 18
Net Saleable Energy at the Interconnection point after the adjustment of Free Power, Project Line Losses and Auxiliary Consumption (Levellised/ Annual)	(MU)		4.124	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12
Fixed Cost																					
RoE	Rs Lacs.			55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97	55.97
Depreciation	Rs Lacs.			51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	51.37	50.82	8.80	8.80	8.80
O&M	Rs Lacs.			31.34	32.54	33.79	35.09	36.44	37.84	39.29	40.80	42.37	43.99	45.68	47.44	49.26	51.15	53.11	55.15	57.27	59.47
WC Interest	Rs Lacs.			3.88	3.85	3.83	3.81	3.80	3.78	3.77	3.76	3.75	3.75	3.74	3.74	3.74	3.75	3.75	3.20	3.29	3.38
Interest on long Term loans	Rs Lacs.			73.76	68.68	63.59	58.50	53.41	48.33	43.24	38.15	33.07	27.98	22.89	17.80	12.72	7.63	2.54	0.00	0.00	0.00
Advance Against Dep.	Rs Lacs.			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
Total	Rs Lacs.			216.32	212.41	208.55	204.74	200.99	197.28	193.64	190.05	186.52	183.06	179.65	176.32	173.06	169.87	166.20	123.12	125.33	127.62
Fixed Cost Rs Crores)																					
RoE	Rs./ kWh		1.412	1.36	1.24	1.14	1.04	0.96	0.88	0.80	0.74	0.68	0.62	0.57	0.52	0.48	0.44	0.40	0.37	0.34	0.31
Depreciation	Rs./ kWh		0.990	1.25	1.14	1.05	0.96	0.88	0.81	0.74	0.68	0.62	0.57	0.52	0.48	0.44	0.40	0.36	0.06	0.05	0.05
O&M	Rs./ kWh		1.168	0.76	0.72	0.69	0.65	0.62	0.59	0.56	0.54	0.51	0.49	0.46	0.44	0.42	0.40	0.38	0.36	0.34	0.33
WC Interest	Rs./ kWh		0.094	0.09	0.09	0.08	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Interest on long Term loans	Rs./ kWh		0.844	1.79	1.53	1.30	1.09	0.91	0.76	0.62	0.50	0.40	0.31	0.23	0.17	0.11	0.06	0.02	0.00	0.00	0.00
Total Cost of Generation	Rs./ kWh		4.508	5.25	4.72	4.25	3.82	3.44	3.09	2.78	2.50	2.25	2.02	1.82	1.64	1.47	1.32	1.19	0.81	0.75	0.70
Disc factor		9.12%		1.00	0.92	0.84	0.77	0.71	0.65	0.59	0.54	0.50	0.46	0.42	0.38	0.35	0.32	0.29	0.27	0.25	0.23
Discounted Rate	Rs./ kWh			5.25	4.72	4.25	3.82	3.44	3.09	2.78	2.50	2.25	2.02	1.82	1.64	1.47	1.32	1.19	0.81	0.75	0.70
Generic Levellised Tariff without Subsidy	Rs./ kWh		4.508																		

Generic Levellised Tariff (without Subsidy) at Capital Cost of Rs 1100 Lac/MW = Rs. 4.51 /kWh
Indicative Generic Levellised Tariff by considering Capital Subsidy of Rs 100 Lac/MW = Rs. 4.21 /kWh
Adjustment to be made per Crore of Subsidy per MW= Rs. 0.30 /kWh

GENERIC LEVELLISED TARIFF OF CATEGORY -III (5 MW to 25 MW) without subsidy

DETERMINATION OF TARIFF COMPONENT	UNIT	Y 19	Y 20	Y 21	Y 22	Y 23	Y 24	Y 25	Y 26	Y 27	Y 28	Y 29	Y 30	Y 31	Y 32	Y 33	Y 34	Y 35	Y36	Y37	Y38	Y39	Y40
Net Saleable Energy at the Interconnection point after the adjustment of Free Power, Project Line Losses and Auxiliary Consumption (Levellers/ Annual)	(MU)	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12	4.12
Fixed Cost																							
RoE	Rs Lacs.	55.97	55.97	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02
Depreciation	Rs Lacs.	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80
O&M	Rs Lacs.	61.75	64.13	66.59	69.14	71.80	74.56	77.42	80.39	83.48	86.69	90.01	93.47	97.06	100.79	104.66	108.68	112.85	117.18	121.68	126.35	131.21	136.25
WC Interest	Rs Lacs.	3.47	3.57	3.89	3.99	4.10	4.21	4.33	4.46	4.58	4.72	4.85	5.00	5.14	5.30	5.46	5.62	5.80	5.97	6.16	6.35	6.55	6.76
Interest on long Term loans	Rs Lacs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Advance Against Dep.	Rs Lacs.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	Rs Lacs.	129.99	132.46	150.29	152.95	155.72	158.59	161.57	164.66	167.88	171.22	174.68	178.28	182.02	185.90	189.93	194.11	198.46	202.97	207.66	212.52	217.58	222.82
Fixed Cost Rs Crores)																							
RoE	Rs./ kWh	0.28	0.26	0.30	0.28	0.25	0.23	0.21	0.19	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
Depreciation	Rs./ kWh	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
O&M	Rs./ kWh	0.31	0.30	0.28	0.27	0.26	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17	0.16	0.16	0.15	0.14	0.13	0.13	0.12	0.12	0.11
WC Interest	Rs./ kWh	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Interest on long Term loans	Rs./ kWh	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Cost of Generation	Rs./ kWh	0.66	0.61	0.64	0.59	0.55	0.52	0.48	0.45	0.42	0.39	0.37	0.34	0.32	0.30	0.28	0.26	0.25	0.23	0.22	0.20	0.19	0.18
Disc factor		0.21	0.19	0.17	0.16	0.15	0.13	0.12	0.11	0.10	0.09	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03
Discounted Rate	Rs./ kWh	0.66	0.61	0.64	0.59	0.55	0.52	0.48	0.45	0.42	0.39	0.37	0.34	0.32	0.30	0.28	0.26	0.25	0.23	0.22	0.20	0.19	0.18
Generic Levellised Tariff without Subsidy	Rs./ kWh																						