

**HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION, SHIMLA**

Petition No. 70/2017 (Suo-Motu)

**CORAM**

**Sh. S.K.B.S. Negi**

**Chairman**

**Sh. Bhanu Pratap Singh**

**Member**

Date of Order: 07.12.2017

IN THE MATTER OF

**Determination of generic levelled tariffs for Small Hydro Projects 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 23<sup>rd</sup> November, 2017 in the Rajpatra, Himachal Pradesh (hereinafter referred to as "RE Tariff Regulations, 2017"), which have come into force from 1<sup>st</sup> October, 2017;
2. Sub-regulation (1) of regulation 14, read with regulation 33, of the RE Tariff Regulations, 2017 provide that the Commission shall determine separate generic levelled 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 levelled tariff of SHP and associated terms and conditions as per the proposal enclosed as Annexure-"I";
4. The proposed tariff is determined as per the MNRE subsidy structure for SHP of dated 2<sup>nd</sup> July, 2014. Any changes in the subsidy structure (pattern) for SHP by the MNRE shall be accounted for accordingly in tariff calculations.
5. Comments and suggestions of the stakeholders on the above proposal are invited by 28<sup>th</sup> December, 2017. A public hearing on the above proposal will be held on 5<sup>th</sup> January, 2018 at 11:30AM

Sd/-

(Bhanu Pratap Singh)  
**Member**

Sd/-

(S.K.B.S. Negi)  
**Chairman**

**Generic levellised tariffs for Small Hydro Projects (SHPs).-**

1. The proposed generic levellised tariffs and associated terms and conditions for various categories of Small Hydro Projects in respect of the control period (1<sup>st</sup> October, 2017 upto 31<sup>st</sup> March, 2020) have been computed in accordance with the RE Tariff Regulations, 2017 as discussed in the following paragraphs:-

**Useful Life.-**

2. 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.

**Control Period or Review Period.-**

3. Regulation 9 of the RE Tariff Regulations, 2017 provides that the control period for determination of tariff for SHPs shall start from 1<sup>st</sup> October, 2017 and shall end on the 31<sup>st</sup> March, 2020. In accordance with sub-regulation (2) 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.

**Tariff Period.-**

4. 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.

**Tariff Structure.-**

5. 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.

**Levellised Tariff.-**

6. 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.

### **Debt Equity Ration.-**

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

### **Capital Cost.-**

8. The per MW capital costs for various categories of SHPs have been considered in accordance with regulation 34 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 of the RE Tariff Regulations, 2017, for the control period shall be as under:-

<b>Sr. No.</b>	<b>Category of small hydro project</b>	<b>Rupees in Lac per MW</b>
(i)	Above 100 kW to 2 MW capacity	880
(ii)	Above 2 MW to 5 MW capacity	850
(iii)	Above 5 MW to 25 MW capacity	800

### **Return on Equity.-**

9. Regulation 26 of the RE Tariff Regulations, 2017 provide that the value base for the equity shall be 30% of the normative capital cost as determined under regulation 21 and that the normative return of equity shall be 17% per annum on pre tax basis.

### **Interest on Loan.-**

10. The sub-regulation (1) of regulation 24 of the RE Tariff Regulation, 2017 provides that the loan tenure of 13 years, inclusive of moratorium period, if any, is to 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 loans arrived at in the manner indicated in the regulation 23 shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on 1<sup>st</sup> April of every year shall be worked out by deducting the cumulative repayment upto 31<sup>st</sup> 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), or the respective generic levellised tariffs are to be made applicable, shall be considered:*

*Provided that in case where 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) Apart from the adjustment of subsidy in accordance with regulation 22, 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.”*

11. In view of above, interest rate of 10.00% per annum has been worked out by the 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
April, 2017	8.00
May, 2017	8.00
June, 2017	8.00
July, 2017	8.00
August, 2017	8.00
September, 2017	8.00
<b>Avg. for last available 6 months.</b>	<b>8.00</b>

### **Depreciation.-**

- 12.Regulation 25 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 the normative capital cost (for generic tariff) or the capital cost of the project as admitted by the Commission (for project specific tariff), as the case may be;*
- (b) 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;*
- (c) depreciation per annum shall be based on ‘Differential Depreciation Approach’. For tariff purposes, the depreciation shall be allowed @ 5.28% per annum till such time the requirement for repayment of loan component of the capital cost as per regulations 21, 23 and 24 after adjusting the amount of subsidy as per regulation 22, 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.”*

13. In accordance with the above, the rate of deprecation has been considered as 5.28% per annum for meeting the requirements of loan

repayment (after adjusting the subsidy component) 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.

**Interest on working capital.-**

14. In accordance with the regulation 27 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 2 (two) months 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.”*

15. Interest rate on working capital as 11.00% per annum has been worked out by the adding 300 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.

**Operation and Maintenance Expenses.-**

16. In accordance with regulation 39 of RE Tariff Regulations, 2017, the normative annual O&M expenses for the first year of the tariff period have been considered as under:-

<b>Sr. No.</b>	<b>Category of Project</b>	<b>Annual O&amp;M expenses Rupees in Lac per MW</b>
(i)	Above 100 kW to 2 MW capacity	33
(ii)	Above 2 MW to 5 MW capacity	29
(iii)	Above 5 MW to 25 MW capacity	24

17. These normative O&M expenses have been escalated at the rate of 5.72% per annum over the tariff period in accordance with the regulation 28 of the RE Tariff Regulations, 2017.

**Subsidy or incentive or grant/budgetary support by the Central/ State Government.-**

18. The sub-regulation (1) of regulation 22 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 its agencies, but excluding accelerated depreciation benefit under the Income Tax Act:*

*Provided that for tariff determination, only 75% of the capital subsidy available to the project as per applicable scheme of the MNRE/State Government shall be considered:*

*Provided further that the Commission may evolve suitable mechanism(s) for incorporating impact of the subsidy component for determination or adjustment of generic levelled tariffs for various categories of projects:*

*Provided further that the capital subsidy under the schemes of the Central or State Government or its agencies, shall, unless the circumstances otherwise warrant, be ordinarily adjusted in the middle of first 12 months from the commencement of the tariff period against the principal component of the loan amount as additional reduction apart from the normal payment:*

*.....XXXXXX..... .”*

19. In accordance with sub-regulation (3) of regulation 22 of RE Tariff Regulations, 2017, the amount of subsidy shall be considered for each renewable source as per the applicable policy of the MNRE/State Government and if the amount and/or mechanism of subsidy is changed by the MNRE/State Government, consequent corrections in tariffs may be carried out by the Commission in accordance with regulation 20 of the RE Tariff Regulations, 2017.
20. In accordance with the prevalent scheme of MNRE dated 2<sup>nd</sup> July, 2014, the SHPs in private, cooperative and joint sector etc. are entitled to capital subsidy at the following rates:-

Category	Above 0.1 MW - 25 MW
N.E. States, J&K, HP & Uttrakhand (Special category States)	Rs. 1.5 Crore per MW limited to Rs. 5.00 Crore per project.

The per MW capital subsidy for SHPs of various capacities have been worked out on this basis and is attached at Appendix-D. It is observed that the per MW rate of capital subsidy for various capacities of SHPs reduces progressively as the capacity increase but this reduction is not in a linear ration. The per MW capital subsidy, as computed for 1 MW, 2 MW and 5 MW SHPs have been considered for working out the generic levelled tariffs for the SHPs under category I,II and III respectively. However, since this methodology may deprive the SHPs of higher capacities in each category of full benefit of 25 % of subsidy intended to be allowed to be retained by them, suitable formulae have been evolved for

increasing the generic levelled tariff so as to compensate such SHPs suitably to a reasonable degree of approximation. These formulae have been evolved by evaluating the difference between the generic levelled tariff corresponding to the lowest & highest MW capacities under each category of SHPs and the corresponding difference in 75% of the capital subsidy per MW in accordance with Col-4 of Appendix-D. The relevant formulae have been given in Sheet-IV of the respective appendices relating to tariff computation for various categories of SHPs (i.e. Appendix-A, B and C) as well as in para-29. These formulae shall, however not be applicable in cases where the adjustment of account of budgetary support or generation based incentive, if any, or the additional MNRE subsidy to Govt. sector project are involved. In such cases the adjustment shall be made on case to case basis in accordance with regulation 22 of the RE Tariff Regulations, 2017.

**Normative Net Saleable Energy.-**

21. The annual normative net saleable energy at the interconnection point has been computed in line with the provisions of regulation 35 of the RE Tariff Regulations, 2017 which specify that the normative annual Capacity Utilisation Factor (CUF) for all the SHPs upto 25 MW shall be 55% 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 and the energy losses in the project line have been taken as 0.7% of the net generation as per regulation 38. The free power structure as discussed in para-24 have been taken into account. Every fourth year has been considered as a leap year.

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

22. The sub-regulation (1) of regulation 36 of the RE Tariff Regulations, 2017 stipulates that the Commission shall consider appropriate structure(s) of free power for determination of generic levelled 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).
23. In accordance with clause (iii) of sub-regulation (1) of regulation 35 and sub-regulation (3) of regulation 36 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.

24. Based on above and the free power structure presently being followed by the State Government, the generic levelled tariffs for various categories of SHPs have been computed 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 to 5 MW capacity	7% for first 12 years and 13% for the remaining 28 years .
(iii)	Above 5 MW to 25 MW capacity	13% for the entire tariff period of 40 years

25. 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 levelled tariff for such a project shall be computed by adjusting the generic levelled tariff determined by the Commission in inverse proportion to be levelled values of net saleable energy under two structure 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 8.64% 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.

**Discount Factor.-**

26. 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 considered for the purpose of levelled tariff computation. The discount factor has been calculated on this basis by following the normative debt equity ratio (70:30). For this purpose, the interest rate for the loan component (i.e. 70%) of capital cost has been considered as 10.00% which has been adjusted for the corporate tax. For equity component (i.e. 30% of the capital cost) the post tax RoE has been computed as 13.56% by adjusting the normative RoE of 17.00% per annum with average of MAT rate as on 1<sup>st</sup> April, 2016 i.e. 20.26% per annum. The discounted factor has been calculated as



8.64%. The Corporate tax has been taken as 34.61% (30% IT rate+ 12% Surcharge+ 3% Education cess).

**Rounding.-**

27. 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.

**Generic Levellised Tariff and Associated Terms and Conditions.-**

28. In light of the discussion made in the preceding paragraphs, the generic levellised tariffs and the associated terms and conditions for various categories of SHPs are proposed to be determined as under:-

A. The generic levellised tariffs for various categories of SHPs shall be as under:-

Category	Capacity	Generic levellised Tariff in Rs./kWh of net saleable energy.
Col. 1	Col. 2	Col.3
(i)	Above 100 kW to 2 MW capacity	3.79
(ii)	Above 2 MW to 5 MW capacity	3.61
(iii)	Above 5 MW to 25 MW capacity	3.44

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

(a) adjustment on account of differential rate of capital subsidy and grants, budgetary support and generation based incentives.

**Category –I (Above 100 kW to 2 MW Capacity)**

Description	Increase in Paise/kWh on account of different rate of capital subsidy
If the capacity is more than 100 kW to 2000 kW	No increase

**Category –II (Above 2 MW to 5 MW Capacity)**

Description	Increase in Paise/kWh on account of different rate of capital subsidy
If the capacity is more than 2000 kW but does not exceed 5000 kW	=7/37.50* (112.5-“Y”) Paise/kWh

**Category –III (Above 5 MW to 25 MW Capacity)**

Description	Increase in Paise/kWh on account of different rate of capital subsidy
If the capacity is more than 5000 kW but does not exceed 25000 kW	=10/60 * (75-“Y”) Paise/kWh

In all above cases, “Y”=75% of the capital subsidy/MW as per Col-4 of Appendix-D for the project for which Generic Levellised Tariff is to be determined.

Note: The adjustment on account of grant or budgetary support and the generation based incentive if any, shall be made separately on case to case basis in accordance with the regulation 22 of the RE Tariff Regulations, 2017. Similarly the adjustments on account of additional MNRE subsidy to Government Sector Projects shall also be made separately on case to case basis. The formulae given in this para (B) above shall not be applicable in any of such cases.

(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 to 5 MW capacity	7% for first 12 years and 13% for the remaining 28 years .
(iii)	Above 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 25 . 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 para(a) above.

(c) **Rounding:** The tariff worked out after carrying out the adjustments on the above lines shall be rounded to the nearest Paisa. The fraction of 0.5 and above shall be rounded to the next higher value and the fraction of less than 0.5 shall be ignored.

- C. These tariffs shall be subject to the RE Tariff Regulations and the orders as may be issued by the Commission thereunder.
29. The detailed computations for generic levellised tariff for the SHPs under the three categories (I, II and III) as well as illustrations thereof are enclosed as per Appendices A, B and C respectively.

Tariff for SHP of Capacity above 100kW upto 2MW(at 2MW)		Appendix A Sheet- I
<b>Assumptions for Small Hydro Power</b>		
<b>Generating Capacity (MW)</b>	<b>MW</b>	<b>1</b>
<b>Project Cost</b>		
Cost/MW	Rs Lacs/MW	880.00
Project Cost	Rs Lacs	880.00
MNES Subsidy	Rs Lacs (at 1MW Capacity)	112.5
Term	Years	40
Return on Equity	%	17%
<b>Project Financing</b>		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	616.00
Equity	Rs Lacs	264.00
Term of Debt	Years	13
Moratorium	Years	0
Interest Rate	%	10.00%
<b>Depreciation</b>		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 11 Years)	%	5.28%
Rate of Depreciation (Lats 29years)	%	1.10%
<b>Operating Norms</b>		
CUF	%	55%
Availability	%	100%
Auxiliary Consumption	%	0.50%
Transformation Losses	%	0.50%
Transmission losses		0.70%
<b>O&amp;M Expenses</b>	Rs. In Lacs/ MW	33.00
<b>O&amp;M Expenses w.r.t Capital Cost</b>	%	
Annual Escalation Factor	%	5.72%
<b>Tax</b>		
Tax Rate	%	34.61%
MAT Rate	%	20.26%
Surcharge		12.00%
Cess Rate		3.00%
Effective ROE		17.00%
<b>Working Capital Norms</b>		
Receivables	Months	2
Spares	% of O&M Cost	15%
O&M Expenses	Months	1
Interest on Working Capital	%	11.00%
<b>Discount Factor</b>	%	8.64%
<b>Depreciation amount</b>		90.00%
<b>Book Depreciation rate</b>		5.28%
<b>Income Tax (MAT)</b>		20.26%
<b>Income Tax (Normal Rates)</b>		34.610%

GENERIC LEVELLISED TARIFF OF CATEGORY -I ( Above 100 KW to 2 MW )

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
Gross Generation (MU)	(MU)		4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
Auxiliary Consumption @ 1 % (.5% +.5%)	(MU)		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Net Generation (MU)	(MU)		4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77
Project Line Losses @ 0.7% (MU)	(MU)		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Saleable Energy (MU)	(MU)		4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74
Free Power	%		3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	13%	13%	13%	13%	13%	13%
Net Saleable Energy (Levellised/ Annual)	(MU)	4.433	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	4.12
Cost Structure																				
Fixed Cost																				
RoE	Rs Lacs.		44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88
Depreciation	Rs Lacs.		46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	46.46	9.69	9.69	9.69	9.69	9.69	9.69	9.69
O&M	Rs Lacs.		33.00	34.89	36.88	38.99	41.22	43.58	46.07	48.71	51.50	54.44	57.56	60.85	64.33	68.01	71.90	76.01	80.36	84.95
WC Interest	Rs Lacs.		4.12	4.02	4.02	4.03	4.04	4.06	4.08	4.11	4.15	4.19	4.26	3.71	3.86	4.02	4.20	4.38	4.57	4.78
Interest on long Term loans	Rs Lacs.		53.61	43.24	38.50	33.77	29.03	24.29	19.55	14.81	10.07	5.33	1.48	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
Total	Rs Lacs.		182.07	173.49	170.75	168.13	165.63	163.27	161.05	158.98	157.06	155.31	154.64	119.12	122.76	126.60	130.66	134.96	139.50	144.30
Fixed Cost Rs Crores)																				
RoE	Rs./ kWh		1.015	0.98	0.90	0.83	0.76	0.70	0.65	0.59	0.55	0.50	0.46	0.43	0.39	0.40	0.37	0.34	0.31	0.29
Depreciation	Rs./ kWh		0.716	1.01	0.93	0.86	0.79	0.73	0.67	0.61	0.57	0.52	0.48	0.44	0.08	0.09	0.08	0.07	0.07	0.06
O&M	Rs./ kWh		1.560	0.72	0.70	0.68	0.66	0.64	0.63	0.61	0.59	0.58	0.56	0.55	0.53	0.58	0.56	0.55	0.53	0.52
WC Interest	Rs./ kWh		0.108	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03
Interest on long Term loans	Rs./ kWh		0.391	1.17	0.87	0.71	0.57	0.45	0.35	0.26	0.18	0.11	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Cost of Generation	Rs./ kWh		3.790	3.96	3.47	3.15	2.85	2.59	2.35	2.13	1.94	1.76	1.60	1.47	1.04	1.10	1.05	0.99	0.94	0.90
Disc factor		8.64%	1.00	0.92	0.85	0.78	0.72	0.66	0.61	0.56	0.52	0.47	0.44	0.40	0.37	0.34	0.31	0.29	0.27	0.24
Discounted Rate	Rs./ kWh		3.96	3.47	3.15	2.85	2.59	2.35	2.13	1.94	1.76	1.60	1.47	1.04	1.10	1.05	0.99	0.94	0.90	0.86
Generic Levellised Tariff	Rs./ kWh	3.790																		

Generic Levellised Tarif = Rs. 3.79 /kWh

## GENERIC LEVELLISED TARIFF OF CATEGORY -I (Above 100 KW to 2 MW)

[illegible]

## **Appendix-A Sheet-IV**

### **Generic Levellised Tariffs and Associated terms and Conditions for category-I of SHPs (i.e. above 100 kW to 2 MW) as per HPERC (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017:**

The generic levellised tariff for the SHP's under this category (i.e. above 100 kW to 2 MW Capacity) shall be Rs. 3.79/kWh.

The above generic levellised tariff shall be subject to adjustments in accordance with the following subparagraphs (a) to (c):-

#### **(a) Adjustment on account of differential rate of capital subsidy and grants, budgetary support and Generation based Incentives.**

Description	Increase in Paise/kWh on account of different rate of capital subsidy
If the capacity is more than 100 kW to 2000 kW	No increase

The adjustments on account of grant or budgetary support and the generation based incentive if any, shall be made separately on case to case basis in accordance with the regulation 22 of the RE Tariff Regulations, 2017. Similarly, the adjustments on account of additional MNRE subsidy to Government Sector Projects shall also be made separately on case to case basis. The above formulae shall not be applicable in any of such cases.

#### **(b) Variation in free power structure:**

The tariffs as mentioned above account for free power (energy) @ 3% for the first 12 years and @13% for the balance tariff period of 28 years. The levellised net saleable energy for this structure of free power has been worked out as 4.433 MUs per annum per MW.

In case the structure of free power(energy) applicable for SHP for which the PPA is to be approved by the Commission is different from that considered in the tariff computation, the adjustment shall be carried out in accordance with the para 25 of this proposal. 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 sub-regulation (2) and (3) of regulation 36 of the RE Tariff Regulations, 2017 during any part of the tariff period. The adjustment on this account, if required, shall be carried out after carrying out the adjustment(s), if any, as per above.

#### **(c) Rounding:**

The tariff worked out after carrying out the adjustments on the above lines shall be rounded to the nearest Paisa. The fraction of 0.5 and above shall be rounded to the next higher value and the fraction of less than 0.5 shall be ignored.

The tariff shall be subject to the RE Tariff Regulations, 2017 and the order(s) as may be issued by the Commission thereunder.

**Appendix-A Sheet-V****ILLUSTRATIONS****Basic Data of the SHP for which Generic levellised tariff is to be computed**

1	Capacity of the Project	1.9 MW (1900 kW)
2	Free Power Structure	1% for first 12 years and 13% for remaining 28 years.

**Calculations:**

3	Category under which the SHP falls	I (Above 100kW to 2 MW)
4	Generic levellised tariff	Rs.3.79/kWh
5	Adjustment of capital subsidy as per Sheet-IV	
	for the capacity of 1900 kW	No increase
6	Tariff after adjustment under as per Sheet-IV	Rs.3.79 per kWh
7	Adjustment under as per Sheet-IV	
	Levellised net saleable energy per annum per MW as per the generic tariff as per Sheet-II	4.433 MU
	Levellised net saleable energy per annum per MW as per the permissible free power structure applicable to the project for which tariff is to be calculated (with discount factor 8.64% per annum)	4.495 MU
8	Tariff adjustment as per sheet- IV	$Rs. 3.79 \times 4.433 / 4.495$ =Rs. 3.737 /kWh
9	Tariff applicable after rounding item 8.	Rs. 3.74/kWh of net saleable energy

Tariff for SHPs 2MW to 5MW capacity (at 2MW)		Appendix B Sheet- I
<b>Assumptions for Small Hydro Power</b>		
<b>Generating Capacity (MW)</b>	<b>MW</b>	<b>1</b>
<b>Project Cost</b>		
Cost/MW	Rs Lacs/MW	<b>850.00</b>
Project Cost	Rs Lacs	850.00
MNES Subsidy	Rs Lacs/MW( at 2MW capacity)	112.5
Term	Years	40
Return on Equity	%	17%
<b>Project Financing</b>		
Project Debt	% of project cost	<b>70%</b>
Project Debt	Rs Lacs	595.00
Equity	Rs Lacs	255.00
Term of Debt	Years	<b>13</b>
Moratorium	Years	<b>0</b>
Interest Rate	%	<b>10.00%</b>
<b>Depreciation</b>		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 11 Years)	%	5.28%
Rate of Depreciation (Last 29 years)	%	1.10%
<b>Operating Norms</b>		
CUF	%	<b>55%</b>
Availability	%	<b>100%</b>
Auxiliary Consumption	%	<b>0.50%</b>
Transformation Losses	%	<b>0.50%</b>
Transmission losses		<b>0.70%</b>
<b>O&amp;M Expenses</b>	Rs. In Lacs./ MW	<b>29.00</b>
<b>O&amp;M Expenses w.r.t Capital Cost</b>	%	
Annual Escalation Factor	%	<b>5.72%</b>
<b>Tax</b>		
Tax Rate	%	34.610%
MAT Rate	%	20.26%
Surcharge		12.00%
Cess Rate		3.00%
Effective ROE		17.00%
<b>Working Capital Norms</b>		
Receivables	Months	<b>2</b>
Spares	% of O&M Cost	<b>15%</b>
O&M Expenses	Months	<b>1</b>
Interest on Working Capital	%	<b>11.000%</b>
<b>Discount Factor</b>	%	<b>8.64%</b>
<b>Depreciation amount</b>		<b>90.00%</b>
<b>Book Depreciation rate</b>		<b>5.28%</b>
<b>Income Tax (MAT)</b>		<b>20.26%</b>
<b>Income Tax (Normal Rates)</b>		<b>34.610%</b>



GENERIC LEVELLISED TARIFF OF CATEGORY -II ( Above 2MW to 5 MW)

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
Gross Generation (MU)	(MU)			4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
Auxiliary Consumption @ 1 % (.5% +.5%)	(MU)			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Net Generation (MU)	(MU)			4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77
Project Line Losses @ 0.7% (MU)	(MU)			0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Saleable Energy (MU)	(MU)			4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74
Free Power	%			7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	13%	13%	13%	13%	13%	13%
Net Saleable Energy (Levellised/ Annual)	(MU)		4.309	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.12	4.12	4.12	4.12	4.12	4.12
Cost Structure																					
Fixed Cost																					
RoE	Rs Lacs.			43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35	43.35
Depreciation	Rs Lacs.			44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	44.88	9.36	9.36	9.36	9.36	9.36	9.36	9.36
O&M	Rs Lacs.			29.00	30.66	32.41	34.27	36.23	38.30	40.49	42.81	45.25	47.84	50.58	53.47	56.53	59.76	63.18	66.80	70.62	74.66
WC Interest	Rs Lacs.			3.85	3.74	3.73	3.73	3.74	3.74	3.76	3.78	3.80	3.83	3.89	3.34	3.48	3.62	3.78	3.94	4.11	4.29
Interest on long Term loans	Rs Lacs.			51.59	41.38	36.81	32.23	27.65	23.08	18.50	13.92	9.35	4.77	1.24	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
Total	Rs Lacs.			172.67	164.01	161.18	158.46	155.85	153.35	150.98	148.73	146.63	144.67	143.94	109.52	112.72	116.09	119.66	123.44	127.43	131.65
Fixed Cost Rs Crores)																					
RoE	Rs./ kWh		1.007	0.98	0.91	0.83	0.77	0.71	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.39	0.36	0.33	0.30	0.28	0.26
Depreciation	Rs./ kWh		0.718	1.02	0.94	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.09	0.08	0.08	0.07	0.07	0.06	0.06
O&M	Rs./ kWh		1.394	0.66	0.64	0.62	0.61	0.59	0.57	0.56	0.54	0.53	0.51	0.50	0.49	0.51	0.49	0.48	0.47	0.45	0.44
WC Interest	Rs./ kWh		0.101	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Interest on long Term loans	Rs./ kWh		0.389	1.17	0.86	0.71	0.57	0.45	0.35	0.26	0.18	0.11	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Advance Against Dep.	Rs./ kWh		0.000	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			3.609	3.92	3.42	3.10	2.80	2.54	2.30	2.08	1.89	1.71	1.56	1.43	1.00	1.01	0.96	0.91	0.86	0.82
				3.609																	
Disc factor		8.64%		1.00	0.92	0.85	0.78	0.72	0.66	0.61	0.56	0.52	0.47	0.44	0.40	0.37	0.34	0.31	0.29	0.27	0.24
Discounted Rate	Rs./ kWh		3.609	3.92	3.42	3.10	2.80	2.54	2.30	2.08	1.89	1.71	1.56	1.43	1.00	1.01	0.96	0.91	0.86	0.82	0.78
Generic Levellised Tariff	Rs./ kWh	3.609																			

Generic Levellised Tariff = Rs. 3.61 /kWh



**Generic Levellised Tariffs and Associated terms and Conditions for category-II of SHPs (i.e. above 2 MW to 5 MW) as per HPERC (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017:**

The generic levellised tariff for the SHP's under this category (i.e. above 2 MW to 5 MW Capacity) shall be Rs. 3.61/kWh

The above generic levellised tariff shall be subject to adjustments in accordance with the following subparagraphs (a) to (c):-

**(a) Adjustment on account of differential rate of capital subsidy and grants, budgetary support and Generation based Incentives.**

Description	Increase in Paise/kWh on account of different rate of capital subsidy
If the capacity is more than 2000 kW but does not exceed 5000 kW	=7/37.50* (112.5-“Y”) Paise/kWh

The adjustments on account of grant or budgetary support and the generation based incentive if any, shall be made separately on case to case basis in accordance with the regulation 22 of the RE Tariff Regulations, 2017. Similarly, the adjustments on account of additional MNRE subsidy to Government Sector Projects shall also be made separately on case to case basis. The above formulae shall not be applicable in any of such cases.

**(b) Variation in free power structure:**

The tariffs as mentioned above account for free power (energy) @ 7 % for the first 12 years and @13% for the balance tariff period of 28 years. The levellised net saleable energy for this structure of free power has been worked out as 4.309 MUs per annum per MW.

In case the structure of free power(energy) applicable for SHP for which the PPA is to be approved by the Commission is different from that considered in the tariff computation, the adjustment shall be carried out in accordance with the para 25 of this proposal. 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 sub-regulation (2) and (3) of Regulation 36 of the RE Tariff Regulations, 2017 during any part of the tariff period. The adjustment on this account, if required, shall be carried out after carrying out the adjustment(s), if any, as per above.

**(c) Rounding:**

The tariff worked out after carrying out the adjustments on the above lines shall be rounded to the nearest Paisa. The fraction of 0.5 and above shall be rounded to the next higher value and the fraction of less than 0.5 shall be ignored.

The tariff shall be subject to the RE Tariff Regulations, 2017 and the order(s) as may be issued by the Commission thereunder.

**Appendix-B Sheet-V****ILLUSTRATIONS****Basic Data of the SHP for which Generic levelled tariff is to be computed**

1	Capacity of the Project	4500 kW (4.5 MW)
2	Free Power Structure	1% for first 12 years and 13% for remaining 28 years.

**Calculations:**

3	Category under which the SHP falls	II (Above 2 MW to 5 MW)
4	Generic levelled tariff	Rs.3.61/kWh
5	Adjustment under as per Sheet-IV	
	(i) for the capacity of 4500 kW	=7/37.50* (112.5-“Y”) Paise/kWh
	Where ‘Y’=75% capital subsidy/MW (in lac Rs.)as per Column 4 of Appendix-D i.e. for 4.5 MW (4500 kW) =83.33 lakhs	
	(ii)	=7/37.50* (112.5- 83.33) =5.45 Paise/kWh = Rs. 0.055/ kWh
6	Tariff after adjustment as per Sheet-IV (4+5)	Rs. 3.67 per kWh
7	Adjustment under as per Sheet-IV	
	Levelled net saleable energy per annum per MW as per the generic tariff as per sheet-II	4.309 MUs
	Levelled net saleable energy per annum per MW as per the permissible free power structure applicable to the project for which tariff is to be calculated (with discount factor 8.64% per annum)	4.495 MU
8	Tariff after adjustment as per Sheet- IV	Rs. 3.67*4.309/4.495 = Rs. 3.518/kWh
9.	Tariff applicable after rounding item 8.	Rs. 3.52/kWh of net saleable energy

Tariff for SHPs Above 5MW to 25MW (at 5MW)		Appendix C Sheet- I
<b>Assumptions for Small Hydro Power</b>		
<b>Generating Capacity (MW)</b>	<b>MW</b>	<b>1</b>
<b>Project Cost</b>		
Cost/MW	Rs Lacs/MW	800.00
Project Cost	Rs Lacs/MW	800.00
MNES Subsidy (at 5MW Capacity)	Rs Lacs/MW	75
Term	Years	40
Return on Equity	%	17%
<b>Project Financing</b>		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	560.00
Equity	Rs Lacs	240.00
Term of Debt	Years	13
Interest Rate	%	10.000%
<b>Depreciation</b>		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 12 Years)	%	5.28%
Rate of Depreciation (Lats 28 years)	%	0.95%
<b>Operating Norms</b>		
CUF	%	55%
Availability	%	100%
Auxiliary Consumption	%	0.50%
Transformation Losses	%	0.50%
Transmission losses		0.70%
<b>O&amp;M Expenses</b>	Rs. Lacs/ MW	24.00
<b>O&amp;M Expenses w.r.t Capital Cost</b>	%	
Annual Escalation Factor	%	5.72%
<b>Tax</b>		
Tax Rate	%	34.61%
MAT Rate	%	20.26%
Surcharge		12.00%
Cess Rate		3.00%
Effective ROE		17.00%
<b>Working Capital Norms</b>		
Receivables	Months	2
Spares	% of O&M Cost	15%
Escalation Factor for Spares	%	0%
O&M Expenses	Months	1
Interest on Working Capital	%	11.000%
<b>Discount Factor</b>	%	8.64%
<b>Depreciation amount</b>		90.00%
<b>Book Depreciation rate</b>		5.28%
<b>Income Tax (MAT)</b>		20.26%
<b>Income Tax (Normal Rates)</b>		34.610%

GENERIC LEVELLISED TARIFF OF CATEGORY -III (Above 5 MW to 25 MW)

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
Gross Generation (MU)	(MU)			4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
Auxiliary Consumption @ 1 % (.5% +.5%)	(MU)			0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Net Generation (MU)	(MU)			4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77
Project Line Losses @ 0.7% (MU)	(MU)			0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Saleable Energy (MU)	(MU)			4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74
Free Power	%			13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Net Saleable Energy (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
Cost Structure																					
Fixed Cost																					
RoE	Rs Lacs.			40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80
Depreciation	Rs Lacs.			42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	7.61	7.61	7.61	7.61	7.61	7.61
O&M	Rs Lacs.			24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78
WC Interest	Rs Lacs.			3.51	3.42	3.41	3.40	3.39	3.39	3.39	3.39	3.41	3.42	3.44	3.50	2.97	3.09	3.21	3.35	3.49	3.64
Interest on long Term loans	Rs Lacs.			50.10	42.04	37.73	33.42	29.12	24.81	20.50	16.19	11.88	7.58	3.27	0.56	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
Total	Rs Lacs.			160.64	153.87	151.00	148.22	145.53	142.93	140.44	138.05	135.78	133.63	131.61	131.35	98.16	100.96	103.91	107.04	110.34	113.83
Fixed Cost Rs Crores)																					
RoE	Rs./ kWh		0.989	0.99	0.91	0.84	0.77	0.71	0.65	0.60	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.26	0.24
Depreciation	Rs./ kWh		0.734	1.02	0.94	0.87	0.80	0.74	0.68	0.62	0.57	0.53	0.49	0.45	0.41	0.07	0.06	0.06	0.05	0.05	0.05
O&M	Rs./ kWh		1.186	0.58	0.57	0.55	0.54	0.52	0.51	0.49	0.48	0.47	0.46	0.44	0.43	0.42	0.41	0.40	0.39	0.38	0.37
WC Interest	Rs./ kWh		0.092	0.09	0.08	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.02	0.02	0.02	0.02
Interest on long Term loans	Rs./ kWh		0.434	1.21	0.94	0.78	0.63	0.51	0.40	0.30	0.22	0.15	0.09	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Cost of Generation	Rs./ kWh		3.436	3.90	3.43	3.10	2.80	2.53	2.29	2.07	1.87	1.70	1.54	1.39	1.28	0.88	0.83	0.79	0.75	0.71	0.67
Disc factor		8.64%		1.00	0.92	0.85	0.78	0.72	0.66	0.61	0.56	0.52	0.47	0.44	0.40	0.37	0.34	0.31	0.29	0.27	0.24
Discounted Rate	Rs./ kWh			3.90	3.43	3.10	2.80	2.53	2.29	2.07	1.87	1.70	1.54	1.39	1.28	0.88	0.83	0.79	0.75	0.71	0.67
Generic Levellised Tariff	Rs./ kWh		3.436																		

Generic Levellised Tariff = Rs. 3.44 /kWh

### GENERIC LEVELLISED TARIFF OF CATEGORY -III (Above 5 MW to 25 MW)

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
Gross Generation (MU)	(MU)	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82	4.82
Auxiliary Consumption @ 1 % (.5% +.5%)	(MU)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Net Generation (MU)	(MU)	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77
Project Line Losses @ 0.7% (MU)	(MU)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Saleable Energy (MU)	(MU)	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74	4.74
Free Power	%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%	13%
Net Saleable Energy (Levellised/ 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
Cost Structure																							
Fixed Cost																							
RoE	Rs Lacs.	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80	40.80
Depreciation	Rs Lacs.	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61	7.61
O&M	Rs Lacs.	65.32	69.06	73.01	77.18	81.60	86.26	91.20	96.41	101.93	107.76	113.92	120.44	127.33	134.61	142.31	150.45	159.06	168.16	177.77	187.94	198.69	210.06
WC Interest	Rs Lacs.	3.79	3.96	4.13	4.32	4.52	4.72	4.94	5.18	5.42	5.68	5.95	6.24	6.55	6.87	7.22	7.58	7.96	8.37	8.79	9.25	9.72	10.23
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.	117.52	121.43	125.55	129.91	134.52	139.40	144.55	150.00	155.76	161.85	168.29	175.09	182.29	189.90	197.94	206.44	215.43	224.93	234.98	245.60	256.83	268.70
Fixed Cost Rs Crores)																							
RoE	Rs./ kWh	0.22	0.20	0.19	0.17	0.16	0.15	0.14	0.12	0.11	0.11	0.10	0.09	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04
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	0.36	0.35	0.34	0.33	0.32	0.31	0.30	0.29	0.29	0.28	0.27	0.26	0.26	0.25	0.24	0.24	0.23	0.22	0.22	0.21	0.21	0.20
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
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	0.64	0.61	0.58	0.55	0.53	0.50	0.48	0.46	0.44	0.42	0.40	0.38	0.37	0.35	0.34	0.32	0.31	0.30	0.29	0.28	0.27	0.26
Disc factor		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	0.08	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04
Discounted Rate	Rs./ kWh	0.64	0.61	0.58	0.55	0.53	0.50	0.48	0.46	0.44	0.42	0.40	0.38	0.37	0.35	0.34	0.32	0.31	0.30	0.29	0.28	0.27	0.26
Generic Levellised Tariff	Rs./ kWh																						

## **Appendix-C Sheet IV**

### **Generic Levellised Tariffs and Associated terms and Conditions for category-III of SHPs (i.e. above 5 MW to 25 MW) as per HPERC (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017:**

The generic levellised tariff for the SHP's under this category (i.e. above 5 MW to 25 MW Capacity) shall be Rs. 3.44/kWh.

The above generic levellised tariff shall be subject to adjustments in accordance with the following subparagraphs (a) to (c):-

#### **(a) Adjustment on account of differential rate of capital subsidy and grants, budgetary support and Generation based Incentives.**

Description	Increase in Paise/kWh on account of different rate of capital subsidy
If the capacity is more than 5000 kW but does not exceed 25000 kW	$=10/60 * (75-"Y")$ Paise/kWh

The adjustments on account of grant or budgetary support and the generation based incentive if any, shall be made separately on case to case basis in accordance with the regulation 22 of the RE Tariff Regulations, 2017. Similarly, the adjustments on account of additional MNRE subsidy to Government Sector Projects shall also be made separately on case to case basis. The above formulae shall not be applicable in any of such cases.

#### **(b) Variation in free power structure:**

The tariffs as mentioned above account for free power (energy) @ 13% for the entire tariff period of 40 years. The levellised net saleable energy for this structure of free power has been worked out as 4.123 MUs per annum per MW.

In case the structure of free power(energy) applicable for SHP for which the PPA is to be approved by the Commission is different from that considered in the tariff computation, the adjustment shall be carried out in accordance with the para 25 of the main 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 sub-regulation (2) and (3) of regulation 36 of the RE Tariff Regulations, 2017 during any part of the tariff period. The adjustment on this account, if required, shall be carried out after carrying out the adjustment(s), if any, as per above.

#### **(c) Rounding:**

The tariff worked out after carrying out the adjustments on the above lines shall be rounded to the nearest Paisa. The fraction of 0.5 and above shall be rounded to the next higher value and the fraction of less than 0.5 shall be ignored.

The tariff shall be subject to the RE Tariff Regulations, 2017 and the order(s) as may be issued by the Commission thereunder.



**Appendix-C Sheet-V****ILLUSTRATIONS****Basic Data of the SHP for which Generic levelled tariff is to be computed**

1	Capacity of the Project	21.1 MW (21100 kW)
2	Free Power Structure	13% for the entire period.

**Conclusions:**

3	Category under which the SHP falls	III (Above 5 MW to 25MW)
4	Generic levelled tariff	Rs.3.44/kWh
5	Adjustment as per Sheet-IV	
	(i) for the capacity of 21100 kW (21.1 MW)	=10/60 * (75-“Y”) Paise/kWh
	Where ‘Y’=75% capital subsidy/MW (in lac Rs.)as per Column 4 of Appendix-D i.e. for 21.1 MW (21100kW) =17.77 lakhs	
	(ii)	=10/60 * (75-17.77) =9.54 Paise/kWh
6	Tariff after adjustment as per Sheet-IV (4+5)	Rs. 3.54 per kWh
7	Adjustment on account of free power	Not applicable in this case
8	Tariff after adjustment as per Sheet-IV	Rs. 3.54/kWh

## **Appendix-D**

Per MW Amount of capital subsidy for SHPs based as per the MNRE scheme dated 2nd July, 2014

Rs in Lacs			
Capacity in MW	MNRE Capital Subsidy	Capital Subsidy/MW	75% of Capital subsidy/MW
Col-1	Col-2	Col-3= (Col-2/Col-1)	Col-4=(0.75*Col-3)
1	150	150	112.50
2	300	150	112.50
3	450	150	112.50
4	500	125	93.75
5	500	100	75.00
6	500	83.33	62.50
7	500	71.43	53.57
8	500	62.50	46.88
9	500	55.56	41.67
10	500	50.00	37.50
11	500	45.45	34.09
12	500	41.67	31.25
13	500	38.46	28.85
14	500	35.71	26.79
15	500	33.33	25.00
16	500	31.25	23.44
17	500	29.41	22.06
18	500	27.78	20.83
19	500	26.32	19.74
20	500	25.00	18.75
21	500	23.81	17.86
22	500	22.73	17.05
23	500	21.74	16.30
24	500	20.83	15.63
25	500	20.00	15.00

The values under col-4 shall be used (i.e. as value "Y" in lac Rs.) for working out the adjustment on account of the differential rate of capital subsidy for the projects above 2MW to 25MW capacity as per the formulae given in this order. In cases where the capacity of SHPs involves in fraction of MW, the value of 'Y' (in lac Rs.) in the said formulae shall be worked out on similar lines on which the values under Col-2,3 & 4 have been worked out.