

**HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION, SHIMLA**

Suo-Motu Petition No. 76/2019

**CORAM**  
**Sh. S.K.B.S. Negi**  
**Chairman**  
**Sh. Bhanu Pratap Singh**  
**Member**

Date of Order: 15.02.2020.

IN THE MATTER OF:-

**Determination of Generic Levellised Tariffs for Small Hydro Projects for 2<sup>nd</sup> control period (i.e. 1<sup>st</sup> October, 2019 to 31<sup>st</sup> March, 2020) 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 which were amended from time to time, the latest being as per the 3<sup>rd</sup> amendment of said regulations dated 11<sup>th</sup> November, 2019 notified in the Rajpatra, Himachal Pradesh on 18<sup>th</sup> November, 2019 wherein financial principles of various RE technologies for 2<sup>nd</sup> control period (i.e. 1<sup>st</sup> October, 2019 and upto 31<sup>st</sup> March, 2020) have been specified (hereinafter referred to as “RE Tariff Regulations, 2017” or “RE Regulations, 2017”).
2. The Commission, in due discharge of the mandate under regulation 14 of RE Tariff Regulations, 2017 has issued the proposal dated 06.12.2019 for the determination of Generic Levellised Tariffs for Small Hydro Projects under 2<sup>nd</sup> control period (i.e. 1<sup>st</sup> October, 2019 to 31<sup>st</sup> March, 2020).
3. The Commission invited suggestions/objections from the public on its aforesaid proposal by way of insertions in the Newspapers i.e. “Hindustan Times” and “Divya Himachal” on 8<sup>th</sup> December, 2019. The text of the said proposal was also made available on the Commission’s website: [www.hperc.org](http://www.hperc.org).
4. The Commission, vide letter dated 11.12.2019, also requested the major stakeholders including Consumer representative, State Government, Directorate of Energy, HIMURJA, HPPCL and HPSEB Ltd i.e. the Distribution Licensee to send their suggestions/objections on the aforesaid proposal.

5. The Himachal Pradesh Power Corporation Ltd., Himfed Building, BCS, Shimla-171009(HP) vide letter dated 26.12.2019 has submitted that they have no objection on the aforesaid proposal. However, written suggestions/objections were received from the following stakeholders:-

- (i) The Himalaya Power Producers Association, B-7, Sector-I, Phase-I, Main Road, New Shimla-171009(HP).
- (ii) The Bonafide Himachalies Hydro Power Development Association, Sai Bhawan, Sector-IV, Phase-II, New Shimla-171009(HP).
- (iii) M/s Swadeshi Distributors LLP, One First Floor Building, Village Guganh, Teh & Distt Chamba-176314(HP).
- (iv) M/s Jagdambey Hydro Projects LLP, One First Floor Building, Village Guganh, Teh & Distt Chamba-176314(HP).
- (v) M/s POM Hydro Energy Ltd, 131/6. Samkhetar Bazar, Mandi-175001(HP).
- (vi) The Himachal Pradesh State Electricity Board Ltd (HPSEBL), Vidyut Bhawan, Shimla-171004(HP).
- (vii) The Directorate of Energy, Shanti Bhawan, Phase-III, Sector-VI, New Shimla-09(HP).

6. A public hearing in the matter was held on 7<sup>th</sup> January, 2020. The list of participants who attended the public hearing on 7<sup>th</sup> January, 2020 is annexed as Annexure-“A”. In the said hearing, apart from reiterating the issues raised by the stakeholders in their written submissions, general comments were also made. The issues raised in the public hearing are briefly given as under:-

6.1 The representative of the Himalaya Power Producers Association, Shri S.N. Kapur stated that the proposal should be aligned with the CERC's RE Regulations keeping in view that HPSEBL is also gaining on account of green attributes attached with SHP power. The representative mainly stressed upon the adoption of Capacity Utilization Factor (CUF) for SHP at par with the CERC particularly in a scenario where State Sector projects are not able to achieve the benchmarked normative CUF. He further reiterated the issues which have already been raised by the Association in their written submission.

The other representative of Association Shri C.J. Rai stated that SHP with capacity of 5.00MW may be covered in the 2<sup>nd</sup> category of SHPs (i.e. above 2.00MW upto 5.00MW) instead of considering the same in higher capacity category. He also stated that the interruption of power evacuation is also a cause of lower CUF of existing projects and also that the interest on term loan considered in the tariff determination is on lower side as compared to the same levied by the IREDA. He further stated that at the end of useful life of the SHP the State Govt. should either buy the project back by paying 10% residual cost of the project or this residual cost may be passed through in the tariff.

- 6.2 The representative of the Bonafide Himachalies Hydro Power Development Association, Shri Rajesh Kumar Sharma stated that the hydro sector, particularly SHPs, may not achieve the capacity addition targets as per the potential. He stated that the main hurdles for the under achievement include the higher wages, royalty structure, lower tariff etc. The State Government is also losing on account of royalty, taxes and employment generation. He also cited the condition incorporated in the concept paper/proposal of the MNRE relating to the applicability of subsidy/VGF to the SHPs. He further stated that whereas the HPSEBL is charging line losses 5% to 7% for intermediate/ interim arrangements, the normative line losses are considered in the tariff calculations as 0.7%. He further suggested that the Commission may also consider, in the tariff, the impact on generation due to upstream water usage after commissioning of the project.
  - 6.3 The Consumer Representative, Shri Ramesh Chauhan stated that the consumers of the State may not be averse to give incentives to SHPs so long as the same are not given at the cost of the consumers. The delay in commissioning of the projects may be dealt in such a way that higher tariff on this account may not be passed on to the consumers.
  - 6.4 The representative of the Himachal Pradesh State Electricity Board Limited stated that comments have already been submitted in writing.
  - 6.5 The representative of the Directorate of Energy handed over the letter dated 06.01.2020 inviting reference to the GoHP letter dated 06.09.2019 suggesting that the HPERC may consider the parameters such as O&M expenses, Return on Equity, Capacity Utilization Factor etc. as per CERC Regulations.
7. We observe that most of the written comments/suggestions, including those expressed in the public hearing held on 7<sup>th</sup> January, 2020, relate to the fixation of the normative parameters and do not form the subject matter of proposal presently under consideration i.e. determination of generic levelled tariffs for small hydro projects under 2<sup>nd</sup> control period (i.e. 1<sup>st</sup> October, 2019 to 31<sup>st</sup> March, 2020). Such comments, including those contained in the GoHP letter dated 06.09.2019 as referred to by DoE, in their letter dated 06.01.2020, were duly considered by the Commission while finalizing its Order dated 11.11.2019 in the matter of formulation of the Himachal Pradesh Electricity Regulatory Commission (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) (Third Amendment), Regulations, 2019.

Even though the comments of this nature concerning the normative parameters, which in fact have already been finalised as a part of the regulations, do not merit consideration at this stage, we have duly taken note of such comments. The written comments received, including those expressed in the public hearing have been discussed in the following sub-para:-

### 7.1 **Operation & Maintenance (O&M) Expenses.-**

The stakeholders have submitted as under:-

- (i) The Himalaya Power Producers Association has submitted that O&M expenses for category of 5.00 MW to 25.00 MW have been considered as Rs. 27 Lakhs per MW, whereas, the CERC has considered as Rs. 30.18 Lakhs per MW for this category.
- (ii) The Bonafide Himachalies Hydro Power Development Association, M/s Jagdambay Hydro Projects LLP and M/s Swadeshi Distributors LLP have submitted that the O&M expenses for all categories should be as per the CERC norms.

#### **Commission's View:-**

The Commission has already specified the normative operation and maintenance expenses for the various categories of SHPs for the 2<sup>nd</sup> control period of RE Tariff Regulations, 2017. The tariffs have accordingly to be determined on the basis of normative O&M expenses so specified.

### 7.2 **Capacity Utilization Factor (CUF).-**

The stakeholders have submitted as under:-

- (i) The Himalaya Power Producers Association has submitted that even after adjusting the CERC's norm of 45% CUF with free power, the Commission has taken additional generation of 2.85% purely on normative basis which have an impact on tariffs. The projects which have already been commissioned are facing difficulty in achieving normative benchmarked CUF.
- (ii) The Bonafide Himachalies Hydro Power Development Association, M/s Jagdambay Hydro Projects LLP and M/s Swadeshi Distributors LLP have submitted that the CUF should be 45% net of free energy as per the CERC norms.

#### **Commission's View:-**

The normative CUF has been specified in the regulations for 2<sup>nd</sup> control period and has to be accounted for accordingly. As a matter of fact, the justification for adopting a marginally higher CUF as compared to that adopted by the CERC was also duly elaborated at the time of finalisation of 3<sup>rd</sup> amendment of RE Tariff Regulations, 2017, wherein the normative parameters has already been specified for the 2<sup>nd</sup> control period of RE Tariff Regulations, 2017. It is also worth mentioning that the CERC has specified the CUF net of free power, whereas, the RE Tariff Regulations, 2017 specify the CUF on gross basis.

### 7.3 **Return on Equity (RoE).-**

The stakeholders have submitted as under:-

- (i) The Bonafide Himachalies Hydro Power Development Association, M/s Jagdambay Hydro Projects LLP and M/s Swadeshi Distributors LLP have submitted that the RoE may be allowed as per the CERC norms i.e. 17.6% as per prevailing rate of MATs instead of 17%.

- (ii) The Himalaya Power Producers Association has submitted that the CERC allows RoE of 17.6% as per prevailing rates for MAT. However, the Commission has proposed the RoE as 17%. It has also been stated that useful life as per CERC for SHPs is 35 years whereas in HP this is 40 years and after initial about 13-15 years, full Income Tax will be applicable on developer and that this loss of 0.6% for 40 years to developers of SHPs and additional liability of full Income Tax will work out to be huge amount and drive away the investors particularly when such SHPs can have better options in other States where CERC regulations have been totally adopted. It has been requested that the RoE may be considered at par with the CERC Regulations.

**Commission's View:-**

- (i) The normative RoE has already been specified in the regulations for 2<sup>nd</sup> control period after considering various aspects and the aspects on which comments have been made in this regard are not the subject matter of the process under consideration.
- (ii) The 40 years useful life of the SHP specified in the regulations is as per the provisions of State Hydro Policy and subsequent provision made in the IA.

**7.4 Interconnection point/facilities its costs/O&M charges and line loss.-**

The stakeholders have submitted as under:-

- (i) The Himalaya Power Producers Association has submitted that the interconnection facilities and interconnection point have not been considered as per CERC Regulations wherein the interconnection point is to be located in project switch yard and all expenditure on project line and incoming bays is to be borne by the State Discom. This is based on the fact that the length of evacuation line varies in every project and generic tariff cannot include such variable expenditure. However, the proposed regulations for HP have put this expenditure in the scope of the Developer. With a view to keep all the generators at same level, this needs to be reviewed and either, the cost of project be enhanced to cover this expenditure or else it should be in the scope of Discom.
- (ii) The Bonafide Himachalies Hydro Power Development Association and M/s Jagdambay Hydro Projects have submitted that the cost of evacuation line and bay are in the scope of IPP as part of project cost whereas, as per the CERC RE Regulations these are not a part of capital cost. Similarly the O&M charges for line & bay and also the line losses (i.e. 0.7%) are still in the scope of the developer whereas these are also to be borne by the licensee as per the CERC RE Tariff Regulations.

### **Commission's View:-**

- (i) The aspects on which comments have been made by the stakeholders are not a subject matter of the process under consideration. However, while finalizing the 3rd amendment of RE Tariff Regulations, 2017, on such similar request of stakeholders, the Commission has observed that:-

*“We are of the view that since as per the State Hydro Policy, the project line as well as the interconnection facilities will form a part of the project, the cost of these components also form a part of the capital cost and is covered in the Normative Capital Cost..... .”*

- (ii) The normative line losses (0.7%) are not in the scope of developers as claimed in their submission. The corresponding generation to this extent is deducted while working out net saleable energy on normative basis.

### **7.5 Adjustment of subsidy.-**

The stakeholder has submitted as under:-

M/s POM Hydro Energy Limited has submitted that subsidy adjustment provisions should be applicable only if the project is eligible for subsidy i.e. if the project is not found eligible for the MNRE capital subsidy, no adjustment will be made in the tariff and further adjustment formula/provisions should not be applicable to that unit.

### **Commission's View:-**

The Regulations in this regard are quite clear. The available subsidy/incentives shall deem to be adjusted only in cases the project(s) fall under such schemes.

### **7.6 Adjustment of free power.-**

The stakeholder has submitted as under:-

M/s POM Hydro Energy Limited has submitted that levelled tariff should be worked out as per the actual free power commitment mentioned in the Implementation Agreement (IA).

### **Commission's View:-**

The aspects on which comment has been made by the stakeholder is not a subject matter of the process under consideration. However, while finalizing the 3rd amendment of RE Tariff Regulations, 2017, on such similar request of stakeholder, the Commission has observed that:-

*“As regards the limit of free power to be considered as pass through for SHPs, we observe that for tariff purposes, it has been provided as 13% based on the provisions in the National Hydro Policy/Tariff Policy of Central Government.”*

### **7.7 Difference in tariff category wise and in the 1<sup>st</sup> and 2<sup>nd</sup> control period.-**

The stakeholder has submitted as under:-

The HPSEBL has submitted that tariffs calculated/determined by the HPERC is on the higher side which varies from 17.44% to 21.33% as

compared to tariffs for 1<sup>st</sup> control period. It has also been submitted that the proposed tariff for category-I SHPs is higher than that for II<sup>nd</sup> and III<sup>rd</sup> category SHPs by 11 Paise/kWh and 34 paise/kWh as against 18 paise/kWh and 17 paise/kWh as per the tariff for the first control period.

**Commission's View:-**

At the time of finalization of the norms/parameters for 2<sup>nd</sup> control period vide 3<sup>rd</sup> amendment of RE Tariff Regulations, 2017, the HPSEBL did not make any specific request to reconsider the normative parameters/norms proposed for the SHP tariff determination. The issue raised by the HPSEBL at this stage does not have any relevance as far as present regulatory process is concerned. As far as the inter category difference in tariffs is concerned, the same is attributed to the reason that the proposed tariff for first control period and that proposed for the second control period does not take into account the impact of subsidy which is to be adjusted separately as per the provisions of regulations.

7.8 **Local Area Development Fund(LADF).**- The Bonafide Himachalies Hydro Power Development Association and M/s Jagdambay Hydro Projects have submitted that LADF during the construction period may not be a part of capital cost as per the CERC norms.

**Commission's View:-**

The LADF is a part of capital cost of project as per the provisions of HPERC RE Tariff Regulations, 2017. The comment made by the stakeholder is not a subject matter of the process under consideration. However, while finalizing the 3<sup>rd</sup> amendment of RE Tariff Regulations, 2017, on such similar request of stakeholders, the Commission has observed that:-

“..... the LADF payable by the IPPs during the construction of the project under the State Hydro Policy is a valid component of the project cost.”

7.9 **Depreciation.**- The Bonafide Himachalies Hydro Power Development Association, M/s Jagdambay Hydro Projects LLP and M/s Swadeshi Distributors LLP have submitted that the depreciation is being allowed as 90% over 40 years useful life of the project. However the project is to be handed over to Government at the end of Power Purchase Agreement term of 40 years as free of cost. The HPERC should allow 100% depreciation keeping in view the provisions of PPA and Hydro Policy of the State.

**Commission's View:-**

This aspect is not a subject matter of the process under consideration. However, while finalizing the 3<sup>rd</sup> amendment of RE Tariff Regulations, 2017, on such similar request of stakeholders, the Commission has observed that:-

“It is a standard practice to allow depreciation to the extent of only 90% of the capital cost and we do not find it appropriate to allow any depreciation beyond 90% of the capital cost. However, in cases where the RE projects are to be taken over by the State Government after completion of useful life of the

project, the matter regarding balance 10% depreciation may need to be addressed by the State Government as a part of State Policy.”

#### 7.10 **Additional issues raised during public hearing:-**

- (a) As far as the issue regarding loan interest rate on term loan raised by the representative of Himalayan Power Producers Association is concerned, we observe that the RE Regulations, 2017, provide for normative interest rate of 200 points above the average State Bank of India MCLR rate, which is also in-line with the CERC RE Regulations.
- (b) As far as suggestion made by the representative of the Himalaya Power Producers Association to consider 5.00MW capacity of SHP in the IInd category of SHPs (i.e. above 2.00MW upto 5.00MW), the capacity of 5.00MW has been in the category-III keeping in view the provisions contained in the CERC RE regulations.
- (c) In regard to the issue raised by the representative of Bonafide Himachalies Hydro Power Development Association to allow the impact on generation due to upstream water usage after commissioning the project, it is felt that the SHP developers should be extra vigilant while carrying out the feasibility study of their projects and fixing the capacity of their projects after taking into account the useful life of 40 years, as well as the condition(s) agreed by them in the Implementation Agreement (IA).
- (d) Regarding the comment that the line losses as 5% to 7% during the intermediate/interim arrangements by the HPSEBL, we are of the view that the licensee as well as generator should adhere to the time lines provided for making the evacuation arrangements. The interim arrangements are decided under the mutual agreements between generator and licensee(s), after taking into account the site specific considerations. The aspect on which the comment has been made is therefore, not a subject matter of the regulatory process under consideration for determining the Generic levelled tariffs.

#### 8. **Determination of Generic Levelled Tariffs.-**

In light of discussion made in the preceding paragraphs, the Commission now proceeds further to determine the generic levelled tariffs and associated terms and conditions for three categories i.e. Above 100 kW to 2 MW capacity (category-I), Above 2 MW but below 5 MW capacity (category-II) and 5 MW to 25 MW capacity (category-III) of small hydro projects for the 2<sup>nd</sup> control period (i.e. 1<sup>st</sup> October, 2019 to 31<sup>st</sup> March, 2020) under RE Regulations, 2017.

##### 8.1 **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. The tariffs are therefore being determined for the tariff period of 40 years.

##### 8.2 **Control Period or Review Period.-**

2<sup>nd</sup> proviso of sub-regulation (1) of regulation 9 of the RE Tariff Regulations, 2017 provides that the 2<sup>nd</sup> control period for determination



of tariff for SHPs shall start from 1<sup>st</sup> October, 2019 and shall end on the 31<sup>st</sup> March, 2020. 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.

### 8.3 **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 levelled tariffs for various categories of SHPs.

### 8.4 **Tariff Structure.-**

Regulation 12 of the RE Tariff Regulation, 2017 stipulates that single part levelled 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.

### 8.5 **Levelled Tariff.-**

The generic tariff shall be determined on levelled basis for the tariff period as per sub-regulation (3) of the regulation 12 of the RE Tariff Regulations, 2017.

### 8.6 **Debt Equity Ratio.-**

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

### 8.7 **Capital Cost.-**

The per MW capital costs for various categories of SHPs have been considered in accordance with regulation 34-A 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-A 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	<b>1000</b>
(ii)	Above 2 MW but below 5 MW capacity	<b>1000</b>
(iii)	5 MW to 25 MW capacity	<b>900</b>

## 8.8 Return on Equity.-

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

## 8.9 Interest on Loan.-

The sub-regulation (1) of regulation 24-A 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-A 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- A, 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.”*

In view of above, the interest rate has been worked out as 10.37% 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
April, 2019	8.50
May, 2019	8.45
June, 2019	8.45
July, 2019	8.40
August, 2019	8.25
September, 2019	8.15
<b>Avg. for last available 6 months.</b>	<b>8.37</b>

#### 8.10 **Depreciation.-**

Regulation 25-A 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-A, 23-A and 24-A after adjusting the amount of subsidy as per regulation 22-A, 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.”*

In accordance with the above, the rate of depreciation 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.

#### 8.11 **Interest on working capital.-**

In accordance with the regulation 27-A 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.”*

Interest rate on working capital has been worked out as 11.37 % per annum 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 prior to the respective date(s) from which the generic tariff(s) are to be made applicable.

#### 8.12 **Operation and Maintenance Expenses.-**

In accordance with regulation 39-A 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	37
(ii)	Above 2 MW but below 5 MW capacity	32
(iii)	5 MW to 25 MW capacity	27

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-A of the RE Tariff Regulations, 2017.

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

The sub-regulation (1) of regulation 22-A 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 the Commission may evolve suitable mechanism(s) for incorporating impact of the subsidy component for determination or adjustment of generic levellised 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..... .”*

In accordance with sub-regulation (3) of regulation 22-A 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/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 of the RE Tariff Regulations, 2017.

Since the MNRE, Government of India is yet to notify the subsidy scheme for the SHPs for the current plan period and the SHPs coming up in this period may fall under different subsidy schemes depending upon the eligibility conditions, it is considered appropriate not to adjust any subsidy, at this stage while determining the generic levellised rate under this order and to adjust the tariff at appropriate subsequent stage after duly considering the eligibility conditions under the relevant applicable schemes of Government of India. 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 shall be made on normative basis.

**8.14 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-A of the RE Tariff Regulations, 2017 which specifies 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-A and the energy losses in the project line have been taken as 0.7% of the net generation as per regulation 38-A. The free power structure as discussed in para-8.15 of this 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.

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

The sub-regulation (1) of regulation 36-A 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).

In accordance with clause (iii) of sub-regulation (1) of regulation 35-A and sub-regulation (3) of regulation 36-A 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.

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:-

<b>Sr. No.</b>	<b>Category of small hydro project</b>	<b>Free power structure</b>
(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 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 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 9.35% 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.

#### 8.16 **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 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 10.37%. For equity component (i.e. 30%), rate of return of equity (RoE) is considered as post tax rate of 14.03% by adjusting the normative RoE of 17.00% per annum with average of MAT rate of 17.47%. The discount factor has been calculated as 9.35%. The Corporate tax has been taken as 29.12% (25% IT rate+ 12% Surcharge+4% Health and Education cess).

#### 8.17 **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.

8.18 **Generic Levellised Tariff and Associated Terms and Conditions for 2<sup>nd</sup> control period (i.e. 01.10.2019 to 31.03.2020).**-

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, without taking into consideration the subsidies available, or as may become available in due course, are determined as under:-

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

<b>Category</b>	<b>Capacity</b>	<b>Generic levellised Tariff in Rs./kWh of net saleable energy without considering subsidy.</b>
<b>Col. 1</b>	<b>Col. 2</b>	<b>Col.3</b>
(i)	Above 100 kW to 2 MW capacity	4.49
(ii)	Above 2 MW but below 5 MW capacity	4.38
(iii)	5 MW to 25 MW capacity	4.04

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) **Adjustments on account of subsidy etc.:**

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 8.13 of this order and the provisions of applicable regulations.

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

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

<b>Sr. No.</b>	<b>Category of small hydro project</b>	<b>Free power structure</b>
(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 8.15 of this order. However, it has to 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 have been 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 2<sup>nd</sup> 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 attached as per Appendices A, B and C respectively.

Sd/-

(Bhanu Pratap Singh)

**Member**

Sd/-

(S.K.B.S. Negi)

**Chairman**

Place: Shimla.

Dated: 15<sup>th</sup> February, 2020.



## Annexure-A

**List of stakeholders/participants attended the Public Hearing held on 7<sup>th</sup> January, 2020.**

<b>Sr. No.</b>	<b>Name</b>
1	Er. S.P. Jamwal, Superintending Engineer, HPSEBL
2	Er. Pritam Chauhan, Sr. XEN, HPSEBL
3	Shri. Kamlesh Saklani, Law Officer, HPSEBL
4	Er. Sandeep Sharma, AEE, HPSEBL
5	Er. Sanjay Kumar, HPSEBL
6	Er. Virender Kumar, DoE
7	Shri. Shanti Swaroop, Legal Consultant, DoE
8	Shri Ramesh Chauhan, Consumer Representative
9	Shri M.S. Srujan Kumar, Batot HEP
10	Shri. S.N Kapur, Sr. Vice President, Himalaya Power Producers Association
11	Shri. Pawan Kumar, Vice President, Himalaya Power Producers Association
12	Shri. Amarnath Kaushal, Vice President, Himalaya Power Producers Association
13	Shri. C.J. Rai, General Secretary, Himalaya Power Producers Association
14	Shri. Kamal Kishore , MD, PHPPL.
15	Shri Rajesh Kumar Sharma, President, Bonafide Himachalies Hydro Power Development Association

**Tariff for SHP of Capacity above 100kW upto 2MW(Withoust subsidy)**

**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	1000.00
Project Cost	Rs Lacs	1000.00
MNES Subsidy	Rs Lacs (at 1MW Capacity)	0
Term	Years	40
Return on Equity	%	17%
<b>Project Financing</b>		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	700.00
Equity	Rs Lacs	300.00
Term of Debt	Years	13
Moratorium	Years	0
Interest Rate	%	10.37%
<b>Depreciation</b>		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 13 Years)	%	5.28%
Rate of Depreciation (Last 27years)	%	0.79%
<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	37.00
<b>O&amp;M Expenses w.r.t Capital Cost</b>	%	
Annual Escalation Factor	%	5.72%
<b>Tax</b>		
Tax Rate	%	29.12%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
<b>Working Capital Norms</b>		
Recievables	Months	2
Spares	% of O&M Cost	15%
O&M Expenses	Months	1
Interest on Working Capital	%	11.37%
<b>Discount Factor</b>	%	9.35%
<b>Depreciation amount</b>		90.00%
<b>Book Depreciation rate</b>		5.28%
<b>Income Tax (MAT)</b>		17.47%
<b>Income Tax (Normal Rates)</b>		29.120%

**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	Y 18
Gross Generation (MU)	(MU)		4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	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	4.78	4.77	4.77	4.77	4.78	4.77	4.77	4.77	4.78	4.77	4.77	4.77	4.78	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	4.75	4.74	4.74	4.74	4.75	4.74	4.74	4.74	4.75	4.74	4.74	4.74	4.75	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)	4.444	4.59	4.59	4.59	4.61	4.59	4.59	4.59	4.61	4.59	4.59	4.59	4.61	4.12	4.12	4.12	4.13	4.12	4.12
<b>Fixed Cost</b>																				
RoE	Rs Lacs.		51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00
Depreciation	Rs Lacs.		52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	7.91	7.91	7.91	7.91	7.91
O&M	Rs Lacs.		37.00	39.12	41.35	43.72	46.22	48.86	51.66	54.61	57.74	61.04	64.53	68.22	72.13	76.25	80.61	85.22	90.10	95.25
WC Interest	Rs Lacs.		4.99	4.98	4.98	4.98	4.99	5.01	5.03	5.06	5.10	5.14	5.20	5.26	5.34	4.62	4.82	5.04	5.26	5.50
Interest on long Term loans	Rs Lacs.		69.80	64.21	58.63	53.05	47.46	41.88	36.30	30.71	25.13	19.54	13.96	8.38	2.79	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
<b>Total</b>	Rs Lacs.		215.59	212.11	208.76	205.55	202.47	199.55	196.78	194.19	191.76	189.53	187.49	185.66	184.05	139.78	144.35	149.17	154.27	159.66
<b>Fixed Cost Rs Crores)</b>																				
RoE	Rs./ kWh		<b>1.151</b>	1.11	1.02	0.93	0.85	0.78	0.71	0.65	0.59	0.54	0.50	0.45	0.41	0.42	0.39	0.35	0.32	0.30
Depreciation	Rs./ kWh		<b>0.872</b>	1.15	1.05	0.96	0.88	0.80	0.74	0.67	0.61	0.56	0.51	0.47	0.43	0.44	0.06	0.05	0.05	0.04
O&M	Rs./ kWh		<b>1.680</b>	0.81	0.78	0.75	0.73	0.70	0.68	0.66	0.63	0.61	0.59	0.57	0.55	0.60	0.58	0.56	0.54	0.52
WC Interest	Rs./ kWh		<b>0.128</b>	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	0.04	0.03	0.03	0.03
Interest on long Term loans	Rs./ kWh		<b>0.664</b>	1.52	1.28	1.07	0.88	0.72	0.58	0.46	0.36	0.27	0.19	0.12	0.07	0.02	0.00	0.00	0.00	0.00
<b>Total Cost of Generation</b>	Rs./ kWh		<b>4.494</b>	4.69	4.22	3.80	3.41	3.08	2.78	2.51	2.25	2.04	1.85	1.67	1.51	1.53	1.06	1.00	0.94	0.85
Disc factor		9.35%	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22
Discounted Rate	Rs./ kWh		4.69	4.22	3.80	3.41	3.08	2.78	2.51	2.25	2.04	1.85	1.67	1.51	1.53	1.06	1.00	0.94	0.90	0.85
<b>Generic Levellised Tariff Without Subsidy</b>	Rs./ kWh	<b>4.494</b>																		

**Generic Levellised Tariff without Subsidy = Rs. 4.49 /kWh**



Tariff for SHPs 2MW and below 5MW capacity (Without subsidy)		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	1000.00
Project Cost	Rs Lacs	1000.00
MNES Subsidy	Rs Lacs/MW	0
Term	Years	40
Return on Equity	%	17%
<b>Project Financing</b>		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	700.00
Equity	Rs Lacs	300.00
Term of Debt	Years	13
Moratorium	Years	0
Interest Rate	%	10.37%
<b>Depreciation</b>		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 13 Years)	%	5.28%
Rate of Depreciation (Last 27 years)	%	0.79%
<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	32.00
<b>O&amp;M Expenses w.r.t Capital Cost</b>	%	
Annual Escalation Factor	%	5.72%
<b>Tax</b>		
Tax Rate	%	29.120%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
<b>Working Capital Norms</b>		
Receivables	Months	2
Spares	% of O&M Cost	15%
O&M Expenses	Months	1
Interest on Working Capital	%	11.370%
<b>Discount Factor</b>	%	9.35%
<b>Depreciation amount</b>		90.00%
<b>Book Depreciation rate</b>		5.28%
<b>Income Tax (MAT)</b>		17.47%
<b>Income Tax (Normal Rates)</b>		29.120%

**GENERIC LEVELLISED TARIFF OF CATEGORY -II ( Above 2MW and below 5 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	
Gross Generation (MU)	(MU)		4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	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	4.78	4.77	4.77	4.77	4.78	4.77	4.77	4.77	4.78	4.77	4.77	4.77	4.78	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	4.75	4.74	4.74	4.74	4.75	4.74	4.74	4.74	4.75	4.74	4.74	4.74	4.75	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)	4.316	4.40	4.40	4.40	4.42	4.40	4.40	4.40	4.42	4.40	4.40	4.40	4.42	4.12	4.12	4.12	4.13	4.12	4.12	
<b>Fixed Cost</b>																					
RoE	Rs Lacs.		51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	51.00	
Depreciation	Rs Lacs.		52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	7.91	7.91	7.91	7.91	7.91	
O&M	Rs Lacs.		32.00	33.83	35.77	37.81	39.97	42.26	44.68	47.23	49.94	52.79	55.81	59.00	62.38	65.95	69.72	73.71	77.92	82.38	
WC Interest	Rs Lacs.		4.76	4.74	4.72	4.71	4.70	4.71	4.72	4.74	4.76	4.80	4.84	4.89	4.15	4.32	4.51	4.70	4.90		
Interest on long Term loans	Rs Lacs.		69.80	64.21	58.63	53.05	47.46	41.88	36.30	30.71	25.13	19.54	13.96	8.38	2.79	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	
<b>Total</b>	Rs Lacs.		210.36	206.58	202.92	199.37	195.94	192.64	189.48	186.47	183.60	180.90	178.37	176.02	173.86	129.01	132.95	137.12	141.53	146.20	
<b>Fixed Cost Rs Crores)</b>																					
RoE	Rs./ kWh		<b>1.183</b>	1.16	1.06	0.97	0.88	0.81	0.74	0.68	0.62	0.57	0.52	0.47	0.43	0.42	0.39	0.35	0.32	0.30	0.27
Depreciation	Rs./ kWh		<b>0.906</b>	1.20	1.10	1.00	0.91	0.84	0.77	0.70	0.64	0.59	0.54	0.49	0.45	0.44	0.06	0.05	0.05	0.05	0.04
O&M	Rs./ kWh		<b>1.479</b>	0.73	0.70	0.68	0.65	0.63	0.61	0.59	0.57	0.55	0.54	0.52	0.50	0.52	0.50	0.48	0.47	0.45	0.44
WC Interest	Rs./ kWh		<b>0.121</b>	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	0.03	0.03	0.03	0.03
Interest on long Term loans	Rs./ kWh		<b>0.692</b>	1.58	1.33	1.11	0.92	0.75	0.61	0.48	0.37	0.28	0.20	0.13	0.07	0.02	0.00	0.00	0.00	0.00	
Advance Against Dep.	Rs./ kWh		<b>0.000</b>	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	
<b>Total Cost of Generation</b>	Rs./ kWh		<b>4.381</b>	4.78	4.29	3.85	3.45	3.11	2.80	2.52	2.26	2.04	1.84	1.66	1.49	1.44	0.98	0.92	0.87	0.82	0.78
			4.381																		
Disc factor		9.35%	1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22	
Discounted Rate	Rs./ kWh		4.381	4.78	4.29	3.85	3.45	3.11	2.80	2.52	2.26	2.04	1.84	1.66	1.49	1.44	0.98	0.92	0.87	0.82	0.78
<b>Generic Levellised Tariff without Subsidy</b>	Rs./ kWh	<b>4.38</b>																			

**Generic Levellised Tariff without Subsidy = Rs. 4.38 /kWh**



Tariff for SHPs 5MW to 25MW (Without subsidy)		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	900.00
Project Cost	Rs Lacs/MW	900.00
MNES Subsidy (For 5MW)	Rs Lacs/MW	0
Term	Years	40
Return on Equity	%	17%
<b>Project Financing</b>		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	630.00
Equity	Rs Lacs	270.00
Term of Debt	Years	13
Interest Rate	%	10.370%
<b>Depreciation</b>		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 13 Years)	%	5.28%
Rate of Depreciation (Lats 27 years)	%	0.79%
<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	27.00
<b>O&amp;M Expenses w.r.t Capital Cost</b>	%	
Annual Escalation Factor	%	5.72%
<b>Tax</b>		
Tax Rate	%	29.12%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
<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	%	11.370%
<b>Discount Factor</b>	%	9.35%
<b>Depreciation amount</b>		90.00%
<b>Book Depreciation rate</b>		5.28%
<b>Income Tax (MAT)</b>		17.47%
<b>Income Tax (Normal Rates)</b>		29.120%



**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	
Gross Generation (MU)	(MU)		4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	4.82	4.82	4.82	4.83	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	4.78	4.77	4.77	4.77	4.78	4.77	4.77	4.77	4.78	4.77	4.77	4.77	4.78	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	4.75	4.74	4.74	4.74	4.75	4.74	4.74	4.74	4.75	4.74	4.74	4.74	4.75	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)	4.123	4.12	4.12	4.12	4.13	4.12	4.12	4.12	4.13	4.12	4.12	4.12	4.13	4.12	4.12	4.12	4.13	4.12	4.12	
<b>Fixed Cost</b>																					
RoE	Rs Lacs.		45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	45.90	
Depreciation	Rs Lacs.		47.52	47.52	47.52	47.52	47.52	47.52	47.52	47.52	47.52	47.52	47.52	47.52	47.52	7.12	7.12	7.12	7.12	7.12	
O&M	Rs Lacs.		27.00	28.54	30.18	31.90	33.73	35.66	37.70	39.85	42.13	44.54	47.09	49.78	52.63	55.64	58.83	62.19	65.75	69.51	
WC Interest	Rs Lacs.		4.20	4.18	4.16	4.14	4.13	4.12	4.12	4.13	4.14	4.15	4.17	4.20	4.24	3.56	3.71	3.86	4.03	4.20	
Interest on long Term loans	Rs Lacs.		62.82	57.79	52.77	47.74	42.72	37.69	32.67	27.64	22.61	17.59	12.56	7.54	2.51	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.		187.44	183.94	180.52	177.21	174.00	170.89	167.91	165.04	162.30	159.70	157.25	154.94	152.80	112.23	115.55	119.07	122.80	126.73	
<b>Fixed Cost Rs Crores)</b>																					
RoE	Rs./ kWh		<b>1.113</b>	1.11	1.02	0.93	0.85	0.78	0.71	0.65	0.59	0.54	0.50	0.46	0.42	0.38	0.35	0.32	0.29	0.27	0.24
Depreciation	Rs./ kWh		<b>0.865</b>	1.15	1.05	0.96	0.88	0.81	0.74	0.67	0.62	0.56	0.52	0.47	0.43	0.39	0.05	0.05	0.05	0.04	0.04
O&M	Rs./ kWh		<b>1.286</b>	0.66	0.63	0.61	0.59	0.57	0.55	0.54	0.52	0.50	0.48	0.47	0.45	0.44	0.42	0.41	0.39	0.38	0.37
WC Interest	Rs./ kWh		<b>0.109</b>	0.10	0.09	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.02	0.02	0.02
Interest on long Term loans	Rs./ kWh		<b>0.666</b>	1.52	1.28	1.07	0.88	0.73	0.59	0.46	0.36	0.27	0.19	0.12	0.07	0.02	0.00	0.00	0.00	0.00	
<b>Total Cost of Generation</b>	Rs./ kWh		<b>4.039</b>	4.55	4.08	3.66	3.28	2.95	2.65	2.38	2.14	1.93	1.73	1.56	1.40	1.27	0.85	0.80	0.75	0.71	0.67
Disc factor		9.35%		1.00	0.91	0.84	0.76	0.70	0.64	0.58	0.53	0.49	0.45	0.41	0.37	0.34	0.31	0.29	0.26	0.24	0.22
Discounted Rate	Rs./ kWh			4.55	4.08	3.66	3.28	2.95	2.65	2.38	2.14	1.93	1.73	1.56	1.40	1.27	0.85	0.80	0.75	0.71	0.67
<b>Generic Levellised Tariff without Subsidy</b>	Rs./ kWh																				

**Generic Levellised Tariff without Subsidy = Rs. 4.04 /kWh**

