

HIMACHAL PRADESH ELECTRICITY REGULATORY COMMISSION, SHIMLA

Suo-Motu Petition No. 08/2021

CORAM

**Sh. Devendra Kumar Sharma
Chairman**

**Sh. Bhanu Pratap Singh
Member**

IN THE MATTER OF:-

Determination of generic levelled tariff for Small Hydro Projects upto 100 kW (01.04.2021 to 30.09.2023) as per the first proviso of sub-regulation(2) of Regulation 14 of Himachal Pradesh Electricity Regulatory Commission (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017.

ORDER

1. The Commission notified the Himachal Pradesh Electricity Regulatory Commission (Promotion of Generation from the Renewable Energy Sources and Terms and Conditions for Tariff Determination) Regulations, 2017 on 23rd November, 2017 in the Rajpatra, Himachal Pradesh and also specified the financial principles for RE technologies for 3rd control period (i.e. 01.04.2020 to 30.09.2023) vide 4th amendment of said Regulations on 8th September, 2020 as notified in the Rajpatra, Himachal Pradesh on 15th September, 2020. Further, keeping in view the policy changes made by the State Government vide notification dated 23rd August, 2017, the Commission, vide 5th amendment of said Regulations notified on 20th November, 2020, also specified the enabling provision to determine the generic levelled tariff for Small Hydro Projects (SHPs) upto 100 kW. The said Regulations of 23rd November, 2017, read with subsequent amendments have hereinafter jointly referred to as “RE Tariff Regulations, 2017”.
2. The Commission, after taking into consideration the Policy changes made by the State Government and enabling provision under first proviso of sub-regulation (2) of Regulation 14 of RE Tariff Regulations, 2017 issued the proposal dated 10.02.2021 for determination of generic levelled tariff, alongwith other associated terms and conditions, for Small Hydro Projects upto 100 kW for the control period (i.e. 01.04.2021 to 30.09.2023).
3. The Commission invited suggestions/objections from the public on its aforesaid proposal by way of insertions in the Newspapers i.e. “Amar Ujala” and “Hindustan Times” on 12.02.2021. The text of the said proposal was also made available on the Commission’s website: www.hperc.org.

4. The Commission, vide letter dated 15.02.2021, also requested the major stakeholders including the State Government, Directorate of Energy, HIMURJA, HPPCL, the Discom (HPSEB Ltd.), the Associations of Industrial consumers and the Consumer representative to send their suggestions/objections on the aforesaid proposal.
5. The written suggestions/objections were received from the following stakeholders:-
 - (i) Shri. Amit Walia, Lavanya (100 kW) MHEP, Near Law College HPR Regional Centre, Mohli, Khanyara, Dharamshala.
 - (ii) Shri. Ramesh Chauhan, Consumer Representative, Himanshu Cottage, Cemetery Road, Sanjauli, Shimla-171006.
6. A public hearing, through video conferencing, in the matter was held on 19.03.2021. The list of participants is annexed at **Annexure-“A”**. In the said hearing, following views were expressed by the participants:-
 - 6.1 Shri. Amit Walia representative of the Lavanya (100 kW) MHEP, apart from reiterating the issues raised in the written submissions, stated that the proposal for determination of generic levelled tariff for the SHPs upto 100 kW now moved by the Commission, pursuant to the Policy decision notified by the State Government to provide for sale of power from such projects, envisages the tariff which is lower than even that for the projects of higher capacities. It was mentioned that the proposed tariff needs to be increased to make these micro hydel projects viable and self sustainable. It was stated by him that in the adjoining State of Uttarakhand, the tariff for such plants is about Rs. 6.00 per unit. He further high-lighted the following points:-
 - (i) For the Collateral free loan for MSME, the Credit Fund Trust for Micro and Small Enterprises set up by the Govt. of India charges additional 3% annual interest. As such, the developer has to pay cumulatively higher interest rate annually for availing loan;
 - (ii) The specified fee of Rs. 2 Lakh for grant of connectivity to small hydro projects upto 100 kW needs to be reduced;
 - (iii) The Small Hydro Projects upto 100 kW are not getting any subsidy;
 - (iv) Since these projects are located in remote areas and the developer(s) face difficulty to retain skilled/trained man power to run these projects during the useful life, higher O&M charges need to be considered;

- (v) The bank guarantee amounting to Rs. 4 Lacs initially taken by the Government of HP/HIMURJA and its annual renewal involves additional financial burden. As such the same should be discontinued.

6.2 Shri K.L. Thakur, Director, HIMURJA confirmed that no comments have been submitted by them in writing. He however, raised the following issues:-

- (i) Since the HIMURJA allotted the projects upto 100 kW under the scheme of micro hydel projects and the category of SHPs may not cover such projects, the title of the proposal should be changed from 'Small Hydro Projects upto 100 kW' to Micro Hydel Projects upto 100 kW';
- (ii) Since the Implementation Agreements for such projects provide for free power @ 2% for first 12 years and @ 12% for the remaining useful life of the project(s), the Commission may consider the free power for these projects in tariff determination accordingly;
- (iii) The words Solar PV Projects appearing in para 4.9 of the proposal, needs to be changed as this appears to be typographical mistake. It was confirmed during the public hearing itself that this typographical error shall be rectified in the final order.
- (iv) In para 4.12 of the proposal, the surcharge on the corporate tax should be considered as 0.12% instead of 12%.

7.0 The Commission now proceeds to consider the suggestions made by the stakeholders in their written submissions as well as in the oral submissions made during the public hearing. The Commission observes that the financial parameters have already been specified as a part of the regulations and do not form the subject matter of proposal presently under consideration. The present proposal is basically limited to fixation of the technological parameters and determination of generic levelled tariff, along with the associated conditions thereof, for Small Hydro Projects upto 100 kW for the control period (i.e. 01.04.2021 to 30.09.2023) in pursuance of the provisions of the RE Tariff Regulations, 2017. However, in the written/oral submissions made by the participants, comments have been made on financial parameters also. Such comments on the financial parameters may therefore not merit consideration. The written comments received, including the views expressed in the public hearing, have however been briefly discussed in the following sub-paragraphs:-

7.1 **Capital Cost.-**

- (i) The Lavanya (100 kW) MHEP have submitted that:-

- (a) The break-up of per Mega Watt costing may be clarified as the Commission has considered project cost for small HEPs upto 100 kW as Rs. 1800 Lacs/MW and the project cost of small hydro project above 100 kW capacity is considered as Rs. 1100 Lacs/MW;
 - (b) The interest during construction (IDC) is also not considered by the Commission;
 - (c) The Land cost varies as per the various site conditions and right of way constraints;
 - (d) The Small Hydro Projects upto 100 kW capacity are not getting any subsidy.
- (ii) The Consumer Representative has submitted that.-
- (a) The normative capital cost has been taken as Rs 180 Lacs for the Small Hydro Projects up to 100 kW which is very much on the higher side. The infrastructure requirement for setting up a small hydro project up to 100 kW capacity may be less than that for the Small Hydro Projects above 100 kW;
 - (b) The Small Hydro Projects upto 100 kW capacity are set-up even in the Atta Ghrats of rural environment and require less water intake infrastructure. Further, the capital cost shall be shared with commercial ventures like atta ghrats etc and the same is also required to be considered while fixing/revising the capital cost. Such projects are also likely to be out of mandatory water discharge requirements which may also avoid the need for monitoring structure which shall otherwise form part of capital cost;
 - (c) The only requirement shall be of electrical infrastructure which will also be maximum on 11 kV level and easily integrable with the local Distribution lines. There is no requirement for dedicated lines for integration with the distribution lines of the Licensee which otherwise is part of capital cost and even if the same is required, the normative cost for same shall also be quite less;
 - (d) The capital cost for Small Hydro Projects upto 100 kW capacity should be quite less than the Rs 1100 Lacs kept for projects above 100 kW capacity and needs to be reduced considerably. The tariff worked out, therefore, may further be adjusted proportionally.

Commission's View:-

- (i) (a) Keeping in view the range of capacity of such projects, the normative capital cost has been proposed in terms of per 100 kW capacity instead of per MW capacity. The capital cost when converted into per MW capacity works out to be higher by about 63% as compared to the same for the SHPs above 100 kW. The normative capital cost has been proposed for the project as a whole. As such component wise cost has not been specified. The normative cost has however otherwise been proposed based on the inputs received from Directorate of Energy.
- (b) The Interest During Construction (IDC) already stands considered as a part of the normative capital cost and does not require separate consideration.
- (c) As far as variation in the land cost from site to site is concerned, the same can be addressed only in the project specific tariff determination and not in the generic levellised tariff determination process which is based on normative parameters.
- (d) It has already been clarified in the proposal that the tariff does not include any Incentive and/or Subsidy and/or grant/Budgetary support by the Central/State Government. Any adjustment on this account shall be made only if the subsidy is available in any of the scheme(s).
- (ii) The normative capital cost of Rs. 180 lacs per 100 kW is based on the relevant inputs and has been proposed after taking into account the various related factors. As regards the submission of consumer representative that the capital cost of Small Hydro Projects upto 100 kW capacity, which are set-up even in Atta Ghrats of rural environment, should be lower than Rs. 1100 per MW, the Commission is of the view that in order to obtain regular output from such projects, proper designing has to be done and considerable infrastructure is required to be built for such projects also. Moreover the power from such projects, shall have to be evacuated at 11 kV level, which may also need higher per MW investment. As such, the suggestion given by the Consumer Representative to reduce the normative cost is not acceptable.

In view of above, the Commission is of the view that the capital cost, as proposed by the Commission, is reasonable and does not require any change.

7.2 Interest rate.-

- (i) M/s Lavanya (100 kW) MHEP have stated that for Collateral free loan for MSME, the Credit Fund Trust for Micro and Small Enterprises set up by the Govt. of India charges additional 3% annual interest on the existing rate of

interest. As such developer has to pay cumulatively higher interest rate annually for availing loan.

- (ii) The consumer representative has submitted that the financial parameters considered in the proposal are in order.

Commission's View:-

The financial parameters, as already specified for the 3rd Control Period in the RE Tariff Regulations, 2017, have to be taken into account for determination of generic levelled tariff for SHPs upto 100 kW. The Commission also otherwise observes that the proposed 9% interest takes into account the additional 2% interest over and above the MCLR which is quite reasonable keeping in view the prevalent market conditions. This is also otherwise in line with the CERC Regulations.

7.3 Transmission losses.-

The Lavanya (100 kW) MHEP have submitted that whereas the HPSEBL is charging line losses 3% for intermediate/interim arrangements, the normative line losses are considered in the tariff calculations as 0.7% and suggested that the Commission may direct the HPSEBL to consider 0.7% line losses on normative basis, upto interconnection point, during the period of intermediate/interim arrangements.

Commission's View:-

The comment relates to the losses charged by HPSEBL under intermediate/interim arrangements. In such cases, the various conditions are decided under the mutual agreements between generator and licensee(s), after taking into account the site specific considerations. The Commission feels that the need for interim arrangements arise only in case of delays on part of one or both the parties in relation of evacuation arrangements. The Commission is of the view that the licensee as well as the generators should not only adhere to the time lines provided for executing their respective works but should also enter into suitable arrangements well in advance.

7.4 Depreciation .-

The Lavanya (100 kW) MHEP have submitted that the generic levelled tariff is being worked out with 90% value of assets considered for depreciation during the life of the project, but as per model PPA approved by the Commission, they have to hand over the project in working condition duly renovated, free of cost, to the Government of Himachal Pradesh on expiry of the term. It has been stated that accordingly 10% scrap value will not be available to the developer on expiry of the term of PPA, which is a direct loss to the developer. It has been

suggested that either model PPA be amended directing the Government of Himachal Pradesh to pay the 10% scrap value or assets should be depreciated for full value (100%) while determining the Generic tariff.

Further, it has been added that the depreciation value of plant has been considered for 40 years of plant life, whereas, the allied equipments used in plant have different life spans as per various standards issued by the Bureau of Indian Standards like distilling columns have life span of 30 years and 11 kV outgoing panels and DCDBs are having a life span of 15 years which need to be considered by the Commission.

Commission's View:-

The issue regarding 10% scrap value has already been addressed by the Commission while finalizing the 4th amendment of RE Tariff Regulations, 2017. The Commission had viewed that it is a standard practice to allow depreciation to the extent of only 90% and it may not be appropriate to allow any depreciation beyond 90% of the value base. 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 (salvage value) may need to be addressed by the State Government as a part of State Policy.

The depreciation is considered for the project cost as a whole which includes various components such as Civil Works, Land, Survey & Investigation, Plant and Machinery, IDC, R&R, LADF, Evacuation Infrastructure, Insurance etc. Some of the components may also have life span of more than 40 years. The Commission does not find it appropriate to deviate from the standard practice followed in this regard. The provision is otherwise also in line with CERC Regulations.

7.5 Separate category of Micro Hydel Projects.-

The Director, HIMURJA suggested that since the HIMURJA allotted the projects upto 100 kW under the scheme of Micro Hydel Projects and the category of SHPs may not cover such projects, the title of the proposal should be changed from 'Small Hydro Projects upto 100 kW' to Micro Hydel Projects upto 100 kW'.

Commission's View:-

As per the RE Tariff Regulations, 2017, all the Hydro Projects upto 25 MW capacity have been categorized as Small Hydro Projects. This is in line with the CERC Regulations as well as broad classification by MNRE. Even though the SHPs upto 25 MW capacity have been further categorized under the Regulations, no separate title has been given to such projects. However, the range of capacity for each category has been mentioned wherever necessary. In

view of the above, the Commission does not feel any necessity to change the title of the proposal as this could lead to complications while interpreting the provisions of the Regulations. HIMURJA can however relate the Policy provisions with the range of capacities under respective categories. The Commission also observes that even otherwise there is no mismatch between the range of capacities under the Regulations and those under the State Policy.

7.6 **Free Power.-**

The Director, HIMURJA suggested during the public hearing that since the IAs for such projects provide for free power @ 2% for first 12 years and @ 12% for the remaining useful life of the project(s), the Commission may consider the free power for these projects in tariff determination accordingly.

Commission's View:-

The proposed tariff order already takes into account the suggested structure of free power.

7.7 **Corporate Tax.-**

The Director, HIMURJA suggested during the public hearing that in para 4.12 of the proposal surcharge on corporate tax should be considered @ 0.12% instead of 12%.

Commission's View:-

The surcharge has been taken as 12% which is in line with the provisions of Income Tax Act.

7.8 **O&M Charges.-**

The representative of Lavanya (100 kW) MHEP have stated that since the projects are located in the remote area and the developers face difficulty in retaining the skilled/trained manpower to run these projects, higher O&M charges need to be considered.

Commission's View:-

The O&M charges have already been considered at a rate higher than those applicable to SHPs above 100 kW capacity and the Commission considers the same as quite reasonable.

7.9 **Miscellaneous Issues.-**

(i) Application fee for grant of connectivity.-

The representative of Lavanya (100 kW) MHEP has stated in the public hearing that the specified fee of two Lac fee for grant of connectivity to micro hydel projects needs to be reduced.

Commission's View:-

This aspect is not a subject matter of the regulatory process under consideration for determining the generic levelled tariff. The Commission otherwise observes that the charges relate to the system studies required to be carried out by the respective Licensee before grant of connectivity to each individual project. However, the Commission may look into the matter separately.

(ii) Bank Guarantee.-

The representative of Lavanya (100 kW) MHEP stated in the public hearing that the bank guarantee amounting Rs. 4 Lacs initially taken by the Government/HIMURJA needs to be discontinued as the same, along with its annual renewal causes additional financial burden.

Commission's View:-

This aspect is not a subject matter of the regulatory process under consideration for determining the generic levelled tariff. The developer may take up the matter with the State Government/HIMURJA if they feel aggrieved.

- (iii) The representative of Lavanya (100 kW) MHEP also stated in the public hearing that the proposed rates are lower than the tariff allowed in adjoining States, as such higher tariffs need to be considered.

Commission's View:-

The Commission observes that keeping in view the difference in tariff structure, the plea that proposed rate is lower may not be factually correct. In view of the different tariff structure, the true rate cannot be compared.

8.0 Determination of Generic Levelled Tariffs.-

In light of discussion made in the preceding paragraph, and the proposal moved by the Commission, the Commission now proceeds further to fix the technology specific parameters and also to determine the generic levelled tariff and associated terms and conditions for Small Hydro Projects upto 100 kW in respect of the 3rd control period (i.e. 1st April, 2021 to 30th September, 2023) under RE Tariff Regulations, 2017.

8.1 Control period or review period.-

The first proviso of sub-regulation (2) of Regulation 14 of RE Tariff Regulations, 2017 provides that:

“Provided that for Small Hydro Projects up to 100kW, the Commission may determine the Generic Levelled Tariff for the balance period of the 3rd Control period ending on 30.09.2023 by taking into account the financial parameters specified for the RE technologies as per Chapter-IV and the technology specific

parameters as may be fixed by it in the tariff determination Order in a manner as it may find appropriate.”

The 3rd proviso of sub-regulation (1) of regulation 9 of the RE Tariff Regulations, 2017 provides that the 3rd control period for determination of tariff for SHPs shall start from 1st April, 2020 and shall end on the 30th September, 2023.

In view of above, the generic levelled tariff is being determined in the order for the period i.e. 01.04.2021 to 30.09.2023 which shall, unless amended or revised under regulations 20, continue to be applicable till the expiry of the tariff period as specified in regulation 10.

8.2 Normative Capital Cost.-

The Commission decided to fix the normative capital cost of small hydro projects upto 100 kW capacity as Rs. 180 Lacs, which shall be inclusive of all the components of the capital cost as specified in the regulations 21-B of HPERC RE Tariff Regulations, 2017 in relation to other small hydro projects.

8.3 Normative Operation and Maintenance Expenses.-

The normative per annum O&M expenses for Small Hydro Projects upto 100 kW capacity are fixed as Rs. 5.40 Lacs. These normative O&M charges shall also be escalated @ 3.84% per annum over the tariff period in line with the provisions of regulation 28-B of the RE Tariff Regulations, 2017 specified for other SHP categories.

8.4 Normative Net Saleable Energy.-

Based on the relevant inputs and also taking other relevant factors into consideration, the Commission decides to fix the normative CUF for small hydro projects upto 100 kW capacity as 70% net of 12% free power on normative basis during the tariff period. Taking into account the effect of leap year, the number of hours in a year for calculation of CUF shall be considered as 8766.

The normative auxiliary consumption and transformation loss shall be considered as 1% of gross generation and the energy loss in the project line shall be considered as 0.7% of the gross generation.

8.5 Useful Life.-

Clause (ac) of sub-regulations (1) of regulation 2 of the RE Tariff Regulations, 2017 specifies the useful life of Small Hydro Projects as 40 years. Accordingly, the useful life shall be considered as 40 years in this case also.

8.6 **Tariff Period.-**

The tariff period in terms of regulation 10 of RE Tariff Regulations, 2017 shall be considered as 40 years for such projects also.

8.7 **Levelling Tariff.-**

The generic tariff has been determined on levellised basis for the tariff period as per sub-regulations (3) of regulation 12 of the RE Tariff Regulations, 2017.

8.8 **Debt Equity Ratio.-**

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

8.9 **Return on Equity.-**

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

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

Accordingly, the normative return on equity taken as 14% in accordance with the provisions of RE Tariff Regulations, 2017. The grossed-up RoE for the first 20 years of the useful life of the project worked out as 16.96% by considering MAT @ 17.472% (15% MAT rate +12% Surcharge+ 4% Health and Education cess) and for the remaining 20 years the same grossed-up as 19.75% by considering corporate tax @ 29.12% (25% tax rate +12% Surcharge+ 4% Health and Education cess).

8.10 **Interest on Loan.-**

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

“(2) Interest Rate.-

(a) The loan amount (i.e. the debt component) arrived at in the manner indicated in the regulation 23-B shall be considered as gross normative loan for calculation of interest on loan. The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to 31st March of previous year from the gross normative loan.

(b) For the purpose of computation of tariff(s) under these Regulations, normative interest rate of two hundred (200) basis points above the average State

Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) prevalent during the last available six months, prior to the respective date(s) from which such tariff(s) the respective generic levellised tariffs are to be made applicable, shall be considered:

Provided that in case where the project specific tariff

- (c) Notwithstanding any moratorium period availed by the renewable energy generator, the repayment of loan shall be considered from the first year of the tariff period and shall be equal to the annual depreciation allowed.*
- (d) The loan repayment for a financial year or the relevant part period thereof shall be considered to have been done in the middle of that financial year or the relevant part period thereof, as the case may be.”*

In view of above, the interest rate has been worked out as 9.00% 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 control period i.e. 01.04.2021 to 30.09.2023 as shown in the table below:-

Month to	Tenor-wise MCLR of SBI
October, 2020	7.00
November, 2020	7.00
December, 2020	7.00
January, 2021	7.00
February, 2021	7.00
March, 2021	7.00
Avg. for last available 6 months.	7.00

8.11 Depreciation.-

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

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

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

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

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

Provided that purposes of project specific determination of tariff.”

Accordingly, the rate of depreciation for the first 15 years has been considered as 4.67% and the rate of depreciation from the 16th year onwards has been spread over the balance useful life as under:-

Details	Micro Hydel Projects upto 100 KW.
Useful life (in years)	40
Rate of depreciation for 15 years (%)	4.67
Rate of depreciation after first 15 years (%)	0.798

8.12 Interest on working capital.-

(i) In accordance with the regulation 27-B of the RE Tariff Regulations, 2017, the working capital requirement of the Small Hydro Projects upto 100 KW has been considered by including the following:-

- “(a) operation and maintenance expenses for one month;*
- (b) receivables equivalent to 45 days of energy charges for sale of electricity calculated on the net saleable energy corresponding to the CUF considered for tariff determination on normative basis;*
- (c) maintenance spare @ 15% of operation and maintenance expenses.”*

(ii) Interest rate on working capital has been worked out as 10.50 % per annum by the adding 350 basis points above the average of Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) of State Bank of India (SBI) prevalent during the last available six months prior to the respective date(s) from which the generic tariff(s) are to be made applicable.

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

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

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

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

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

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

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

8.14 No adjustment of incentive and/or subsidy and/or grant is being made in the tariff calculations. However, adjustment to be made in the rate on the basis of per million (rupees) of subsidy has been worked out and mentioned in the attached calculation sheet of the project and adjustment, if any, on account of the same shall be made at appropriate stage while applying the tariff after taking into account the eligibility conditions in each case. Similarly, adjustment on account of subsidy available under the Ministry of Commerce and Industry, Government of India and/or any other subsidy scheme(s) of Government (Central/State) shall also be made at appropriate stage(s) after taking into account the extent of subsidy(ies) available under such scheme(s). The adjustments on account of subsidies, where available, are to be made at the rates indicated in the calculation sheet on normative basis by considering the provisions of regulations 20-B, 23-B, 24-B, 25-B and 26-B. For this purpose the total amount (in million rupees) of incentive and/or subsidy and/or grant etc., shall be divided by the installed capacity of the projects and the per 100 KW amount (in million rupees) so arrived at, shall be multiplied by the rate indicated in the calculation sheet.

8.15 Discount Factor.-

In accordance with sub-regulation (4) of regulation 12 of the RE Tariff Regulations, 2017, the discount factor equivalent to the post tax weighted average cost of capital has been considered for the purpose of levellised tariff computation. The discount factor has been calculated on this basis of the normative debt equity ratio (70:30) and weighed average of the post tax rates for debt and equity component. For this purpose, the interest rate on the loan component (i.e. 70%) of capital cost is 9.00%. For equity component (i.e. 30%), rate of Return of Equity (RoE) is considered as post tax rate of 14%. The discount factor has been calculated as 8.67%. The Corporate tax has been taken as 29.12% (25% IT rate+ 12% Surcharge+ 4% Health and Education cess).

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

(i) In case of SHPs above 100 KW capacity, it has been specified that the free energy to be taken into account for any part of the tariff period shall not exceed 13.00%,

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. A similar limit is adopted in case of SHPs upto 100 KW also. However, since no free power for contribution towards LADF is applicable in case of SHPs upto 100 KW capacity, the free energy to be taken into account for any part of the tariff period for SHPs upto 100 KW shall not exceed 12.00%.

- (ii) Based on above and the free power structure presently being followed by the State Government for Small Hydro Projects upto 100 KW and also the fact that the free power for Local Area Development is presently not applicable to such projects, the generic levelled tariff for such projects is being determined by accounting for free energy, as per following royalty structure:-

Capacity of the Projects	Free power structure
Upto 100 KW	2% for first 12 years and 12% for the remaining 28 years.

In case where the free power structure applicable for a small hydro project 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 or KW) as per the tariff calculation and dividing the same with the levelled net saleable energy (per annum per MW or KW) worked out at discount rate of 8.67% 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.

However, for any variations in the structure of free energy after execution of PPA, the adjustment shall be computed in accordance with the following provision:-

In case of any change in the structure of free power of the project from that considered for the determination of generic levelled and in cases where the adjustment in tariff on account of variation in free power has to be carried out, the distribution licensee shall adjust the tariff as per the following formula:-

Rate payable for the month for the net saleable Energy (Rs/kWh)	= a x (100-b)/(100-c)
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Where,-

“a” is the levelled tariff (in Rs/kWh) which is required to be adjusted under this regulation

“b” is the free power (in percentage) taken into account or deemed as taken into account for the month, in “a” in the corresponding month of the tariff period by reckoning the date of commencement of operation of the project as the starting date of the tariff period.

“c” is the free power (in percentage) to be allowed in the tariff for the month subject to maximum limit of 12% free power(energy).

Where free power is applicable at different rates for different parts of a month, the permissible free power (i.e. “c”) shall be determined under this provision separately for each such part and weighted average rate for the month as a whole shall be worked out by considering the total quantum of energy for each day of the month.

8.17 Rounding.-

The tariff so worked out for Small Hydro Projects upto 100 KW has 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.

9. GENERIC LEVELLISED TARIFF AND ASSOCIATED TERMS AND CONDITIONS FOR THE SHPs UPTO 100 kW FOR THE PERIOD 01.04.2021 to 30.09.2023.-

In light of the discussion made in the preceding paragraphs, the generic levellised tariff and the associated terms and conditions for Small Hydro Projects upto 100 KW have been determined as under:-

- A. The generic levellised tariff for such Hydro Projects upto 100 kW shall be Rs. 4.62/kWh of the net saleable energy.
- B. The tariff as per item A above shall be subject to adjustments in accordance with the following sub-paragraph (a) to (c) as applicable:-
 - (a) **Adjustments on account of incentive and/or subsidy and/or grant available:**

This tariff does not take into account any adjustment(s) on account of incentive and/or subsidy and/or grant available. The adjustment on this account shall be made available before the adjustment(s) on account of subsidy(ies) available, or as may become available, under various applicable scheme(s) of Government (Central/State) shall be carried out at appropriate stage(s) in accordance with para-8.13 & 8.14 of this order and provisions of applicable Regulations.

- (b) **Variation in free power structure:** The above tariff account for free energy at the following rate.

Capacity	Free power structure
Upto 100 KW	2% for first 12 years and 12% for the remaining 28 years.

In case the structure of free power applicable for a small hydro project for which the PPA is to be approved by the Commission is different from that considered in the tariff, the adjustment shall be carried out in accordance with para-8.16 of this proposal.

However, it shall be ensured that free power (energy) to be accounted for the tariff does not exceed the permissible limits of 12.00% during any part of the tariff period. The adjustment, if any, on account of royalty structure shall be computed on the rate arrived at after carrying out adjustments as per the sub-paragraph above. This means that the adjustment of royalty structure as per sub-paragraphs shall have to be computed again if the adjustment as per sub-paragraph (a) is done at a subsequent stage i.e. after approval of the PPA.

(c) **Rounding:**

- (i) The tariff so determined for Small Hydro Projects upto 100 KW has 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) Rounding on the similar lines shall be carried out in the final rate arrived at after carrying out the adjustments as per sub-paragraphs (a)&(b) above.

(d) The above tariff has been determined for the period 01.04.2021 to 30.09.2023, which shall, unless amended or revised under Regulation 20 of the RE Tariff Regulations, 2017, continue to be applicable till the expiry of the period as specified in the Regulation 10 of the said Regulations.

10. The detailed computation for generic levelled tariff for Small Hydro Projects upto 100 KW capacity is attached as per **Appendix –“I”**.

Sd/-
(Bhanu Pratap Singh)
Member

Sd/-
(Devendra Kumar Sharma)
Chairman

Place: Shimla.

Dated: 31st March, 2021.

Annexure-A

List of stakeholders/participants attended the Public Hearing, through video conferencing, held on 19th March, 2021.

Sr. No.	Name
1	Er. K.L. Thakur, Director, HIMURJA
2	Er. Manoj Kumar, SE, Directorate of Energy
3	Shri Amit Walia, Lavanya (100 KW) MHEP
4	Er. Joginder Singh, CE (SO), HPSEBL
5	Er. Tushar Gupta, SE, HPSEBL

Tariff for SHP of Capacity upto 100kW (Without subsidy)
Appendix-A Sheet-I

Assumptions for Small Hydro Power		
Generating Capacity (MW)	MW	1
Project Cost		
Cost/MW	Rs Lacs/MW	1800.00
Project Cost	Rs Lacs	1800.00
MNES Subsidy	Rs Lacs (at 1MW Capacity)	0
Term	Years	40
Project Financing		
Project Debt	% of project cost	70%
Project Debt	Rs Lacs	1260.00
Equity	Rs Lacs	540.00
Term of Debt	Years	15
Moratorium	Years	0
Interest Rate	%	9.00%
Depreciation		
Recovery of Depreciation	%	90%
Rate of Depreciation (First 15 Years)	%	4.67%
Rate of Depreciation (Last 25years)	%	0.798%
Operating Norms		
CUF (Net of free power)	%	70.00%
Auxiliary Consumption	%	0.50%
Transformation Losses	%	0.50%
Transmission losses		0.70%
O&M Expenses	Rs. In Lacs/ MW	54.00
O&M Expenses w.r.t Capital Cost	%	
Annual Escalation Factor	%	3.84%
Tax		
Tax Rate	%	29.12%
MAT Rate	%	17.47%
Surcharge		12.00%
Cess Rate		4.00%
Effective ROE(for first 20 years)		16.96%
Effective ROE (for period beyond first 20 years)		19.75%
Working Capital Norms		
Receivables	Months	1.5
Spares	% of O&M Cost	15%
O&M Expenses	Months	1.5
Interest on Working Capital	%	10.50%
Discount Factor	%	8.67%
Depreciation amount		90.00%
Income Tax (MAT)		17.47%
Income Tax (Normal Rates)		29.12%

GENERIC LEVELLISED TARIFF OF SHP upto 100 KW capacity (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	Y 19
INSTALLED CAPACITY	(MW)																				
Net Saleable Energy at the Interconnection point after the adjustment of Free Power, Project Line Losses and Auxillary Consumption (Levellised/ Annual)	(MU)		6.481	6.72	6.72	6.72	6.72	6.72	6.72	6.72	6.72	6.72	6.72	6.72	6.03	6.03	6.03	6.03	6.03	6.03	6.03
Fixed Cost																					
RoE	Rs Lacs.		91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58	91.58
Depreciation	Rs Lacs.		84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	84.06	14.36	14.36	14.36	14.36
O&M	Rs Lacs.		54.00	56.07	58.23	60.46	62.78	65.20	67.70	70.30	73.00	75.80	78.71	81.73	84.87	88.13	91.52	95.03	98.68	102.47	106.40
WC Interest	Rs Lacs.		5.79	5.77	5.76	5.74	5.73	5.72	5.72	5.72	5.72	5.73	5.74	5.75	5.77	5.80	5.83	5.00	5.14	5.28	5.43
Interest on long Term loans	Rs Lacs.		109.62	102.06	94.50	86.94	79.38	71.82	64.26	56.70	49.14	41.58	34.02	26.46	18.90	11.34	3.78	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
Total	Rs Lacs.		345.06	339.55	334.13	328.79	323.54	318.38	313.32	308.36	303.50	298.75	294.11	289.59	285.19	280.91	276.77	205.98	209.76	213.70	217.78
Fixed Cost Rs Crores)																					
RoE	Rs./ kWh		1.457	1.36	1.25	1.15	1.06	0.98	0.90	0.83	0.76	0.70	0.65	0.59	0.55	0.56	0.52	0.47	0.44	0.40	0.37
Depreciation	Rs./ kWh		0.999	1.25	1.15	1.06	0.98	0.90	0.83	0.76	0.70	0.64	0.59	0.54	0.50	0.51	0.47	0.44	0.07	0.06	0.06
O&M	Rs./ kWh		1.325	0.80	0.77	0.73	0.70	0.67	0.64	0.61	0.58	0.56	0.53	0.51	0.49	0.52	0.50	0.47	0.45	0.43	0.41
WC Interest	Rs./ kWh		0.092	0.09	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.04	0.03	0.04	0.03	0.03	0.02	0.02	0.02
Interest on long Term loans	Rs./ kWh		0.752	1.63	1.40	1.19	1.01	0.85	0.71	0.58	0.47	0.38	0.29	0.22	0.16	0.12	0.06	0.02	0.00	0.00	0.00
Total Cost of Generation	Rs./ kWh		4.624	5.14	4.65	4.21	3.81	3.45	3.13	2.83	2.56	2.32	2.10	1.91	1.73	1.74	1.58	1.43	0.98	0.92	0.86
			4.62																		
Disc factor			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Disc factor		8.67%	1.00	0.92	0.85	0.78	0.72	0.66	0.61	0.56	0.51	0.47	0.44	0.40	0.37	0.34	0.31	0.29	0.26	0.24	0.22
Discounted Rate	Rs./ kWh		5.14	4.65	4.21	3.81	3.45	3.13	2.83	2.56	2.32	2.10	1.91	1.73	1.74	1.58	1.43	0.98	0.92	0.86	0.81

Generic Levellised Tariff Without Subsidy Rs./ kWh **4.62**

Generic Levellised Tariff (without Subsidy) at Capital Cost of Rs 180 Lac/100 kW = Rs. 4.62 /kWh

Indicative Generic Levellised Tariff by considering Subsidy/Incentive/Grant of Rs 1 million/100 kW = Rs. 4.44 /kWh

Reduction in rate for one million rupees of Subsidy/Incentive/Grant etc per 100 kW of capacity= Rs. 0.18/kWh [Please refer paras 8.13 & 8.14 of the order]

GENERIC LEVELLISED TARIFF OF SHP upto 100 KW capacity (without subsidy)

DETERMINATION OF TARIFF COMPONENT	UNIT	Y 20	Y 21	Y 22	Y 23	Y 24	Y 25	Y 26	Y 27	Y 28	Y 29	Y 30	Y 31	Y 32	Y 33	Y 34	Y 35	Y 36	Y 37	Y 38	Y 39	Y 40	
INSTALLED CAPACITY	(MW)																						
Net Saleable Energy at the Interconnection point after the adjustment of Free Power, Project Line Losses and Auxillary Consumption (Levellised/ Annual)	(MU)	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	6.03	
Fixed Cost																							
RoE	Rs Lacs.	91.58	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	106.65	
Depreciation	Rs Lacs.	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	14.36	
O&M	Rs Lacs.	110.49	114.73	119.14	123.71	128.46	133.40	138.52	143.84	149.36	155.10	161.05	167.24	173.66	180.33	187.25	194.44	201.91	209.66	217.71	226.07	234.76	
WC Interest	Rs Lacs.	5.58	5.94	6.11	6.28	6.46	6.65	6.84	7.05	7.26	7.47	7.70	7.93	8.18	8.43	8.69	8.97	9.25	9.54	9.85	10.17	10.50	
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	
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	
Total	Rs Lacs.	222.02	241.69	246.26	251.01	255.94	261.06	266.38	271.90	277.63	283.59	289.77	296.19	302.85	309.77	316.96	324.42	332.17	340.22	348.58	357.26	366.27	
Fixed Cost Rs Crores)																							
RoE	Rs./ kWh	0.31	0.34	0.31	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.13	0.12	0.11	0.10	0.10	0.09	0.08	0.08	0.07	
Depreciation	Rs./ kWh	0.05	0.05	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	
O&M	Rs./ kWh	0.38	0.36	0.34	0.33	0.31	0.30	0.29	0.27	0.26	0.25	0.24	0.23	0.22	0.21	0.20	0.19	0.18	0.17	0.17	0.16	0.15	
WC Interest	Rs./ kWh	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	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	
Total Cost of Generation	Rs./ kWh	0.76	0.76	0.71	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.41	0.38	0.36	0.34	0.32	0.30	0.28	0.27	0.25	0.24	
Disc factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Disc factor		0.21	0.19	0.17	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	0.76	0.76	0.71	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.41	0.38	0.36	0.34	0.32	0.30	0.28	0.27	0.25	0.24	

Generic Levellised Tariff Without Subsidy Rs./ kWh 4.62