CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Petition No. 2/SM/2021 (Suo-Motu)

Coram:
1. **Shri P.K. Pujari, Chairperson**
2. **Shri I.S. Jha, Member**
3. **Shri Arun Goyal, Member**
4. **Shri Pravas Kumar Singh, Member**

Date: 31st March, 2021

IN THE MATTER OF

Determination of levellised generic tariff for FY 2021-22 under Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions forTariff determination from Renewable Energy Sources) Regulations, 2020.

ORDER

1. The Commission has notified the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 (hereinafter referred to as "the RE Tariff Regulations"), which provide for terms and conditions and the procedure for determination of tariff of the following categories of Renewable Energy (RE) generating stations:

a. Small Hydro Projects;

b. Biomass Power Projects with Rankine Cycle technology;

c. Non-fossil fuel-based co-generation Project;

d. Biomass Gasifier based Power Projects;

e. Biogas based Power Projects

2. As per Regulation 7of the RE Tariff Regulations, the Commission shall determine project specific tariff for the following RE technologies:

a. Solar PV power projects, floating solar projects and solar thermal power projects;
b. Wind power projects (both on-shore and off-shore);
c. Biomass gasifier-based power projects and biogas based power projects – if a project developer opts for project specific tariff;
d. Municipal solid waste-based power projects and refuse derived fuel based power projects;
e. Renewable hybrid energy projects;
f. Renewable energy with storage projects; and
g. Any other project based on new renewable energy sources or technologies approved by MNRE.

3. Further, Regulation 8(1) of the RE Tariff Regulations provides as under:

"8. Petition and proceedings for determination of tariff
1) In case of renewable energy projects for which generic tariff has to be determined as per these regulations, the Commission shall determine such generic tariff through a Generic Tariff Order at least one month before the commencement of year for each year of the Control Period:

Provided that for first year of Control Period i.e., from 1.7.2020 to 31.3.2021, the Generic Tariff Order shall be determined upon issuance of these regulations."

4. The Commission, in discharge of the mandate under Regulation 8(1) of the RE Tariff Regulations, is required to determine the generic tariff of the RE projects for the second year of the control period (i.e. FY 2021-22) **.**

5. For this purpose, the Commission issued a Public Notice on 18.02.2021 along with a proposal for "Determination of levellised tariff tariff for FY 2021-22 under Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 and invited comments/ suggestions/ objections from the stakeholders. The last date for submission of comments/ suggestions/ objections was 05.03.2021. One stakeholder (North Bihar Power Distribution Co. Ltd) requested for extension of time for submission of comments. In view of the fact that adequate time of about 15 days has been provided for this purpose and also the fact that the order needs to be issued before 31.03.2021, any extension of time will not be appropriate.

6. In response to this public notice, written comments/ suggestions/ objections were received from Venika Hydro Projects Ltd.

7. The Commission has considered the comments/ suggestions/ objections of the stakeholders and the analyses/ decisions of the Commission thereon are as dealt with in relevant paragraphs of this order.

8. **Capital cost of Small Hydro Projects (SHP)**

Commission's Proposal

8.1 As regards the Capital Cost of Small Hydro Projects, Regulation 27 of the RE Tariff Regulations specifies as under:

*"**27. Capital Cost***

(1) The normative capital cost for small hydro projects during the first year of control period i.e. financial year 2020-21 shall be as follows:

Region	***Projects Size***	***Capital Cost (Rs.Lakh/MW)***
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	*Below 5 MW*	*1100*
	5 MW to 25 MW	*1100*
Others States	*Below 5 MW*	*780*
	5 MW to 25 MW	*900*

(2) The capital cost for small hydro projects as specified for first year of the Control Period shall remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission."

Comments Received

8.2 Venika Hydro Projects Pvt Ltd has submitted that due to increase in cost of cement, steel and fuel, the construction cost for other States in the category of 5 MW to 25 MW will exceed Rs. 1100 lakhs/MW. Therefore, it has requested to reconsider the capital cost of Rs 1100 lakhs/MW for this category.

Analysis and Decision

8.3 The capital cost for small hydro projects considered for generic tariff determination is as per the provisions of the RE Tariff Regulations. Any change in the Capital Cost is outside the scope of the present exercise of determination of levellised generic tariff. In view of the above, the Commission has decided to continue with the Capital Cost as per the proposal dated 18.02.2021.

9. Return on Equity

Commission's Proposal

9.1 As regards Rate of Return on Equity, sub-Regulation (2) of Regulation 16 of the RE Tariff Regulations specifies as under:

> ***"16. Return on Equity***
>
> *… …*
>
> *(2) 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."*

Comments Received

9.2 Venika Hydro Projects Pvt Ltd has submitted that the normative Return on Equity should be at least 16% as per standard business practices.

Analysis and Decision

9.3 The Return on Equity considered for generic tariff determination is as per the provisions of the RE Tariff Regulations. Any change in the Return of Equity is outside the scope of the present exercise of determination of levellised generic tariff. In view of the above, the Commission has decided to continue with the rate of return on equity as per the proposal dated 18.02.2021.

10. Loan Tenure

Commission's Proposal

10.1 As regards loan tenure, Clause (1) of Regulation 14 of the RE Tariff Regulations specifies as under:

"(1) Loan Tenure

For determination of generic tariff and project specific tariff, loan tenure of 15 years shall be considered."

Comments Received

10.2 Venika Hydro Projects Pvt Ltd has requested to consider the loan repayment tenure of 20 years.

Analysis and Decision

10.3 The Loan Tenure considered for generic tariff determination is as per the provisions of the RE Tariff Regulations. Any change in the tenure of the loan is outside the scope of the present exercise of determination of levellised generic tariff. In view of the above, the Commission has decided to continue with the loan tenure as per the proposal dated 18.02.2021.

11. Interest on Loan

Commission's Proposal

11.1 Regulation 14(1) of the RE Regulations specifies the rate of interest as equivalent to SBI MCLR (one-year tenor) prevalent during the last available six months plus 200 basis points, for the purpose of determination of generic and project specific tariff for RE projects. The relevant extract of RE Tariff Regulations is reproduced as under:

> *"(a) The loans arrived at in the manner indicated in Regulation 13 shall beconsidered as gross normative loan for calculation for interest on loan…..*
> *(b) For the purpose of computation of tariff, 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 shall be considered.*
> *(c) Notwithstanding any moratorium period availed by project developer, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed."*

11.2 Accordingly, the Commission has considered the rate of interest of 9 % fordetermination generic tariff for RE projects for FY 2021-22.

Comments Received

11.3 Venika Hydro Projects Pvt Ltd has suggested to consider the rate of interest as per interest rates stipulated by Indian Renewable Energy Development Agency (IREDA) as 10.45%.

Analysis and Decision

11.4 The Rate of Interest considered for generic tariff determination is as per the provisions of the RE Tariff Regulations. Any change in the Rate of Interest, is outside the scope of the present exercise of determination of levellised generic tariff. In view of the above, the Commission has decided to continue with the rate of interest per the proposal dated 18.02.2021.

12. **Operation and Maintenance (O&M) Expenses**

Commission's Proposal

12.1 Regulation 19 of the RE Tariff Regulations specifies O&M expenses in respect of RE projects as following

"***19. Operation and Maintenance Expenses***

(1) *Operation and Maintenance expenses shall be determined for the Tariff Period of theproject based on normative O&M expenses specified in these regulations for the firstyear of the Control Period."*

(2) Normative O&M expenses allowed during first year of the Control Period i.e., financial year 2020-21 under these Regulations shall be escalated at the rate of 3.84% per annum over the Tariff Period."

12.2 The normative O&M expenses for various RE technologies specified under the relevant provisions of the RE Tariff Regulations are as under:

(a) **Small Hydro Projects (SHP):** Regulation 30 of the RE Regulations provide for the normative O&M expenses for small hydro projects for the first year of the Control Period (FY 2020-21), which shall be escalated at the rate of 3.84% per annum over the tariff period for determination of the levellised tariff. Accordingly, the table below represents the O&M cost for SHP as specified by the Commission for FY 2021-22:

Region	Project Size	O&M Expenses FY 2020-21 (Rs Lakh/ MW)	O&M Expenses FY 2021-22 (Rs Lakh/MW)
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu and Kashmir, Union	Below 5 MW	41.78	43.38
	5 MW to 25 MW	31.34	32.54

Territory of Ladakh andNorth Eastern States			
Other States	Below 5 MW	33.66	34.95
	5 MW to 25 MW	24.37	25.31

(b) **Biomass power projects with rankine cycle technology:** Regulation 35 of RE Tariff Regulations provides that the normative O&M expenses for Biomass-based projects for first year of the Control Period (FY 2020-21) is Rs. 46.42 lakh per MW which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M cost norm for Biomass-based projects as Rs 48.20 lakhs per MW for FY 2021-22.

(c) **Non-Fossil Fuel based Cogeneration Projects:** As per Regulation 45 of RE Tariff Regulations, the normative O&M expenses for non-fossil fuel based co-generation projects for the first year of the Control Period (FY 2020-21) is Rs. 24.52 lakh per MW which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M cost norm for non-fossil fuel based co-generation projects as Rs 25.46 lakhs per MW for FY 2021-22.

(d) **Biomass Gasifier based power projects:** As per Regulation 54 of the RE Tariff Regulations, normative O&M expenses for Biomass Gasifier based power projects is Rs. 61.31 lakh/MW for the first year of Control Period (FY 2020-21) which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M cost norm for Biomass Gasifier based power projects as Rs 63.66 lakh per MW for FY 2021-22.

(e) **Biogas based power projects:** As per Regulation 59 of the RE Tariff Regulations, normative O&M expenses for such projectsisRs. 61.31 lakh/MW for the first year of Control Period (FY2020-21) which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M expense norm for such projects as Rs 63.66 lakh per MW for FY 2021-22.

12.3 The Commission has considered the normative O&M Expenses as specified in RE Tariff Regulations for different RE technologies as stated above.

Comments Received

12.4 Venika Hydro Projects Pvt Ltd. has suggested to consider O&M cost escalation at 10% per annum.

Commission's Proposal

12.5 The O&M expenses and the escalation rate for O&M expenses considered for generic tariff determination are as per provisions of the RE Tariff Regulations. Any change in this regard is outside the scope of the present exercise of determination of levellised generic tariff. Accordingly, the Commission has decided to apply the normative O&M Expenses and escalation rate for O&M expenses as specified in RE Tariff Regulations for different RE technologies.

13. No other comment on any other parameter has been received. Hence, the Commission determines the levellised generic tariff for RE based generating stationsfor FY 2021-22 as enclosed in Annexure – I to this Order.

Sd/-	**Sd/-**	**Sd/-**	**Sd/-**
[Pravas Kumar Singh]	**[Arun Goyal]**	**[Indu Shekhar Jha]**	**[P.K. Pujari]**
Member	**MEMBER**	**MEMBER**	**CHAIRPERSON**

New Delhi, 31.03.2021

ANNEXURE 1

LEVELLISED GENERIC TARIFF FOR VARIOUS RENEWABLE ENERGY TECHNOLOGIES FOR FY 2021-22

1. The levellised generic tariffs for Small Hydro Projects, Biomass Power Projects with Rankine Cycle Technology, Non-fossil Fuel-based Co-generation Projects, Biomass Gasifier based Power Projects and Biogas based Power Projects, for FY 2021-22 are discussed in following paragraphs.

2. For RE projects covered under Regulation 7 of the RE Tariff Regulations, the Commission is required to determine project specific tariff. A separate petition is required to be filed by the person seeking tariff for determination of project specific tariff as per Regulation 8 of RE Tariff Regulations.

A. Useful Life

3. The clause (hh) of sub-Regulation (1) of Regulation 2 of the RE Tariff Regulations defines 'useful life' in relation to project, including dedicated evacuation system, from the date of commercial operation (COD) of such project, as under:

Renewable Energy Projects	**Years**
Small HydroProjects	40
Biomass power project with Rankine Cycle technology	25
Non-fossil Fuel-based Co-generation Projects	25
Biomass Gasifierbased Power Projects	25
Biogasbased Power Projects	25

B. Control Period

4. Regulation 5 of the RE Tariff Regulations specifies that the Control Period for determination of tariff for renewable energy projects (RE projects) shall be from 01.07.2020 to 31.03.2023. The proviso to this Regulation specifies that the tariff determined for the RE projects commissioned during the control period, shall remain valid for the tariff period (Useful life of the project). Accordingly, the tariff determined by the Commission vide order 13/SM/2020

dated 21st July 2020, is applicable for RE projects commissioned during first year of the control period. The tariff to be determined via this order is for the second year of the control period, which shall be applicable for the Projects commissioned during the period from April 1, 2021 till March 31, 2022.

C. Tariff Structure

5. Regulation 9 of the RE Regulations stipulates that the tariff for renewable energy sources shall consist of the following components:

a. Return on equity;
b. Interest on loan capital;
c. Depreciation;
d. Interest on working capital; and
e. Operation and Maintenance expenses

6. For renewable energy technologies having fuel cost component, likebiomass power projects with rankine cycle technology, non-fossil fuel based cogeneration projects, biomass gasifier based power projects and biogas based power projects, single part tariff with two components i.e. fixed cost component and fuel cost component, is to be determined.

D. Tariff Design

7. In terms of Regulation 10 of the RE Tariff Regulations, the tariff design for renewable energy generating stations is as under:

> *"(1) The generic tariff shall be determined, on levellised basis, considering the year of commissioning of the project, for the tariff period of the project: Provided that for renewable energy projects having single part tariff with two components, fixed cost component shall be determined on levellised basis considering the year of commissioning of the project while fuel cost component shall be determined on year of operation basis in the Tariff Order to be issued by the Commission."*

E. Levellised Tariff

8. Levellised Tariff is to be calculated by carrying out levellisation for 'useful life' of each technology considering the discount factor.

F. Discount Factor

9. Regulation 10(2) of the RE Tariff Regulations specifies methodology to calculate discount factor for the purpose of levellised tariff computation as under:

> ***"10. Tariff Design***
> *… …*
> (2) *For the purpose of levellised tariff computation, discount factor equivalent to post-tax weighted average cost of capital shall be considered."*

10. Accordingly, the discount factor considered for this exercise is equal to the post tax weighted average cost of capital on the basis of normative debt-equity ratio (70:30). Considering the normative debt equity ratio and weighted average of the post-tax rates for debt and equity component, the discount factor is calculated.

11. Interest Rate considered for the loan component (i.e., 70% of capital cost) is 9%. For equity component (i.e., 30% of capital cost), the rate of Return on Equity (ROE) is considered at post-tax rate of 14%. Further, Corporate Tax rate has been considered as 34.94%[1]. Accordingly, the discount factor derived by this method for all technologies is 8.30%.

(*Discount Factor = [{(9% x 0.70) x (1 – 34.94%)} + (14.0% x0.30)]= 8.30%*)

G. Capital Cost

12. Regulation 12 of the RE Tariff Regulations specifies as under:

> ***"12. Capital Cost***
>
> *Norms for capital cost, as specified in relevant chapters of these regulations, shall be inclusive of land cost, pre-development expenses, all capital work including plant & machinery, civil work, erection, commissioning, financing cost, interest during construction, and evacuation infrastructure up to inter-connection point."*

13. The Commission has considered the normative capital cost as specified in the RE Tariff Regulations, applicable for the second year of control

[1]Income Tax rate of 30% + 12%surcharge on IT rate +4% Health and Education cess on IT rate and Surcharge

period i.e. FY 2021-22, for various RE technologies viz. Small Hydro Projects, Biomass Power Projects based on Rankine Cycle Technology, Non-Fossil Fuel based Cogeneration Projects, Biomass Gasifier based power projects and Biogas based power projects. The capital cost of RE projects is discussed as under:

Capital cost of Small Hydro Projects (SHP)

14. Small Hydro Projects for the purpose of the RE Tariff Regulations cover those projects which are located at the sites approved by the State Nodal Agencies/ State Governments using new plant and machinery and with installed power plant capacity lower than or equal to 25 MW.

15. Normative capital cost for small hydro projects for FY 2021-22 in accordance to Regulation 27(1) of the RE Tariff Regulations as under:

Region	Projects Size	Capital Cost (Rs. Lakh/MW)
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	1100
	5 MW to 25 MW	1100
Other States	Below 5 MW	780
	5 MW to 25 MW	900

Capital cost of Biomass Power Projects based on Rankine Cycle Technology

16. Regulation 31 of the RE Tariff Regulations has specified the normative capital cost for Biomass based Power Projects for FY 2021-22 as under:

Biomass Rankine Cycle Projects	Capital Cost (Rs lakh/ MW)
Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser	559
Project [other than rice straw and Juliflora(plantation) based project] with air cooled condenser	600
For rice straw and Juliflora (plantation) based project with water cooled condenser	611
For rice straw and Juliflora (plantation) based project with air cooled condenser	652

Capital cost of Non-fossil fuel based Cogeneration Projects

17. Non-fossil based cogeneration has been defined as the process in which more than one form of energy is produced in a sequential manner by using biomass. As per Regulation 4(d) of the RE Tariff Regulations, for a project to qualify as non-fossil based co-generation project, it must be using new plant and machinery with topping cycle mode of operation which uses the non-fossil fuel input for power generation and utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously, and where the sum of useful power output and half of useful thermal output is greater than 45% of the plant's energy consumption during the season.

18. Regulation 39 of the RE Tariff Regulations has specified normative capital cost for the Non-Fossil Fuel Based Cogeneration Projects as Rs.492 lakh/MW for FY 2021-22.

Capital cost of Biomass Gasifier Power Projects

19. Regulation 50 of the RE Tariff Regulations has specified the normative capital cost for Biomass Gasifier power projects as Rs. 593 lakh/MW for FY 2021-22. After taking into account the capital subsidy of Rs. 150.00 lakh/MW (by Ministry of New and Renewable Energy), net project cost works out to be Rs. 443 lakh/MW for FY 2021-22.

Capital cost of Biogas based Power Projects

20. Regulation 56 of the RE Tariff Regulations has specified the normative capital cost for Biogas based power projects as Rs. 1186 lakh/MW for FY 2021-22. After taking into account the capital subsidy of Rs. 300 lakh/MW (by Ministry of New and Renewable Energy), net project cost works out to be Rs. 886 lakh/MW for FY 2021-22.

21. The capital cost for FY 2021-22 in respect of various renewable energy power generating stations is summarized as following:

Renewable Energy Projects	Net Capital Cost Norm for FY 2021-22
Small Hydro Projects	
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu andKashmir, Union Territory of Ladakh andNorth Eastern States (Below 5 MW)	Rs.1100 lakh/MW
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu andKashmir, Union Territory of Ladakh andNorth Eastern States (5 MW to 25 MW)	Rs. 1100 lakh / MW
Other States (Below 5 MW)	Rs. 780 lakh / MW
Other States (5 MW to 25 MW)	Rs. 900 lakh / MW
Biomass Power Projects Based on Rankine Cycle Technology	
Project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser	Rs. 559 lakh / MW
Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	Rs. 600 lakh / MW
Rice straw and Juliflora (plantation) based project with water cooled condenser	Rs. 611 lakh / MW
Rice straw and Juliflora (plantation) based project with air cooled condenser	Rs. 652 lakh / MW
Non-fossil fuel co-generation Projects	Rs. 492 lakh / MW
Biomass Gasifier based Power Projects	Rs. 443 lakh / MW
Biogas based Power Projects	Rs. 886 lakh / MW

H. Debt-Equity Ratio

22. Clause (1) of Regulation 13 of the RE Tariff Regulations specifies debt-equity ratio of 70:30 for determination of generic tariff.

23. Based on the debt-equity ratio of 70:30, the debt and equity components of the normative capital cost for determination of tariff for the RE projects have been worked out as following:

Renewable Energy Projects	Debt Amount (Rs. Lakh)	Equity Amount (Rs. Lakh)	Net Capital Cost (Rs. Lakh)
Small Hydro Projects			
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States. (Below 5 MW)	770.00	330.00	1,100.00
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States. (5 MW to 25 MW)	770.00	330.00	1,100.00
Other States (Below 5 MW)	546.00	234.00	780.00
Other States (5 MW to 25 MW)	630.00	270.00	900.00
Biomass Power Projects Based on Rankine Cycle Technology			
Project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser	391.30	167.70	559.00
Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	420.00	180.00	600.00
Rice straw and Juliflora (plantation) based project with water cooled condenser	427.70	183.30	611.00
Rice straw and Juliflora (plantation) based project with air cooled condenser	456.40	195.60	652.00
Non-fossil fuel based co-generation projects	**344.40**	**147.60**	**492.00**
Biomass Gasifier based Power Projects	**310.10**	**132.90**	**443.00**
Biogas based Power Projects	**620.20**	**265.80**	**886.00**

I Return on Equity

24. As regards Rate of Return on Equity, sub-Regulation (2) of Regulation 16 of the RE Tariff Regulations specifies as under:

"16. Return on Equity

… …

(2) 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."

25. For computation of Rate of Return on Equity, MAT Rate of 17.47% and Corporate Tax Rate of 34.94% have been considered. Accordingly, Rate of Return has been computed as 16.96% for first 20 years and 21.52% after 20 years of useful life.

J. Interest on Loan

26. Sub-Regulation (1) of Regulation 14 of the RE Regulations specifies the loan tenure of 15 years for the purpose of determination of generic and project specific tariff for REprojects, which is reproduced as under:

"(a) The loans arrived at in the manner indicated in Regulation 13 shall be considered as gross normative loan for calculation for interest on loan…..

(b) For the purpose of computation of tariff, 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 shall be considered.

(c) Notwithstanding any moratorium period availed by project developer, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed."

27. The monthly data of MCLR for the last available six months from State Bank of India and the average MCLR is shown in following table:

Effective Date	One (1) Year Tenor MCLR rates[2]
10.07.2020 to 09.08.2020	7%
10.08.2020 to 09.09.2020	7%
10.09.2020 to 09.10.2020	7%
10.10.2020 to 09.11.2020	7%
10.11.2020 to 09.12.2020	7%
10.12.2020 to 09.01.2021	7%
Avg. for last Available 6 months	**7%**

28. Accordingly, interest rate for loan component is determined as 9%.

K. Depreciation

29. Regulation 15 of the RE Tariff Regulations specifies for computation of

[2]Source: https://www.sbi.co.in/web/interest-rates/interest-rates/mclr-historical-data

depreciation in the following manner:

"(1) *Thevalue base for the purpose of depreciation shall be the capital cost of the project admitted by the Commission. The salvage value of the project shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the project"*

Provided that, no depreciation shall be allowed to the extent of grant or capital subsidy received for the project.

(2) Depreciation rate of 4.67% per annum shall be considered for the first 15 years and remaining depreciation shall be evenly spread during remaining Useful Life of the project"

(3) Depreciation shall be computed from the first year of commercial operation:

Provided, that for determination of project specific tariff, in case of commercial operation of the project for part of the year, depreciation shall be computed on pro rata basis."

30. In accordance with the above, the rate of depreciation for the first 15 years is specified as 4.67% and the rate of depreciation from the 16th year onwards is to be spread over the balance useful life of the RE project as under:

Details	Small Hydro Projects	Biomass Power Projects Based on Rankine Cycle Technology	Non-fossil fuel based co-generation projects	Biomass Gasifier based Power Projects	Biogas based Power Projects
Useful Life (in years	40	25	25	25	25
Rate of depreciation for 15 years (%)	4.67	4.67	4.67	4.67	4.67
Rate of depreciation from 16th year onwards (%)	0.80%	2.00%	2.00%	2.00%	2.00%

L. Interest on Working Capital

31. Regulation 17 of the RE Tariff Regulations specifies the working capital requirements of the RE projects as under:

"(1)The Working Capital requirement in respect of wind power projects, small hydro projects, solar PV power projects, floating solar projects, solar thermal power projects, and renewable energy with storage projects shall be computed in accordance with the following:

(a) Operation & Maintenance expenses for one month

(b) Receivables equivalent to 45 days of tariff for sale of electricity calculated on normative Capacity Utilisation Factor or Plant Load Factor, as the case may be and

(c) Maintenance spares equivalent to 15% of Operation and Maintenance expenses.

(2) The Working Capital requirement in respect of biomass power projects with Rankine cycle technology, biogas power projects, biomass gasifier based power projects, non-fossil fuel based co-generation projects, municipal solid waste based power projects and refuse derived fuel based power projects shall be computed in accordance with the following

(a) Fuel costs for four months equivalent to normative Plant Load Factor:

(b) Operation and Maintenance expense for one month;

(c) Receivables equivalent to 45 days of tariff for sale of electricity calculated on the plant load factor; and

(d) Maintenance spares equivalent to 15% of Operation and Maintenance expenses.

(3) In case of renewable hybrid energy projects, the Working Capital requirement shall be sum of the Working Capital requirement determined as per norms applicable for renewable energy sources, in proportion to their rated capacity in the project

(4) Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred and fifty (350) 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."

32. Receivables equivalent to forty five (45) days of tariff for sale of electricity calculated on the plant load factor and four months of fuel cost, (as applicable for biomass power projects with rankine cycle technology, non-fossil fuel based cogeneration projects, biomass gasifier based power projects and biogas based power projects) have been considered.

33. Interest rate has been computed as average of State Bank of India MCLR (One Year Tenor) prevalent during the last available six months plus 350 basis points (equivalent to interest rate of 10.50%).

34. The parameters considered for computation of the interest on working capital arestipulated in following table:

Details	**Small Hydro Projects**	**Biomass Power Projects Based on Rankine Cycle Technology, Non-fossil fuel based co-generation projects, Biomass Gasifier based Power Projects and Biogasbased Power Projects.**
(a) For Fixed Charge		

Details	Small Hydro Projects	Biomass Power Projects Based on Rankine Cycle Technology, Non-fossil fuel based co-generation projects, Biomass Gasifier based Power Projects and Biogasbased Power Projects.
O&M Expenses (Month)	1 month	1 month
Maintenance Spares (%) of O&M Expenses	15%	15%
Receivables (Days)	45 Days	45 Days
(b) For Variable Charge		
Biomass/Bagasse Stock (Months)	-	4 month
(c) Rate of Interest (%)	10.50%	10.50%

M. Operation and Maintenance Expenses

35. Regulation 19 of the RE Tariff Regulations specifiesO&M expenses in respect of RE projects as following

"***19. Operation and Maintenance Expenses***

(1) *Operation and Maintenance expenses shall be determined for the Tariff Period of theproject based on normative O&M expenses specified in these regulations for the firstyear of the Control Period."*

(2) Normative O&M expenses allowed during first year of the Control Period i.e., financial year 2020-21 under these Regulations shall be escalated at the rate of 3.84% per annum over the Tariff Period."

36. The normative O&M expenses for various RE technologies specified under the relevant provisions of the RE Tariff Regulations are as under:

(a) **Small Hydro Projects (SHP):** Regulation 30 of the RE Regulations provide for the normative O&M expenses for small hydro projects for the first year of the Control Period (FY 2020-21), which shall be escalated at the rate of 3.84% per annum over the tariff period for determination of the levellised tariff. Accordingly, the table below represents the O&M cost for SHP as specified by the Commission for FY 2021-22:

Region	Project	O&M	O&M

	Size	Expenses FY 2020-21 (Rs Lakh/ MW)	Expenses FY 2021-22 (Rs Lakh/MW)
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu andKashmir, Union Territory of Ladakh andNorth Eastern States	Below 5 MW	41.78	43.38
	5 MW to 25 MW	31.34	32.54
Other States	Below 5 MW	33.66	34.95
	5 MW to 25 MW	24.37	25.31

(b) **Biomass power projects with rankine cycle technology:** Regulation 35 of RE Tariff Regulations provides that the normative O&M expenses for Biomass-based projects for first year of the Control Period (FY 2020-21) is Rs. 46.42 lakh per MW which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M cost norm for Biomass-based projects as Rs 48.20 lakhs per MW for FY 2021-22.

(c) **Non-Fossil Fuel based Cogeneration Projects:** As per Regulation 45 of RE Tariff Regulations, the normative O&M expenses for non-fossil fuel based co-generation projects for the first year of the Control Period (FY 2020-21) isRs. 24.52 lakh per MW which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M cost norm fornon-fossil fuel based co-generation projects as Rs 25.46 lakhs per MW for FY 2021-22.

(d) **Biomass Gasifier based power projects:** As per Regulation 54 of the RE Tariff Regulations, normative O&M expenses for Biomass Gasifier based power projects isRs. 61.31 lakh/MW for the first year of Control Period (FY 2020-21) which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified

O&M cost norm for Biomass Gasifier based power projects as Rs 63.66 lakh per MW for FY 2021-22.

(e) **Biogas based power projects:** As per Regulation 59 of the RE Tariff Regulations, normative O&M expenses for such projectsisRs. 61.31 lakh/MW for the first year of Control Period (FY2020-21) which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has specified O&M expense norm for such projects as Rs 63.66 lakh per MW for FY 2021-22.

37. The Commission has considered the normative O&M Expenses as specified in RE Tariff Regulations for different RE technologies as stated above.

N. Capacity Utilisation factor (CUF)/Plant Load Factor (PLF)

38. Regulation 18 of the RE Tariff Regulations, as extracted below, specifies number of hours for calculation of CUF/PLF as 8766.

"Thenumber of hours in a year for calculation of capacity utilization factor and plant load factor, as the case may be, shall be considered as 8766."

39. Regulation 28 of the RE Tariff Regulations specifies the norms for Capacity Utilization Factor (CUF) of units generated in a year in respect of the Small Hydro Projects as per the details given in the table below:

Small HydroProjects	CUF (%)
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu andKashmir, Union Territory of Ladakh andNorth Eastern States.	45%
Other States	30%

40. Further, the Commission has considered the Plant Load Factor (PLF) for biomass power projects with rankine cycle technology, biomass gasifier based power projects and biogas based power projectsas specified in Regulations 32, 51 and 57 respectively of the RE Tariff Regulations, which are given in the following table:

Renewable Energy Projects	PLF (%)
Biomass power projects with rankine cycle technology	80%

Renewable Energy Projects	PLF (%)
Biomass gasifier based power projects	85%
Biogas based power projects	90%

41. Further, as regards Non-fossil Fuel based Co-generation projects, the Commission has considered State-wise PLF as specified in Regulation 40 of the RE Tariff Regulations, which is given in the following table:

States	PLF (%)
Uttar Pradesh & Andhra Pradesh	45%
Tamil Nadu &Maharashtra	60%
Other States	53%

O. Auxiliary Consumption

42. The Commission has considered the auxiliary consumption as specified in Regulations 29, 33, 41, 52 and 58 of the RE Tariff Regulations, which is shown in the following Table:

Renewable Energy Projects	Auxiliary Consumption (%)
(i) Small Hydro Projects	1.00%
(ii) Biomass Power Projects with rankine cycle technology a) Using Water Cooled Condenser b) Using Air Cooled Condenser	 10.00% 12.00%
(iii) Non-Fossil fuel based co-generation projects	8.50%
(iv) Biomass Gasifier based power projects	10.00%
(v) Biogas based power projects	12.00%

P. Station Heat Rate

43. The Station Heat Rates (SHR) specified under Regulations 34 and 42 of the RE Tariff Regulations for biomass power projects with rankine cycle technology and non-fossil fuel based co-generation projects are as under:

Renewable Energy Projects	SHR (kcal/Kwh)