



MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

**EXPLANATORY MEMORANDUM
ON
DRAFT MAHARASHTRA ELECTRICITY
REGULATORY COMMISSION (TERMS
AND CONDITIONS FOR DETERMINATION
OF RENEWABLE ENERGY TARIFF)
REGULATIONS, 2019**

October, 2019

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1 Introduction

1.1 Background & Regulatory Framework

As per Section 86 (1) (e) of the Electricity Act, 2003 (“EA 2003” or “the Act”), the State Electricity Regulatory Commissions (“SERCs” or “Commissions”) have been assigned the function of promoting generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person.

The Government of India (GoI) has set an ambitious target to achieve 175 GW of Renewable Energy capacity by 2022 under the Renewable Energy Expansion Programme. Further, it has pledged to have around 40% cumulative installed capacity from non-fossil fuel-based energy resources by 2030. Different private research firms have forecasted India’s Renewable Energy (RE) installed capacity at around 225 GW by 2027.

From the national target of 175 GW by 2022, Maharashtra’s share is around 22 GW. As on 30 June, 2019, the installed RE capacity in the State is about 8.8 GW, thereby implying that Maharashtra needs to add RE capacity of around 13 GW in around 3 years. Such aggressive RE capacity addition would be possible only if the appropriate policy measures are in place and disseminated to the investors at the earliest.

The EA 2003 provides for policy formulation by the GoI and the State Government, and mandates Electricity Regulatory Commissions (ERCs) to take steps to promote RE sources of energy within their area of jurisdiction. The State of Maharashtra has the highest electricity consumption and consumer base in the Country. The Maharashtra Electricity Regulatory Commission (“MERC” or “the Commission”) has been very proactive in promoting energy generation from RE sources. MERC has been in the forefront of determining preferential tariffs for RE technologies, with its first tariff Order for non-fossil fuel-based co-generation projects and Renewable Purchase Specification framework issued even before the enactment of Electricity Act, 2003 (EA 2003).

As per the provisions of EA 2003 and Tariff Policy, MERC has taken further proactive measures for promoting RE based generation within the State, such as determination of Renewable Purchase Obligation (RPO), grid connectivity framework, etc. The Commission has issued Tariff Orders for various types of RE technologies such as wind energy, solar energy, non-fossil fuel-based cogeneration, small hydel power, biomass power, etc.

The Commission has notified the MERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2015 (herein after referred as “MERC RE Tariff Regulations, 2015”) in November 2015 and the MERC (Renewable Purchase Obligation, its Compliance and Implementation of Renewable Energy Certificate Framework) Regulations,

2016 (herein after referred as “MERC RPO Regulations, 2016”) in March 2016, in order to further promote generation from RE sources in the State of Maharashtra.

As a result of these pro-active measures by the Commission over several years, the overall RE capacity in the State has increased by leaps and bound over these years.

The following Table shows the RE capacity addition in Maharashtra by end June, 2019 vis-à-vis the technical potential of various types of RE sources in Maharashtra and the nation as a whole:

Sr. No.	Source	Potential (MW)		% Share of Maharashtra a total Potential	Achievement of Maharashtra (MW) (June, 2019)	% Achievement of State potential
		India	Maharashtra			
1	Wind	49130	9400	19.1%	4792.00	50.97%
2	Small Hydro Power	15000	732	4.9%	366.47	50.06%
3	Biomass	16881	781	4.6%	215.00	27.52%
4	Bagasse co-generation	5000	2200	44.0%	2283.55	103.80%
5	Urban waste	1700	287	16.9%	3.00	1%
6	Industrial waste	1700	350	20.6%	37.838	10.81%
7	Solar Power Project	20-30/sq.km	49/sq.m 35/sq.m	-	1060.45	--
	Total*	89411	13750	15.4%	8758.32	63.70%

Source: Maharashtra Energy Development Agency

*Note: * - Excluding Solar Power Projects*

Maharashtra has around 15% of total potential of RE in the country (excluding Solar power projects). Due to the long-term certainty provided by the prevalent regulatory framework, around 64% of the total assessed potential of RE (excluding Solar power projects) has been harnessed till date, indicating that there is still some scope for harnessing additional RE sources.

In order to achieve the ambitious target set by the GoI, a strategic combination of Top-Down impetus and Bottom-Up execution approach has been initiated, in which GoI, in partnership with the State Governments and Electricity Regulatory Commissions, is adopting a number of measures to promote the various RE technologies. The Commission is also desirous of

encouraging the further penetration of RE generating technologies in the State, in order to have the optimum mix of fossil fuel-based generation and RE generation.

Further, in the recent years, due to the successful procurement of power from RE sources through competitive bidding, especially for Solar and Wind Projects, the tariff of these RE technologies has not only achieved grid parity but has gone lower than that of fossil fuel based generation projects. Significant capacity addition has also taken place at these lower tariffs, thereby helping the Distribution Licensees to reduce their overall power purchase cost, while at the same time procuring increasing quantities of RE power, as a part of their power purchase portfolio.

Considering the above developments, the Commission has formulated the draft MERC (Terms and Conditions of Determination of Renewable Energy Tariff) Regulations, 2019 (hereinafter referred as “draft MERC RE Tariff Regulations, 2019). While formulating the draft MERC RE Tariff Regulations, 2019, the Commission has been guided by CERC RE Tariff Regulations, 2017, relevant Regulations of this Commission and other SERC’s, etc.

The Commission has proposed modifications to certain clauses vis-à-vis the clauses specified in the MERC RE Tariff Regulations, 2015 (as amended from time to time) based on the experiences in implementation of these Regulations over the previous four years, and in order to simplify/clarify/amend certain provisions as considered reasonable. **The rationale for the changes proposed in the MERC RE Tariff Regulations, 2015 have been elaborated in this Explanatory Memorandum. In cases where no change is proposed, the same has not been explicitly mentioned. Generally, only the clauses where any addition/modification is proposed in the draft MERC RE Tariff Regulations, 2019 have been discussed in this Explanatory Memorandum.**

The Commission while formulating draft MERC RE Tariff Regulations, 2019, has endeavoured to balance the interest of consumers, RE Generating Companies, and Distribution Licensees. Based on the analysis, possible regulatory options have been discussed in subsequent Chapters.

The Commission has also simultaneously published the following related draft Regulations and Explanatory Memorandum, for ensuring a holistic view of the RE sector and its development:

1. Draft MERC (Grid Interactive Rooftop Renewable Energy Generating Systems) Regulations, 2019;
2. Draft MERC (Renewable Purchase Obligation, its Compliance and Implementation of Renewable Energy Certificate Framework) Regulations, 2019.

The Explanatory Memorandum is organised in the following Chapters:

- Chapter 1:** Introduction (Present Chapter)
- Chapter 2:** General Principles
- Chapter 3:** Financial Principles
- Chapter 4:** Technology-specific parameters

2 General Principles

2.1 Objectives

This Chapter of the Explanatory Memorandum elaborates the General Principles for formulation of the draft MERC RE Tariff Regulations, 2019.

2.2 Definitions

The Commission, in the draft MERC RE Tariff Regulations, 2019 has modified some definitions and also added some definitions, as under:

1. The Commission has modified the definition of “Eligible Project” for catering to any combination of Hybrid RE Projects and for Storage systems, as under:

“2.1 (m) “Eligible Project” means any of the following Renewable Energy Projects with or without Storage ...

...

- x. Hybrid RE Project based on RE technologies approved by MNRE, such as Wind-Solar Hybrid, Solar-Biomass Hybrid, Solar-Co-Generation Hybrid, Solar Thermal Hybrid, and any other combination of RE technologies, which are co-located, and commissioned after notification of these Regulations...”*

2. The Commission has deleted the definition of “Non-firm power”, as under the extant Rules and Regulations, there is no “non-firm power” which cannot be scheduled, and all RE technologies are required to be scheduled in accordance with their respective Regulations for scheduling.
3. The Commission has modified the definition of “Re-powering”, by deleting the reference to the wind turbines having completed 15 years of useful life, as this need not be a pre-condition. Further, the detailed conditions for Re-powering have been specified separately. The revised definition is as under:
“(cc) ‘Re-powering’ means the process of replacing older wind turbines, with newer ones that have either a higher name- plate capacity or higher CUF, which results in a net increase in power generated from the same site;”
4. The Commission has added the definition of ‘Storage’, to cater to the future possibility of RE generating systems being set up with or without storage, as under:

“(kk) ‘Storage’ means energy storage system utilising methods and technologies like Solid State Batteries, Flow Batteries, Pumped Storage hydro-power, Compressed Air, or any other technology, to store various forms of energy and deliver the stored energy in the form of electricity;”

5. A proviso has been added to the definition of “Useful Life”, to provide clarity on the Useful Life for hybrid RE projects, by specifying that the Useful Life would be the lower of the Useful Life of different RE technologies that have been combined in the Hybrid RE Project, as under:

“Provided that the Useful Life of Hybrid RE Projects shall be minimum of Useful Life of different RE technologies combined for the Hybrid RE Project”

2.3 Scope of Regulations and extent of application

The existing MERC RE Tariff Regulations, 2015 specifies the Scope of the Regulations. The clause has been formatted for greater clarity and the reference to the RPO Regulations has been updated. The reference to “applicable Regulations” has been added, and accordingly, the Proviso has been deleted, as under:

“3.1 These Regulations shall apply to those new RE Projects, which fulfil the following criteria:

- (a) are commissioned in the State of Maharashtra for the generation and sale of electricity to Distribution Licensees in the State;*
- (b) are Eligible Projects for the purposes of these Regulations, and*
- (c) whose tariff is to be determined by the Commission under the provisions of Section 62 read with Section 86 of the Act:*

Provided that, where a RE Project opts for the Renewable Energy Certificate (‘REC’) mechanism specified in the MERC (Renewable Purchase Obligation, its Compliance, and Implementation of REC Framework) Regulations, 2016, as amended from time to time, its pricing mechanism shall be governed by the provisions of those Regulations or as may be specified in future.

3.2 The tariff and other terms and conditions applicable to existing RE Projects shall be governed by the provisions of the applicable Regulations or RE Tariff Orders issued by the Commission from time to time”.

2.4 General Reporting Requirements

The existing MERC RE Tariff Regulations, 2015 specifies the quarterly information to be submitted by the Distribution Licensees to the State Nodal Agency, which has been modified to give clarity regarding source-wise RE procurement. In addition, the Commission has specified certain reports to be submitted regularly by the State Nodal Agency, i.e., Maharashtra Energy Development Agency (MEDA), for having an overview of the State, and ensuring that the State Nodal Agency is at the forefront of development of the RE sector in the State of Maharashtra. The proposed clauses are as under:

“4.1 Distribution Licensees shall furnish the following quarterly information to State Nodal Agency, within a month of the close of the preceding quarter:

- a) details of source-wise RE capacity addition in MW;*
- b) details of source-wise RE purchase in MU; and*
- c) a statement of Energy Purchase Agreements (EPAs) entered into under these Regulations,*

in addition to any other information that the Commission may stipulate from time to time:

Provided that the Distribution Licensees shall also upload and update the above information on their websites on a quarterly basis, along with details of capacity addition in previous years.

4.2 The State Nodal Agency shall furnish the following quarterly information to the Commission, within two months of the close of the preceding quarter:

- a) details of source-wise RE capacity addition in MW;*
- b) details of source-wise RE purchase by each Distribution Licensee in MU; and*
- c) a statement of Energy Purchase Agreements (EPAs) entered into under these Regulations by each Distribution Licensee;*
- d) Projects registered in the State for each Technology in that quarter as well as cumulatively;*
- e) Source-wise RE capacity addition vis-à-vis Technical Potential,*

in addition to any other information that the Commission may stipulate from time to time:

Provided that the State Nodal Agency shall also upload and update the above information on its website on a quarterly basis, along with details of capacity addition in previous years.

4.3 The State Nodal Agency may from time to time stipulate any other financial, technical or other information required to be furnished by the RE Project Entities, including information regarding RE Project performance parameters such as actual energy generated, monthly actual CUF and actual Auxiliary consumption, if applicable; and

financial information such as Capital Cost, yearly O&M Expenses, details of loans and financing, and interest rate, etc., as well as any other information that may be desired by the Commission.”

2.5 Review Period

The existing MERC RE Tariff Regulations, 2015 specifies the review period of five financial years (FY) upto the end of FY 2019-20, i.e., March 31, 2020. The first year of the review period commenced from the date of notification of the MERC RE Tariff Regulations, 2015.

The Commission is of the view that the draft MERC RE Regulations, 2019 can be applicable for the future, without limitation, till such time the Commission amends or notifies new Regulations. At the same time, it needs to be noted that the MERC (Multi Year Tariff) Regulations, 2019 (hereinafter “MERC MYT Regulations, 2019”) specifies the Control Period of five (5) financial years from FY 2020-21 to FY 2024-25. The financial principles applicable for the RE Tariff Regulations are same as that specified in the draft MERC MYT Regulations, 2019. Hence, it is proposed to keep the Review Period of the RE Tariff Regulations co-terminus with the Control Period specified under the MERC MYT Regulations, 2019. The Commission may review the principles and norms at the end of the Review Period, and either extend the applicability of the draft MERC RE Regulations, 2019 for a further period with any modifications through Order, or decide to amend/issue new Regulations for subsequent period.

In view of the above, the Commission proposed that the provision regarding the Review Period is retained and the first Review Period for the proposed Regulations shall be five (5) financial years commencing from April 1, 2020. (i.e., FY 2020-21 to FY 2024-25).

The proposed clauses are as under:

“5.1 These Regulations shall be applicable with effect from April 1, 2020.

5.2 The first Review Period under these Regulations shall be five (5) financial years (FY), from FY 2020-21 up to the end of FY 2024-25.

5.3 At the end of the first Review Period, the Commission may, either extend the applicability of these Regulations for a further period with any modifications through Order, or decide to notify new Regulations for subsequent period:

Provided that, , the principles and tariff norms specified in these Regulations shall continue to apply until either the applicability of these Regulations are extended by the Commission through Order or new Regulations are notified, subject to any adjustments that may be specified therein.”

2.6 Tariff Period

The existing MERC RE Tariff Regulations, 2015 specifies the Tariff Period for different technologies as under:

- (a) Wind Power, Biomass-based, Solar PV, Solar Rooftop PV and Non-fossil Fuel based Co-generation projects – 13 years
- (b) Small Hydro power projects exceeding 5 MW and up to and including 25 MW – 13 years
- (c) Small Hydro power projects of 5 MW capacity or less and for Mini/Micro Hydro Power Projects -35 years
- (d) Solar Thermal projects – 25 years

The Commission notes that, till now, the balanced approach of giving preferential treatment to RE projects has been taken till such time RE technologies are able to compete in the market, in line with the objectives of the Act and Tariff Policy. The certainty was provided to Project Developers during first 13 years of tariff period to meet debt service obligation and after this period, the competitive procurement of RE would ensure that power is procured at most reasonable rate and benefit is passed on to consumers. Considering the present market scenario, it has been observed that RE technologies are able to compete in the market and procurement through Competitive Bidding route has been very successful. Hence, the distinction between Tariff Period and Useful Life of the project is not required anymore. It is also noted that similar approach has also been taken by CERC in its RE Tariff Regulations, 2017.

In view of the above, the Commission has decided to set Tariff Period equal to Useful Life of the project. The proposed clauses are as under:

“6.1 The Tariff Period for RE Projects shall be equal to their Useful Life, as under:

- | | |
|--|--|
| <i>a) Wind Energy Power Projects</i> | <i>25 years</i> |
| <i>b) Biomass-based Power Project, Non-Fossil Fuel-based Co-Generation</i> | <i>20 years</i> |
| <i>c) Mini/Micro and Small Hydro Power Projects</i> | <i>35 years</i> |
| <i>d) Solar PV/Solar Thermal Power Projects</i> | <i>25 years</i> |
| <i>e) Solar Roof-top PV Power Projects</i> | <i>25 years</i> |
| <i>f) Hybrid RE Projects and other RE Projects</i> | <i>Equal to Useful Life of Project</i> |

6.2 *The Tariff Period shall commence from the date of commercial operation of the Generating Station or Unit, as the case may be.*”

2.7 Competitive Bidding for procurement of power generated by grid-connected RE Projects

The existing MERC RE Tariff Regulations, 2015 specify that the Commission shall adopt the tariff for a RE Power Project where such tariff has been determined through a transparent process of competitive bidding in accordance with the Guidelines issued by the Central Government under Section 63 of the Act. As stated earlier, there has been significant capacity addition from RE projects that have tied up their generation capacity with Distribution Licensees at tariff discovered through competitive bidding, and the tariffs have also reduced significantly. Hence, the Commission wishes to encourage such RE power procurement through competitive bidding by the Distribution Licensees, and has specified that certain RE technologies shall ‘invariably’ be procured through competitive bidding.

Further, as there is a threshold capacity for participating in competitive bidding, certain smaller size projects may not be able to tie-up with Distribution Licensees in the absence of clarity regarding the applicable tariff. Hence, an appropriate proxy has been specified in the Regulations for such cases.

The proposed clauses are as under:

“7.1 The tariff shall invariably be determined through a transparent process of competitive bidding in accordance with the Guidelines issued by the Central Government under Section 63 of the Act, inter-alia for the following types of RE Projects:

- (a) Wind Energy Power Projects;*
- (b) Solar PV Power Projects;*
- (c) Non-Fossil Fuel-based Co-Generation;*
- (d) Biomass based Projects;*
- (e) Hybrid RE Power Projects.*

7.2 The Commission shall adopt the tariff for a RE Power Project where such tariff has been determined through a transparent process of competitive bidding in accordance with the Guidelines issued by the Central Government under Section 63 of the Act.

7.3 The tariff for RE Power Projects below threshold limit of eligibility for participating in Competitive Bidding shall be considered equal to the following cases, in order of priority:

- (a) *Latest Tariff discovered through Competitive Bidding by concerned Distribution Licensee for similar RE project;*
- (b) *The Tariff discovered through Competitive Bidding for similar RE project by Other Distribution Licensee(s) in the State;*
- (c) *The Tariff discovered through Competitive Bidding for similar RE project in the Country”*

2.8 Generic Tariff and Project Specific Tariff

The existing MERC RE Tariff Regulations, 2015 specified that Generic Tariff shall be determined by the Commission in the respective Generic Tariff Order for each year for Wind Power, Small Hydro Projects, Biomass based, Non-fossil fuel-based Co-generation, Solar PV and Solar thermal Projects. Similarly, it is specified that project specific tariff shall be determined for Solar Thermal, Waste to Energy, Hybrid RE Projects based on RE technologies approved by MNRE, Biomass-based Projects (except Rankine cycle), Biomass Gasifier and Biogas-based Projects, and Projects based on any other RE technologies approved by MNRE after notification of these Regulations.

As stated earlier, for many RE technologies, the Commission has proposed that tariff shall invariably be determined through competitive bidding. However, for Solar Rooftop PV Projects, in the draft MERC (Grid Interactive Rooftop RE Generating Systems) Regulations, 2019, the Commission has proposed that the power generated by the RE Project under the Net Metering Arrangement (beyond 300 units per month for Residential category) and the Net Billing Arrangement (for all other categories) shall be purchased at the Generic Tariff determined by the Commission. Hence, the Commission proposes to determine the Generic Tariff for Solar Rooftop PV Projects. Similarly, for bagasse and biomass projects, which have two components in the single-part tariff, there is a need for determining Variable Charges annually, in accordance with the draft MERC RE Tariff Regulations, 2019.

RE projects for which generic tariff is not determined or are expected to be invariably tied-up through competitive bidding, shall be considered for project specific tariff under certain circumstances. For all such Projects, the Commission has specified ceiling norms, that shall be considered by the Commission while determining the project-specific tariff.

Further, it has been observed that no small/mini/micro hydro projects are being set up under the Generic Tariff determined by the Commission. Hence, the Commission has included such Projects under Project-specific tariff.

As elaborated subsequently, the Commission wishes to encourage Re-powering of wind energy projects, wherein older wind turbines are replaced with newer ones that have either a higher

name-plate capacity or higher Capacity Utilisation Factor (CUF), which results in a net increase in power generated from the same site. As norms cannot be specified for such Re-powering projects, the same have been included in the list of Project-specific tariff.

The proposed clauses are as under:

“8. **Generic Tariff**

The Commission shall determine the generic tariff for Solar Roof-top PV Power Projects and Variable Charges for Biomass and Non-fossil fuel based Co-generation Projects, in accordance with the norms specified in these Regulations”.

“9.1 A Project-specific tariff shall be determined by the Commission on a case-to case basis for the following types of RE Projects:

- (a) Waste to Energy Projects based on the technologies approved by MNRE;
- (b) Solar Thermal Power Projects;
- (c) Small Hydro Projects, Mini Hydro Projects and Micro Hydro Projects;
- (d) Re-powering of Wind Energy Power Projects;
- (e) Projects based on any other RE technologies approved by MNRE after notification of these Regulations;
- (f) Any other RE technology, for which either Generic Tariff is being determined or for which the tariff is to be invariably determined through competitive bidding, in respect of which the Project Entities opt for a project-specific tariff.

9.2 The determination of project-specific tariff for generation of electricity from such RE sources shall be in accordance with the ceiling such norms specified in these Regulations for the respective technologies and the terms and conditions as may be stipulated in the relevant Orders of the Commission:

Provided that the financial norms specified in Chapter 2, shall be the ceiling norms while determining such project-specific tariff.”

2.9 Petition and proceedings for determination of tariff

The existing MERC RE Tariff Regulations specifies that the Commission shall notify the generic tariff as far as practicable before or at the beginning of each year of the Review Period considering the norms specified by the Central Commission from time to time with regard to the respective RE technologies, and also lays down the details to be submitted in the Petitions for determination of project-specific tariff.

The Commission proposes to modify the clauses to incorporate the following changes:

- (a) Generic tariff determination considering the norms specified by the Commission, rather than the Central Commission;
- (b) Requirement of concerned Distribution Licensee being made a Respondent to the Petition being filed for determination of Project-specific tariff;
- (c) Requirement of Energy Purchase Agreement with Distribution Licensee in the State of Maharashtra, before filing the Petition for determination of Project-specific tariff;
- (d) Consequences of under-generation and excess generation vis-à-vis guaranteed generation;
- (e) Additional requirements in case of request for Project-specific tariff determination for RE technologies that are expected to be covered under either competitive bidding or generic tariff determination.

The proposed clauses are as under:

“10.1 The Commission shall notify the generic tariff for the respective RE technology/ies, as far as practicable before or at the beginning of each year of the Review Period, in accordance with the norms specified in these Regulations.

10.2 A Petition for determination of project-specific tariff shall be filed by the concerned RE Power Project entity, with the concerned Distribution Licensee as a Respondent, accompanied by such fee as may be specified in the applicable Regulations of the Commission, and shall be accompanied by:

- (a) Information in Forms 1.1, 1.2, 2.1 and 2.2, as the case may be, appended as Annexure-A to these Regulations;*
- (b) An EPA with a Distribution Licensee in the State of Maharashtra, clearly stipulating that the tariff to be determined by the Commission in accordance with these Regulations and the consequences of under-generation or excess generation vis-à-vis the guaranteed generation;*
- (c) A detailed project report outlining technical and operational details, site-specific aspects, premise for Capital Cost and financing plan, etc.;*
- (d) A statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined;*
- (e) A statement containing details of any grant, subsidy or incentive received, due or assumed to be due from the Central Government and/or State Government, which shall also include the computation of tariff without consideration of such grant, subsidy or incentive;*
- (f) Details of financial gain through REC or any other mechanism;*
- (g) Any other information that the Commission may require the Petitioner to submit.*

10.3 *In case the RE Project fails to generate energy up to the guaranteed CUF, then the RE Project proponent shall compensate the concerned Distribution Licensee to the extent of under-generation at the tariff rate approved by the Commission:*

Provided that in case the above under-generation is on account of transmission constraints, then such under-generation shall be considered as deemed generation by the RE Project and be compensated accordingly:

10.4 *In case the RE Project generates energy in excess of the guaranteed CUF, then the RE Project proponent shall be entitled to receive compensation from the concerned Distribution Licensee for such excess generation at 75 percent of the tariff rate approved by the Commission.*

10.5 *In case of RE technologies covered under Regulation 9.1 (f), in addition to the above requirements, the Petition for determination of project-specific tariff shall also be accompanied by:*

- (a) Rationale for adoption of project specific tariff instead of Competitive Bidding;*
- (b) Status of compliance with the Renewable Purchase Obligation (RPO) with and without the proposed Project(s);*
- (c) Competitiveness of proposed tariff vis-à-vis tariff discovered through Competitive bidding/tariff prevalent in the market.*

10.4 *The proceedings for determination of tariff shall be in accordance with the Conduct of Business Regulations.”*

2.10 Tariff Design

The existing MERC RE Tariff Regulations specifies that the Tariff shall be determined on a levelised basis for the Tariff Period, and levelisation shall be carried out over the ‘useful life’ of the RE Project, while tariff shall be determined for the period equivalent to the Tariff Period. However, as stated earlier, the Tariff Period is now proposed to be equated to the Useful Life of the Project. Hence, the corresponding changes have been proposed in the Regulations, as under:

“12.1 The tariff shall be determined on a levelised basis for the Tariff Period:

Provided that, for RE Projects having a single-part tariff with two components, the tariff shall be determined on a levelised basis for the Tariff Period, considering the year of commissioning of the Project for the fixed cost component, while the fuel cost component shall be determined separately for each year of operation.

12.2 For the purpose of computation of levelised tariff, a discount factor equivalent to the normative post-tax weighted average cost of capital shall be considered.”

2.11 Scheduling and Despatch Principles for electricity generated from RE sources

The existing MERC RE Tariff Regulations specifies that all RE Power Projects, except Biomass-based Power Projects and Co-generation Project, shall be treated as ‘Must Run’ Projects and shall not be subjected to ‘merit order despatch’ principles. Further, Biomass-based Power Projects and Co-Generation Projects shall be subject to the scheduling and despatch code as specified under the State Grid Code.

The Commission notified the MERC (Forecasting, Scheduling and Despatch of Solar and Wind Generation) Regulations, 2018 on July 20, 2018. These Regulations provides Forecasting and Scheduling Code and Deviation Settlement mechanism for Solar and Wind RE Projects. Hence, the Commission has proposed that the Scheduling and Despatch for Solar and Wind RE projects shall be as per these Regulations.

Also, Biomass-based Power Projects and Co-Generation Projects shall be subject to the scheduling and despatch code as specified under the State Grid Code. Further, Biomass-based Power Projects and Co-Generation Projects, being RE projects, need to have ‘must run’ status.

Accordingly, the Commission proposes the following Regulations:

“Scheduling and Despatch principles for electricity generated from RE Sources

13.1 The Biomass-based Power Projects and Co-Generation Projects shall be subject to the respective scheduling and despatch code as specified under the State Grid Code, as amended from time to time.

13.2 The Wind Energy Power Projects and Solar PV Power Projects shall be subject to the MERC (Forecasting, Scheduling and Despatch of Solar and Wind Generation) Regulations, 2018, as amended from time to time.

13.3 Subject to the provisions of the Indian Electricity Grid Code and the State Electricity Grid Code, all RE Power Projects shall be treated as ‘Must Run’ Projects and shall not be subjected to ‘merit order despatch’ principles.”

3 Financial Principles

3.1 Loan and Finance Charges

The existing MERC RE Tariff Regulations, 2015 specified Loan tenure of 12 years for the purpose of determination of tariff. The Commission has retained the existing loan tenure of 12 years for next Review Period.

Also, the existing MERC RE Tariff Regulations, 2015 specified the rate of interest as Base Rate of the State Bank of India prevailing during the previous year plus 300 basis points.

With effect from 01.04.2016, SBI replaced the Base Rate regime with the new regime of Marginal Cost of Funds based Lending Rate (MCLR), which are pegged on loan tenure basis and are updated on monthly basis. It is noted that the Commission amended the provisions of MERC (MYT) Regulations, 2015 vide amendment dated 29 November, 2017, wherein the Commission has amended the definition of Base Rate as one-year Marginal Cost of Funds-based Lending Rate ('MCLR') as declared by the State Bank of India from time to time. Accordingly, the Commission in RE Generic Tariff Order for FY 2019-20 has considered the One-year average of 1 Year MCLR of State Bank of India plus 300 basis points.

In view of the above, the consideration of 1-year MCLR of State Bank of India would be the appropriate base for specifying the rate of interest for the purpose of determination of RE Tariff. The spread over and above MCLR has been decided after analysing the market trends. The interest rates offered by the leading NBFCs, i.e., IREDA, REC and PFC, which are the top NBFC providing debt to RE projects, have been analysed. The interest rate charged was dependent on the type/technology of project, loan tenure and the risk profile of the borrower. The present 1 year MCLR of State Bank of India is 8.15%.

For the purpose of determination of RE Tariff, based on the prevailing rates, the Commission has proposed the rate of interest of 1 year MCLR prevailing during previous year plus 200 basis points.

The proposed clauses are as under:

“16.1 Loan Tenure:

For the purpose of determination of tariff, the loan tenure shall be considered as 12 years.

16.2 Interest Rate:

(a) The quantum of loan arrived at as specified above shall be considered as the gross normative loan for computation of the interest on loan;

(b) *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 the previous year from the gross normative loan;*

(c) *For the purpose of computation of tariff, the average of the one-year Marginal Cost of Funds-based Lending Rate ('MCLR') as declared by the State Bank of India for the previous year plus 200 basis points, shall be considered as the normative interest rate;*

(d) *Notwithstanding any moratorium period availed, 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."*

3.2 Return on Equity

The existing MERC RE Tariff Regulations, 2015 specifies the rate of Return on Equity as 16% to be grossed up with the applicable Tax rate. The rate of Return on Equity shall be computed by grossing up the base rate with the tax rate equivalent to the weighted average of the Minimum Alternate Tax ('MAT') during the year for the first 10 years from COD, and the weighted average of normal tax rate during the year for the remaining years of Project life.

In any business, in addition to recovery of the costs incurred, the investors are entitled to earn an appropriate return on their investment, since there are alternative investment opportunities and the investor has to choose between these alternative investment opportunities, keeping in view his risk-return profile.

The Commission in its MYT Regulations, 2019 has specified base rate of return on equity for Generating Company as 14%. The Commission has relied on Capital Asset Pricing Model (CAPM), which is typically used to determine the cost of equity. It is recognised that this model will not give the exact rate of return on equity, as it is based on the assumption of data which is taken as input. However, the CAPM gives an approximate rate of return on equity, which can be used to take an informed decision on rate of return on equity.

The CAPM describes the relationship between the expected return and risk of investing in a security. It shows that the expected return on a security is equal to the risk-free return plus a risk premium, which is based on the beta of that security. CAPM can be summarized according to the following formula:

Required (or expected) Return = Risk Free Rate + (Market Return – Risk Free Rate) x Beta.

Based on the CAPM model, the Commission has computed the cost of equity for regulated entities in the power sector to be in the range of 12%-15%.

In the initial years, debt-equity ratio is close to normative debt: equity ratio of 70:30 and this high debt-equity ratio during the construction phase means higher risk for the equity holders during this period and hence, the expected returns are higher. However, once the asset is put to use, the debt-equity ratio will reduce due to debt repayments made during the term of the loan and hence, reduce the risk for the equity holder. Once all the debt is re-paid, the financial risk is reduced to that of servicing only working capital requirements. As the risk profile reduces over the life of the project, the Commission is of the view that actual debt-equity ratio of the Companies is a good proxy of the financial risk involved through the life of the project.

As compared to conventional Generation projects, the gestation period of RE project is significantly lower. Hence, RE projects are exposed to lower risk during the construction phase compared to conventional generation projects.

It is observed that CERC in its RE Tariff Regulations, 2017 has specified rate of return on equity as 14% for RE projects. Also, in major States like Gujarat, Rajasthan, and Kerala, the rate of RoE is allowed at 14%

Considering the cost of equity, which works out to 12-15%, the lower rate of RoE prevalent in quite a few States, and the need to strike a balance between the viability of the Utility and interest of the consumers, it is proposed to reduce the Base Rate of RoE to 14%.

In view of the above, the Commission proposes rate of Return on Equity as 14% for the next Review Period.

This rate of return needs to be grossed up with applicable tax rate. Regarding the applicable tax rate, the existing approach provides for consideration of MAT rate for first 10 years and applicable tax rate for remaining period. However, the effective tax rate for remaining period is also coming out closed to MAT rate. It is proposed not to consider differential treatment over useful life. Hence, it is proposed to consider MAT rate prevailing as on 1st April of the previous financial year for the entire useful life of the project for grossing up Rate of Return.

The proposed clauses are as under:

“18.1 The value base for the equity shall be 30% of the Capital Cost, or the actual equity (in case of project-specific tariff determination) as determined under Regulation 15.

18.2 The Return on Equity shall be computed at the base rate of 14%, to be grossed up as per the Minimum Alternate Tax (‘MAT’) rate, applicable as on 1st April of the previous Financial Year.”

3.3 Interest on Working Capital

The existing MERC RE Tariff Regulations, 2015 specifies the formula for computation of normative working capital requirement for Wind Energy Projects, Small Hydro, Solar PV, and Solar Thermal Power Projects, which does not include fuel cost component and; for Biomass-

based Projects and non-fossil fuel-based Co-Generation Projects, including fuel cost component. The Commission decides to retain the existing formula for computation of Working capital requirement. Further, the Commission has clarified that the formula for Working Capital requirement for Biomass-based Projects and non-fossil fuel-based Co-Generation Projects shall also be applicable to Waste to Energy Projects.

Regarding rate of interest, the existing MERC RE Tariff Regulations, 2015 specifies rate of interest as the average of the Base Rate of State Bank of India prevalent during the previous year, plus 350 basis points. As discussed in the earlier Section; the base rate has to be changed to 1-year MCLR of State Bank of India.

It is seen that working capital is a recurring and short-term requirement used to manage the day to day operational requirements of the RE Projects, and hence the interest cost attached to working capital may be higher than the long-term debt. The prevailing 1-year MCLR is 8.15%.

Considering the prevailing market rates, the Commission proposes rate of Interest for Working Capital as the rate of interest of 1-year MCLR prevailing during previous year plus 300 basis points.

The proposed clauses are as under:

“19.1 The Working Capital requirement in respect of Wind Energy Projects and Small Hydro, Solar PV, Solar Thermal, and Solar Rooftop PV Power Projects, shall consist of:

- a) O&M expenses for one month;*
- b) Receivables equivalent to two months of tariff for sale of electricity calculated on the normative CUF;*
- c) Maintenance spares @ 15% of O&M expenses.*

19.2 The Working Capital requirement in respect of Biomass-based Projects, non-fossil fuel-based Co-Generation Projects, and Waste to Energy Projects shall consist of:

- a) Fuel costs for four months equivalent to normative Plant Load Factor (‘PLF’);*
- b) O&M expenses for one month;*
- c) Receivables equivalent to two months of fixed and variable charges for sale of electricity calculated on the target PLF;*
- d) Maintenance spares @ 15% of O&M expenses.*

19.3 Interest on Working Capital shall be the average of the one-year Marginal Cost of Funds-based Lending Rate (‘MCLR’) as declared by the State Bank of India for the previous year plus 300 basis points.”

3.4 O&M Expenses

As regards O&M Expenses, the existing MERC RE Tariff Regulations, 2015 specify that O&M expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission in these Regulations for the first year of the Review Period, and shall be escalated at the rate specified in the MYT Regulations. It is proposed to clarify that the escalation rate specified for escalation of O&M expenses for Generating Companies, in the MYT Regulations, shall be applicable.

The proposed clauses are as under:

“20.1 O&M expenses shall comprise repair and maintenance (‘R&M’) expenses, establishment (including employee) expenses, and administrative and general expenses including insurance.

20.2 O&M expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission in these Regulations for the first year of the Review Period.

20.3 Normative O&M expenses allowed under these Regulations shall be escalated at the rate specified for Generating Companies in the MERC (Multi Year Tariff) Regulations, 2019, as amended from time to time, for computation of the levelized tariff.”

3.5 Rebate and Late Payment Surcharge

As regards Rebate, the existing MERC RE Tariff Regulations, 2015 specifies that for payment of bills of the Project Entity through Letter of Credit, a rebate of 2% shall be allowed. Where payments are made other than through Letter of Credit within one month of presentation of bills by the Project Entity, a rebate of 1% shall be allowed.

The Commission has modified the provisions of Rebate in line with the approach adopted in MYT Regulations, 2019. It is proposed to allow 1% rebate for payment within 7 days from the date of billing instead of one month.

Regarding the provision for Letter of Credit (LC), the Commission is of the view that revolving LC shall be provided by Distribution Licensee instead of one-time LC. This will secure the interest of Project Entity.

As regards Late Payment Surcharge, the existing MERC RE Tariff Regulations, 2015 specify that in case the payment of any bill for charges payable under these Regulations is delayed beyond a period of sixty days from the date of billing, a Late Payment Surcharge at the rate of 1.25% per month shall be levied by the Project Entity.

The Commission has modified the provision for Late Payment Surcharge in line with the approach adopted in MYT Regulations, 2019. In the said approach, Surcharge has been levied at MCLR (one year) as on 1st of respective month plus 350 basis points on billed amount, for payments delayed beyond 30 days. Accordingly, the Commission proposes the changes in proposed Regulations, as under:

“21.1 For payment of bills of the Project Entity through revolving and valid Letter of Credit, a rebate of 2% shall be allowed.

21.2 Where payments are made other than through Letter of Credit within seven days of presentation of bills by the Project Entity, a rebate of 1% shall be allowed”.

“22. Late Payment Surcharge

In case the payment of any bill for charges payable under these Regulations is delayed beyond a period of 30 days from the date of billing, Late Payment Surcharge on simple interest basis at the one-year MCLR as declared by the State Bank of India as on 1st of the respective month plus 350 basis points per annum on the billed amount, shall be levied for the period of delay by the Project Entity”

3.6 Grant, Subsidy or Incentive from Central/State Government

The existing MERC RE Tariff Regulations, 2015 specify that the Commission shall take into consideration any grant, subsidy or incentive offered by the Central or State Government or their agencies, including accelerated/additional depreciation benefit, if availed, while determining the tariff under these Regulations.

The Commission notes that, for promotion of RE Energy, Generation based Incentive are sometimes being made applicable, over and above the applicable tariff. In such cases, the Commission has clarified that such Generation based Incentive, allowed specifically over and above Tariff, shall not be taken into account while determining the tariff. Accordingly, the following clause has been proposed:

“25.4 In case the Central or State Government or their agencies provide any generation-based incentive, which is specifically over and above the tariff, such incentive shall neither be taken into account while determining the tariff nor be deducted by the Distribution Licensee in subsequent bills raised by the particular Project Entity.”

4 Technology Specific Parameters

As discussed in the earlier Chapter, the Commission has specified the ceiling norms for determination of Project Specific Tariff. The ceiling norms and other technology specific parameters are discussed in this Chapter.

4.1 Technology-specific Parameters for Wind Energy Projects

4.1.1 Capital Cost

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified capital cost of Wind Energy projects. Since, no generic tariff is to be determined for these projects, the Commission will consider the capital cost of Wind Energy projects in case of Project Specific tariff based on prevalent market conditions. Further, as Capital Cost is not being specified, the clause related to indexation of Capital Cost has been deleted. The proposed clauses are as under:

“27. Capital Cost

The Capital Cost for Wind Energy Projects shall include the Wind Turbine Generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest during Construction, and capital investment relating to forecasting and scheduling:

Provided that the Commission shall approve the Capital Cost in case of project-specific tariff considering the prevalent market conditions.”

4.1.2 Capacity Utilisation Factor (CUF)

The existing MERC RE Tariff Regulations, 2015 specifies CUF for Wind Projects based on different Zones. The Zones are based on Average Mean Wind Power Density (WPD), which is directly proportional to CUF. The Commission proposes to do away with the differential CUF for different Wind Zones, as since inception of this concept, most of the Wind projects have claimed to be commissioned under only one Zone having lowest WPD as the tariff fixed for that zone was much higher. Hence, this concept is not serving the intended purpose of harnessing the best wind zone. . For specifying the ceiling norms for Wind Energy Projects, the Commission has considered the CUF at minimum Average Wind Power Density less than 250 W/m². Accordingly, the Commission has proposed minimum CUF of 22% for Wind Energy projects. The proposed clauses are as under:

“28. Capacity Utilisation Factor

The minimum normative CUF for Wind Energy Projects for the Review Period shall be 22% for the purpose of tariff determination:

Provided that the above normative CUF may be revised by the Commission through general or specific Order considering data that may become available subsequently.”

4.1.3 O&M Expenses

The existing MERC RE Tariff Regulations, 2015 specifies the O&M Expenses for Wind Energy Projects as 1.47% of capital cost of the project.

The Commission, based on capital cost norms specified in existing Regulations, has determined the O&M Expenses in terms of Rs. Lakh per MW in respective RE Generic Tariff Order for each year. For FY 2018-19, the Commission has determined O&M Expenses of Rs. 7.72 Lakh/MW based on the revised Capital cost of the project. The Commission decides to retain the same norm for first year of Review period.

Accordingly, the Commission proposes O&M Expenses for Wind Energy Projects for FY 2020-21 as Rs. 7.72 Lakh/MW. The escalation in O&M Expenses shall be applicable as per escalation factor specified in MYT Regulations, 2019. The proposed clause is as under:

“29. Operation and Maintenance Expenses

The ceiling normative O&M expenses for the base year of the Review Period shall be Rs. 7.72 lakh per MW, for the purpose of tariff determination.”

4.1.4 Tariff Determination in case of Re-powering of Wind Energy Projects

The existing MERC Tariff Regulations, 2015 are also applicable to re-powering of Wind Projects after notification of these Regulations.

The Commission notes that 592 MW of Wind Energy projects are installed in the State having capacity less than 1 MW, having been commissioned prior to March 2007. This includes capacity of 242.54 MW having machine capacity less than 250 kW, and 349.55 MW having machine capacity from 500 kW to 1 MW. Further, out of this 592 MW, projects having capacity of 400.94 MW achieved COD prior to 2002. This shows that State is having higher potential for re-powering of existing Wind Energy Projects. The Commission desires to promote re-powering of Wind Energy Projects in order to utilise the existing high wind speed sites for higher generation.

In view of the above, it is proposed to determine the Project Specific Tariff in case of re-powering of Wind Energy Projects. Accordingly, the following enabling provisions have been

proposed in draft Regulations for determination of Project Specific Tariff for re-powering of Wind Projects:

“30.1 A Project-specific tariff shall be determined by the Commission in case of Re-powering of Wind Energy Power Project, subject to the following conditions, in addition to the conditions specified in Regulation 10.2 for determination of Project-specific tariff:

(a) The older wind turbines shall have been operational for at least 15 years of Useful Life since their commissioning:

Provided that based on cost economics, contracting Parties may agree for repowering of wind turbine, which has been operational for lower than 15 years;

(b) The older wind turbines shall be replaced by newer wind turbines having either a higher name-plate capacity or higher CUF, and should result in a net increase in power generated from the same site;

(c) Detailed Project Report shall also clearly explain the rationale and benefits of Re-powering vis-à-vis setting up of a new project.”

4.2 Technology-specific Parameters for Small/Mini/Micro Hydro Projects

4.2.1 Capital Cost

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified capital cost of Small Hydro projects. As stated earlier, the Commission has combined Small/Mini/Micro Hydro Projects, for the purpose of specifying ceiling norms for Project-specific tariff determination. Since, no generic tariff is to be determined for these projects, the Commission will consider the capital cost of Small/Mini/Micro Hydro projects in case of Project Specific tariff based on prevalent market conditions. Further, as Capital Cost is not being specified, the clause related to indexation of Capital Cost has been deleted. The proposed clauses are as under:

“31. Capital Cost

The Capital Cost for Small/Mini/Micro Hydro Power Projects shall include the Turbine Generator including its auxiliaries, land cost, site development charges and other civil works, resettlement and rehabilitation costs, if any, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest during Construction:

Provided that the Commission shall approve the Capital Cost in case of project-specific tariff considering the prevalent market conditions.”

4.2.2 Capacity Utilisation Factor (CUF) and Auxiliary Consumption

The existing MERC RE Tariff Regulations, 2015 specifies CUF of 30% and Auxiliary Consumption of 1% for Small Hydro Projects. The Commission has proposed the same norm of 30% as minimum CUF and 1% as maximum Auxiliary Consumption for new projects, whose tariff is to be determined on Project Specific basis. The proposed clauses are as under:

“32. Capacity Utilisation Factor

The minimum CUF for Small/Mini/Micro Hydro Power Projects shall be 30% for the purpose of tariff determination.”

“33. Auxiliary Consumption

The ceiling normative Auxiliary Consumption for Small/Mini/Micro Hydro Power Projects shall be 1.0% for the purpose of tariff determination.”

4.2.3 O&M Expenses

The existing MERC RE Tariff Regulations, 2015 specifies O&M Expenses for Small Hydro Projects as 3.60% of capital cost for projects having capacity more than 1 MW up to 5 MW, and 2.80% of capital cost for projects having capacity more than 5 MW up to 25 MW.

The Commission proposes to retain the same norm as ceiling norms for new projects, whose tariff is to be determined on Project Specific basis. Further, the norms for Mini and Micro Hydro Projects have also been proposed. Hence, the separate Clause related to Tariff for Mini/Micro Hydro Power Projects, having tariff higher by Rs. 0.50/kWh than that applicable to Small Hydro projects, has been deleted. The proposed clause is as under:

“34. Operation and Maintenance Expenses

The ceiling normative O&M expenses for the base year of the Review Period for the purpose of tariff determination shall be as follows:

Project Size	O&M Expenses (Rs lakh/MW)
<i>Up to 500 kW</i>	<i>4.00% of the Capital Cost</i>
<i>Greater than 500 kW and up to and including 1 MW</i>	<i>4.00% of the Capital Cost</i>
<i>Greater than 1 MW and up to and including 5 MW</i>	<i>3.60% of the Capital Cost</i>
<i>Greater than 5 MW and up to and including 25 MW</i>	<i>2.80% of the Capital Cost</i>

“

4.3 Technology-specific Parameters for Biomass based Projects

4.3.1 Capital Cost

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified capital cost of Biomass based projects. Since, no generic tariff is to be determined for these projects, the Commission will consider the capital cost of Biomass based projects in case of Project Specific tariff based on prevalent market conditions. Further, as Capital Cost is not being specified, the clause related to indexation of Capital Cost has been deleted. The proposed clauses are as under:

“36. Capital Cost

The Capital Cost for Biomass-based Power Projects shall include the Turbine Generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest during Construction:

Provided that the Commission shall approve the Capital Cost in case of project-specific tariff considering the prevalent market conditions.”

4.3.2 Plant Load Factor, Auxiliary Consumption and Station Heat Rate

The existing MERC RE Tariff Regulations, 2015 specifies Plant Load Factor of 60% during stabilisation, 70% for remaining period of first year after stabilisation and 80% from second year onwards. Also, Auxiliary consumption and Station Heat rate have been specified as 10% and 4200 kcal/kWh respectively.

The Commission proposes to retain the same norms as ceiling norms for new projects, whose tariff is to be determined on Project-specific basis. The proposed clauses are as under:

“37. Plant Load Factor

37.1 The minimum PLF for the purpose of determining the fixed charge component of the tariff for Biomass-based Power Projects shall be:

- 1) During stabilisation: 60%;*
- 2) During the remaining period of the first year (after stabilisation): 70%;*
- 3) From 2nd year onwards: 80%.*

37.2 The stabilisation period shall not be longer than 6 months from the date of commissioning of a Project.”

“38. Auxiliary Consumption

The ceiling Auxiliary Power Consumption for Biomass-based Power Projects shall be 10% for the purpose of tariff determination.”

“39. Station Heat Rate

The ceiling SHR for new Biomass-based Power Projects shall be 4200 kcal/kWh for the purpose of tariff determination.”

4.3.3 O&M Expenses

The existing MERC RE Tariff Regulations, 2015 specifies O&M Expenses for Biomass Based Projects as 5.32% of capital cost. The Commission proposes to retain the same norm as ceiling norms for new projects, whose tariff is to be determined on Project Specific basis.

The proposed clause is as under:

“40. Operation and Maintenance Expenses

The ceiling normative O&M expenses for the base year of the Review Period shall be 5.32% of the Capital Cost for the purpose of tariff determination.”

4.3.4 Fuel Mix

The existing MERC RE Tariff Regulations, 2015 specifies that Biomass-based Power Project shall be designed in such a way that it uses different types of non-fossil fuels available within its vicinity. It is proposed to add Refuse Derived Fuel (RDF) in the list of indicative fuels.

The proposed clause is as under:

“41.1 The Biomass-based Power Project shall be designed in such a way that it uses different types of non-fossil fuels available within its vicinity such as crop residues, agro-industrial residues, forest residues, Refuse Derived Fuel (RDF), etc., or other biomass fuels as may be approved by MNRE.

41.2 The Project Entity shall prepare fuel management plans to ensure adequate availability of fuel to meet the Project requirements.”

4.3.5 Use of Fossil Fuel and its monitoring and compliance

The existing MERC RE Tariff Regulations, 2015 specifies that use of fossil fuel shall be limited to the extent of 15% of the total fuel consumption on an annual basis, or such other extent as may be stipulated by MNRE from time to time.

In this regard, the Commission notes that CERC in its RE Tariff Regulations, 2017 has discontinued the allowance of fossil fuel in Biomass based projects. The Commission is of the view that the prime objective of the RE Tariff Regulations are to promote usage of biomass for energy generation. Therefore, by allowing usage of fossil fuel, the very objective of using renewable fuel is defeated.

In view of the above, the Commission proposes to not allow the usage of fossil fuel in biomass based power projects for the next Review Period, for existing and new Projects. However, existing Projects would not be adversely affected, as the variable cost is determined every year considering the fuel mix and Gross Calorific Value (GCV). Accordingly, the following Regulation is proposed:

“42. Use of Fossil Fuel

Use of fossil fuels for generation shall not be allowed, and the entire power has to be generated using biomass.

”

Further, the existing MERC RE Tariff Regulations, 2015 specifies the monitoring mechanism for use of Fossil Fuel. The Distribution Licensee is responsible for monitoring compliance by Biomass-based Power Projects from whom it is procuring power. The Commission is of the view that the State Nodal Agency should also monitor the compliance of use of fossil fuel for Biomass based projects. Accordingly, the following proviso has been added:

“The State Nodal Agency shall be responsible for ensuring compliance with these Regulations by Biomass-based Power Projects from whom the Distribution Licensees in the State are procuring power.”

Further, regarding the non-compliance of usage of fossil fuel, the existing Regulations specify that Biomass-based Power Project is ineligible to avail the generic tariff determined in accordance with these Regulations from the date of and for the duration of the default during such financial year. It is also specified that such defaulting Biomass-based Project shall continue to sell power to the Distribution Licensee during the period of default at a rate lower by Rs. 0.50/kWh below the applicable preferential tariff determined for the relevant year.

The Commission is of the view that compliance of provisions regarding usage of fossil fuel is very important. Hence, it is proposed that such defaulting project shall continue to sell power

to the Distribution Licensee at a rate lower by Rs. 0.50/kWh below the applicable preferential tariff determined for the relevant year or the APPC or latest tariff discovered through Competitive Bidding, whichever is lower.

It is also noted that regular default shall affected the RPO compliance of Distribution Licensee. It is expected that there shall not be any regular default of conditions of these Regulations. The consideration of lower tariff for selling power under default should not be allowed for an extended period. Hence, it is proposed that, the concerned Distribution Licensee shall have the option to terminate the EPA with effect from such date if there is default for more than 90 days at any point in the Useful Life of the Project.

Accordingly, the following Regulations have been proposed:

“43.1 The Project Entity shall, along with its monthly energy bill, furnish a monthly fuel procurement and fuel usage statement certified by a Chartered Accountant to the Distribution Licensee with whom an EPA has been entered into, with a copy to the State Nodal Agency, for the purpose of monitoring the fossil and non-fossil fuel consumption. The statement shall include details such as –

- a. Quantity of fuel (in tonnes) for each fuel type (biomass fuels and fossil fuels) procured and consumed during the month for power generation;*
- b. Cumulative quantity (in tonnes) of each fuel type procured and consumed till the end of the month during the year;*
- c. Actual (gross and net) energy generation (in kWh) during the month;*
- d. Cumulative actual (gross and net) energy generation (in kWh) until the end of that month during the year;*
- e. Opening fuel stock quantity for each fuel type (in tonnes);*
- f. Receipt of fuel quantity for each fuel type (in tonnes) at the power Project site;*
- g. Closing fuel stock quantity (in tonnes) for each fuel type (biomass fuels and fossil fuels) available at the power Project site.*

43.2 Non-compliance in any month with the conditions regarding fossil fuel usage shall render such Biomass-based Power Project ineligible to avail the tariff determined in accordance with these Regulations from the date of and for the duration of the default during such month:

Provided that such defaulting Biomass-based Project shall continue to sell power to the Distribution Licensee during the period of default at a rate lower by Rs. 0.50/kWh below the applicable preferential tariff determined for the relevant year or the APPC or latest tariff discovered through Competitive Bidding, whichever is lower:

Provided further that if the period of such default exceeds 90 days at any point in the Useful Life of the Project, then the concerned Distribution Licensee shall have the option to terminate the EPA with effect from such date.”

4.3.6 Calorific value and Fuel Price

The existing RE Tariff Regulations, 2015 specifies calorific value of 3611 kcal/kg and fuel price of Rs. 3987/MT for first year of Review Period, i.e., FY 2015-16. The indexation mechanism for fuel price is also specified.

The calorific value of 3611 kcal/kg has been considered after taking into account usage of 15% fossil fuel. Now, it is proposed not to allow the usage of fossil fuel, hence, calorific value of fuel will reduce. It is noted that CERC in its RE Tariff Regulations, 2017 has specified calorific value of 3100 kcal/kg, after taking into account the impact of disallowance of usage of fossil fuel. The Commission has proposed the calorific value of 3100 kcal/kg in line with the approach adopted by CERC. The proposed clause is as under:

“45. Calorific Value

The minimum average Calorific Value of the biomass fuel(s) used for the purpose of determination of tariff for new Biomass-based Power Projects shall be 3100 kcal/kg.

”

Regarding the fuel cost, the Commission in RE Generic Tariff Order for FY 2019-20 has approved fuel cost of Rs, 4295.57/ MT. CERC In its RE Tariff Regulations, 2017 has specified the fuel cost of Rs. 3344.85/MT for Maharashtra for FY 2017-18 with 5% escalation each year, which translates to fuel cost of Rs. 3687.70/MT for FY 2019-20. There is a significant difference in the fuel cost for State as specified by the Commission and CERC. The fuel cost for Biomass based project is based on availability and prevailing market conditions in the State. The Commission is of view that a detailed study needs to be undertaken for determining the fuel cost for Biomass based projects, keeping in view the disposal cost, opportunity cost in terms of alternative uses of the fuel, and GCV. Accordingly, the Commission has proposed the following proviso in draft Regulations:

“46. Fuel Price

The biomass fuel price for the first year of the Project shall be determined based on the prevailing prices of the fuel mix for each Project and based on an independent study by the Commission, and shall thereafter be linked to the indexation mechanism specified in Regulation 46:

Provided that the aspects such as disposal cost, opportunity cost in terms of alternative uses of the fuel, and Gross Calorific Value shall be considered, while determining the fuel price.”

The Fuel Price indexation mechanism has also been modified slightly to factor in the findings of the detailed study proposed to be conducted by the Commission. The proposed clause is as under:

“47.2 The Biomass fuel price shall be revised by the Commission taking into consideration the Biomass fuel price determined by the Central Commission, or a normative escalation factor based on an independent study by the Commission, or 5% per annum, as the Commission may consider appropriate.”

4.4 Technology-specific Parameters for Non fossil Fuel based Co-generation Projects

4.4.1 Capital Cost

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified capital cost of Non-fossil fuel-based Co-generation projects. Since, no generic tariff is to be determined for these projects, the Commission will consider the capital cost of Non-fossil fuel-based Co-generation Projects in case of Project Specific tariff based on prevalent market conditions. Further, as Capital Cost is not being specified, the clause related to indexation of Capital Cost has been deleted. The proposed clauses are as under:

“50. Capital Cost

The Capital Cost for Non-fossil fuel-based Co-Generation Projects shall include the Turbine Generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest during Construction:

Provided that the Commission shall approve the Capital Cost in case of project-specific tariff considering the prevalent market conditions.”

4.4.2 Auxiliary Consumption and Station Heat Rate

The existing MERC RE Tariff Regulations, 2015 specifies Auxiliary consumption of 8.5% and Station Heat Rate of 3600 kcal/kWh.

The Commission proposes to retain the same norm as ceiling norms for new projects, whose tariff is to be determined on Project-specific basis. The proposed clauses are as under:

“52. Auxiliary Consumption

The ceiling Auxiliary Power Consumption shall be 8.5%, for the purpose of tariff determination.”

“53. Station Heat Rate

The ceiling SHR for new non-fossil fuel-based Co-Generation Projects shall be 3600 kcal/kWh, for the purpose of tariff determination.”

4.4.3 O&M Expenses

The existing MERC RE Tariff Regulations, 2015 specifies O&M Expenses for Non-fossil fuel based Co-generation Projects as 3.54% of capital cost. The Commission proposes to retain the same norm as ceiling norms for new projects, whose tariff is to be determined on Project Specific basis.

4.4.4 Calorific value and Fuel Price

The existing RE Tariff Regulations, 2015 specifies calorific value of bagasse as 2250 kcal/kg and fuel price of Rs. 2326.84/MT for first year of Review Period, i.e., FY 2015-16. The indexation mechanism for fuel price is also specified.

The Commission has proposed to retain the calorific value of 2250 kcal/kg for bagasse as the ceiling calorific value for Projects desirous of project-specific tariff.

“55. Calorific Value

The minimum Gross Calorific Value of bagasse shall be considered as 2250 kcal/kg:

Provided that for the use of biomass fuels other than bagasse, the Calorific Value as specified in Regulation 44 shall be considered.”

Regarding the fuel price, the Commission is of the view that the fuel price for bagasse is based on availability and prevailing market conditions in the State. The Commission is of the view that a detailed study needs to be undertaken for determining the bagasse cost, keeping in view the disposal cost, opportunity cost in terms of alternative uses of the fuel, and Gross Calorific Value. Accordingly, the Commission has proposed the following proviso in draft Regulations:

“56. Fuel Price

The price of bagasse for the first year of the Project shall be determined based on the prevailing price of bagasse as assessed through an independent study by the Commission, and shall thereafter be linked to the indexation mechanism specified in Regulation 55:

Provided that the aspects such as disposal cost, opportunity cost in terms of alternative uses of the fuel, and Gross Calorific Value shall be considered, while determining the fuel price.

Provided further that for use of biomass other than bagasse, the biomass prices as specified under Regulation 45 shall be applicable”.

The Fuel Price indexation mechanism has also been modified slightly to factor in the findings of the detailed study proposed to be conducted by the Commission. The proposed clause is as under:

“57.2 The Bagasse fuel price shall be revised by the Commission taking into consideration the Biomass fuel price determined by the Central Commission, or a normative escalation factor based on an independent study by the Commission, or 5% per annum, as the Commission may consider appropriate.”

4.4.5 Use of Fossil Fuel and its monitoring and compliance

The existing MERC RE Tariff Regulations, 2015 specifies that use of fossil fuel shall be limited to the extent of 15% of the total fuel consumption on an annual basis, or such other extent as may be stipulated by MNRE from time to time.

As discussed in earlier Section, the Commission proposes to disallow the usage of fossil fuel for the next Review Period. Accordingly, the following Regulation is proposed:

“59. Use of Fossil Fuel

Use of fossil fuels for generation shall not be allowed, and the entire power has to be generated using biomass.

”

Further, the existing MERC RE Tariff Regulations, 2015 specify the monitoring mechanism for use of Fossil Fuel. The Distribution Licensee shall be responsible for monitoring compliance by Fossil Fuel based Co-generation Projects from whom it is procuring power. The Commission of view that State Nodal Agency should also monitor the compliance of use of fossil fuel for Co-generation Projects. Accordingly, the following provisos have been added:

“The State Nodal Agency shall ensure compliance with the provisions of Energy Audit by all the Co-Generation Projects in the State, and submit an annual Report on the compliance status, within three months of the end of each Financial Year.”

“62.4 The State Nodal Agency shall be responsible for ensuring compliance with these Regulations by Non-fossil Fuel-based Co-Generation Projects from whom the Distribution Licensees in the State are procuring power.”

Further, as per Existing MERC RE Tariff Regulations, 2015, the tariff for a Non-fossil Fuel-based Non-qualifying Co-Generation Project shall be equivalent to the APPC of the Distribution Licensee procuring power for that year.

In this regard, the Commission is of the view that compliance of provisions regarding efficiency of cogeneration is very important. Hence, it is proposed that such defaulting project shall

continue to sell power to the Distribution Licensee at a rate lower by Rs. 0.50/kWh below the applicable preferential tariff determined for the relevant year or the APPC or latest tariff discovered through Competitive Bidding, whichever is lower.

Accordingly, the following Regulations have been proposed:

“63.1 The tariff for a Non-fossil Fuel-based Non-qualifying Co-Generation Project shall be equivalent to the APPC of the Distribution Licensee procuring power for that year or latest tariff discovered through Competitive Bidding or previous approved Generic tariff, whichever is lower.”

4.5 Technology-specific Parameters for Solar PV Power Projects and Solar Rooftop PV Power Projects

4.5.1 Technology Aspects

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified the norms for Solar PV Power Projects under Gross Metering.

As discussed earlier, the norms specified for Solar Rooftop PV Power Projects under the proposed Regulations shall be applicable for determination of generic tariff for grid-connected Solar Rooftop PV systems, and shall act as ceiling norms for determination of project-specific tariff for Solar PV Power Projects. Further, as generic tariff is being separately determined for Solar Rooftop PV Projects, the clause linking the tariff to generic tariff of Solar PV projects has been deleted.

The proposed clause is as under:

“64. Technology Aspects

The norms specified for Solar Rooftop PV Power Projects under these Regulations shall be applicable for determination of generic tariff for grid-connected Solar Rooftop PV systems, and shall act as ceiling norms for determination of project-specific tariff for Solar PV Power Projects, both using sunlight for direct conversion into electricity through Photo Voltaic technology as approved by MNRE.”

4.5.2 Capital Cost

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified capital cost of Solar PV Power projects. It is proposed to determine generic tariff for Solar Rooftop PV Power Projects. Hence, the capital cost of the same is required to be specified.

The Commission in existing MERC RE Tariff Regulations, 2015 has specified capital cost of Rs. 605.85 Lakh/MW for FY 2015-16. Subsequently, the Commission in RE Generic Tariff Order for respective year has approved capital cost of Rs. 530.02 Lakh/MW for FY 2016-17 and 424.74 Lakh/MW for FY 2017-18. From FY 2018-19 onwards, the Commission has determined RE Generic Tariff for Solar PV projects based on Tariff discovered through Competitive Bidding.

For specifying the capital cost for Solar PV projects, the Commission has taken into account the prevailing market rates. Accordingly, the Commission has proposed the capital cost for Solar Rooftop PV Power projects as Rs. 400 Lakh/MW.

Accordingly, the following is proposed in draft Regulations:

“65. Capital Cost

The normative Capital Cost of a Solar Rooftop PV Power Project shall be considered as Rs. 400 lakh/MW for base year for the purpose of tariff determination:

Provided that the Capital Cost may be revised in the Generic Tariff Order, based on market conditions and prevailing prices.”

4.5.3 Capacity Utilisation Factor (CUF)

The existing MERC RE Tariff Regulations, 2015 specifies CUF of 19%. The Commission has proposed the same norm for first year of the COD. Further, the Commission has considered annual degradation of 0.5% in net generation from second year onwards.

Accordingly, the following is proposed in draft Regulations:

“66. Capacity Utilisation Factor

The CUF of a Solar Rooftop PV Project shall be considered as 19% for the purpose of tariff determination for the first year after COD:

Provided that annual degradation of 0.5% in net generation shall be considered for the purpose of tariff determination from the second year onwards.”

4.5.4 O&M Expenses

The existing MERC RE Tariff Regulations, 2015 specifies O&M Expenses of Rs. 13 Lakh/MW for FY 2015-16. However, the Karnataka Electricity Regulatory Commission (KERC), in its Order dated 1 August, 2019 has approved much lower O&M Expenses of Rs. 6 lakh/MW for Solar Rooftop PV Projects, by referring to its own Order for the previous Year, wherein it had allowed O&M expenses of Rs. 6 lakh/MW for a capital cost of Rs. 400 lakh/MW.

In view of the above, as Capital Cost has been considered as Rs. 400 lakh/MW, the Commission has proposed O&M Expenses of Rs. 6 Lakh/MW for first year of the Review Period for Solar Rooftop PV projects.

4.6 Technology-specific Parameters for Solar Thermal Power Projects

4.6.1 Capital Cost

In the existing MERC RE Tariff Regulations, 2015, the Commission has specified capital cost of Solar Thermal Power projects. Since, no generic tariff is to be determined for these projects, the Commission will consider the capital cost of Solar Thermal Power projects in case of Project Specific tariff based on prevalent market conditions. Further, as Capital Cost is not being specified, the clause related to indexation of Capital Cost has been deleted. The proposed clauses are as under:

“69. Capital Cost

The Capital Cost for Solar Thermal Power Projects shall include the cost of the solar PV modules, inverter, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest during Construction:

Provided that the Commission shall approve the Capital Cost in case of project-specific tariff considering the prevalent market conditions.”

4.6.2 Capacity Utilisation Factor (CUF) and Auxiliary Consumption

The existing MERC RE Tariff Regulations, 2015 specifies CUF of 23% and Auxiliary Consumption of 10% for Solar Thermal Power Projects. The Commission proposes to retain the same norm as ceiling norms for new projects, whose tariff is to be determined on Project Specific basis. The proposed clauses are as under:

“70. Capacity Utilisation Factor

The minimum CUF of a Solar Thermal Power Project shall be considered as 23% for the purpose of tariff determination.”

“72. Auxiliary Consumption

The ceiling Auxiliary Consumption factor shall be 10% for the purpose of tariff determination.”

4.6.3 O&M Expenses

The existing MERC RE Tariff Regulations, 2015 specifies O&M Expenses for Solar Thermal Power Projects as Rs. 15 Lakh /MW for base year. The Commission proposes to retain the same norm as ceiling norm for new projects, whose tariff is to be determined on Project Specific basis.

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