

CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

No. RA-14026(11)/1/2023-CERC

Date: 17/09/2024

In the matter of

Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2024, applicable from 01.07.2024 – Statement of Objects & Reasons (SOR) thereof.

STATEMENT OF REASONS

Introduction

- a) On February 17, 2024, the Commission issued the Draft Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024 (hereinafter referred to as the 'Draft Regulations'), in exercise of the powers vested under Section 61 and clause (s) of sub-section (2) of Section 178 of the Act and all other enabling powers and in compliance of the requirement under sub-section (3) of Section 178 of the Act. The Commission also issued an Explanatory Memorandum accompanying the Draft Regulations wherein it explained the reasons and analysis relied upon for framing the Draft Regulations.
- b) A public notice was issued by the Commission on February 17, 2024, soliciting the views/ suggestions/ objections of the stakeholders on the Draft Regulations by March 14, 2024. In response, the Commission received submissions from forty-two (42) stakeholders. The list of stakeholders is attached as **Annexure I** to this document. Subsequently, a Public Hearing on the Draft Regulations was conducted on March 19, 2024, through video conferencing. The list of stakeholders who presented during the Public Hearing is attached as **Annexure II**.
- c) The Commission, complying with the provisions of the Act and the Electricity (Procedure for Previous Publication) Rules, 2005, proceeded to finalize the CERC (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2024. The Commission considered the comments of the stakeholders on the Draft Regulations, views of the participants in the Public Hearing as well as their written submissions received during and after the Public Hearing. The Regulations have been finalized after



due consideration of various issues raised. The analysis of the issues and findings of the Commission thereon are discussed in the subsequent paragraphs.

- d) On June 12, 2024, the Commission notified the Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2024 (hereinafter referred to as 'CERC RE Tariff Regulations, 2024') keeping in view the mandate of the Act and the submissions of the stakeholders.
- e) It may be noted that all the suggestions given by the stakeholders have been considered, and the Commission has attempted to elaborate on all the suggestions as well as the Commission's decisions on each suggestion in the Statement of Reasons. However, in case any suggestion is not specifically elaborated, it does not mean that the same has not been considered. Wherever possible, the comments and suggestions have been summarised clause-wise, along with the Commission's analysis and ruling on the same. However, in some cases, due to overlapping of the issues/comments, two clauses have been combined in order to minimise repetition. The Commission has also made certain suo-motu consequential changes in order to ensure consistency among clauses.
- f) The main issues raised during the public consultation process and the Commission's analysis and decisions on the issues, that underlie the Regulations, as finally notified, are given in subsequent paragraphs.

1. Definitions and Interpretation

a. Definition of Biomass

Commission's Proposal:

1.1. As per Regulation 2(1)(c) of the Draft Regulations, Biomass has been proposed as below:

"c) 'Biomass' means wastes produced during agricultural and forestry operations (for example, straws and stalks) or produced as a by-product of processing operations of agricultural produce (e.g., husks, shells, de-oiled cakes); wood produced in dedicated energy plantations or recovered from wild bushes or weeds; and the wood waste produced in some industrial operations;"

Comments Received:

1.2. **Abellon Clean Energy Limited** has suggested that the definition of Biomass needs to be modified to include the organic fraction of MSW.

1.3. **NTPC limited** has suggested to include torrefied charcoal also in the definition of biomass



Analysis and Decision:

1.4. The Commission has considered the stakeholders' suggestions, and it has been pointed out that the guidelines for implementation of waste to energy programme issued by the Nodal Ministry (MNRE) consider the biodegradable fraction of MSW as biomass. Further, MSW can also be converted to 'Torrefied Charcoal' which can be co-fired with fossil fuel in the boilers for generating electricity. However, the Commission is of the view that the Nodal Ministry on renewable energy would be the competent authority to consider the above options under the biomass category and hence decided to modify the definition of Biomass in order to incorporate such other waste as recognised by the Central Government, as follows :

"c) 'Biomass' means wastes produced during agricultural and forestry operations (for example, straws and stalks) or produced as a by-product of processing operations of agricultural produce (e.g., husks, shells, de-oiled cakes); wood produced in dedicated energy plantations or recovered from wild bushes or weeds; and the wood waste produced in some industrial operations; including such other wastes as may be recognised by the Central Government as being part of biomass;"

b. Definition of Project

Commission's Proposal:

1.5. As per Regulation 2(1)(t) of the Draft Regulations, Project has been proposed as below:

"t) 'Project' means a generating station or an evacuation system up to an inter-connection point, as the case may be, and in the case of a small hydro project, includes all components of the generating facility such as a dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;"

Comments Received:

1.6. **SAEL Limited** has suggested that the definition should be aligned to the definition of a Generating Station under Section 2(30) of the Electricity Act, 2003.

Analysis and Decision:

1.7. The definition of "Project," as outlined in Regulation 2(1)(t), adequately captures the scope and components of a generating facility, including small hydro projects.

1.8. The intention behind defining "Project" is to provide clarity and consistency in terminology within the regulatory framework, ensuring that all relevant components of a generating station or evacuation system are appropriately accounted for. By incorporating all components of the generating facility, such as the dam, intake water conductor system,



power generating station, and generating units, the definition aims to encompass the entirety of the power generation scheme.

1.9. The definition of "Project" in Regulation 2(1)(t) comprehensively includes the scope and components of a generating facility, including small hydro projects. Regulation 2(1)(t), read with Regulation 2(2), aligns the term "generating station" used in Regulation 2(1)(t) of the draft Regulations with Section 2(30) of the Electricity Act, 2003. Therefore, the Commission has decided to retain the definition of "Project" as proposed in the Draft Regulations

c. Definition of Renewable Energy Source

Commission's Proposal:

1.10. As per Regulation 2(1)(y) of the Draft Regulations, Renewable Energy Sources have been proposed as below:

"y) 'Renewable energy source' means and includes sources of renewable energy such as hydro, wind, and solar, including its integration with combined cycle, biomass, biofuel cogeneration, urban or municipal waste, and such other sources as recognised or approved by the Central Government;"

Comments Received:

1.11. **The South Indian Sugar Mill Association, UP Sugar Mills Cogen Association (UPSMCA), and ISMA** have requested the Commission to include bagasse in the definition

1.12. **WBSEDCL** suggested that "biofuel cogeneration" may be incorporated into the definition.

Analysis and Decision:

1.13. The Commission is of the view that the current definition of renewable energy sources, which includes "biofuel cogeneration" is sufficient. Therefore, it has been decided to retain the definition of 'Renewable energy source' as proposed in the draft Regulations.

d. Definition of Renewable Hybrid Energy Project

Commission's Proposal:

1.14. As per Regulation 2(1) (aa) of the Draft Regulations, the Renewable Hybrid Energy Project has been proposed as below:

"aa) 'Renewable hybrid energy project' means a renewable energy project that produces electricity from a combination of renewable energy sources connected at the same inter-connection point;"



Comments Received:

1.15. **NTPC Limited and Grid Controller of India Limited** have suggested that for the definition of a Renewable hybrid energy project, a combination of renewable energy sources connected at the same inter-connection or different locations may be considered.

Analysis and Decision:

1.16. The Commission has noted the suggestion regarding modification in the definition of RE hybrid projects and is of the view that no change is required in the definition of Renewable Hybrid Energy Project (RHEP). The primary objective behind defining an RHEP is to encourage the utilization of multiple renewable energy sources to enhance power generation capacity and ensure a steady power supply with an increased capacity utilization factor, and this is best achieved when all the resources of the RHEP are connected to the same interconnection point. The Commission also notes that IEGC also defines hybrid projects connected at the same inter-connection point.

Therefore, the Commission has decided to retain the definition proposed in the Draft Regulations.

e. Definition of Small Hydro Project

Commission's Proposal:

1.17. As per Regulation 2(1) (bb) of the Draft Regulations, a Small Hydro Project has been proposed as below:

"bb) 'Small hydro project' means a hydropower project with an installed capacity up to and including 25 MW or, as defined by the Government of India, from time to time at a single location;"

Comments Received:

1.18. **Chhattisgarh Hydro Power LLP and Sarada Hydro Power LLP** have requested the Commission to declare all SHPs between 5 MW to 50 MW as small hydro power projects

Analysis and Decision:

1.19. The Commission has noted the suggestions and is of the view that the capacity limits of the small hydro project are in line with the limits defined by the Ministry of Power (MoP) /Ministry of New and Renewable Energy (MNRE). Therefore, it has been decided to retain the definition as proposed in the Draft Regulations.



f. Definition of State Nodal Agency

Commission's Proposal:

1.20. As per Regulation 2(1) (ee) of the Draft Regulations, the State Nodal Agency has been proposed as below:

ee) 'State Nodal Agency' means the agency in a State as may be designated by the Ministry of New and Renewable Energy to promote efficient use of renewable energy in that State;

Comments Received

1.21. **GRIDCO Limited** commented that section 86 (1)(e) of the EA of 2003 empowers State Commissions to encourage co-generation and renewable energy generation and suggested that State Nodal Agencies should be designated by the State Electricity Regulatory Commission rather than MNRE to promote efficient renewable energy use within their respective states.

Analysis and Decision:

1.22. The Commission is of the view that the definition of State Nodal Agency for the RE Tariff Regulations is limited to the role specified under these regulations and is adequate. The Commission is of the view that it does not conflict with the power of the State Commission under Section 86 (1) (e) of the Act. Rather it can significantly increase the effectiveness of renewable energy promotion efforts at the state level while ensuring alignment with national objectives in a coherent manner. Therefore, the Commission has decided to retain the definition proposed in the Draft regulations.

g. Definition of Storage

Commission's Proposal:

1.21. As per Regulation 2(1) (ff) of the Draft Regulations, Storage has been proposed as below:

"ff) 'Storage' means an energy storage system utilizing methods and technologies like solid state batteries, flow batteries, pumped storage, compressed air, fuel cells, hydrogen storage or any other technology to store various forms of energy and to deliver the stored energy in the form of electricity;"

Comments Received:

1.22. **Mr. Shanti Prasad** has suggested that the definition should also cover liquid electrolyte type storage batteries, and hence, before the words 'solid state batteries', the words 'liquid electrolyte based batteries' may kindly be added



Analysis and Decision:

1.23. The Commission has taken note of the suggestion and deliberated on its merits. While the Commission, acknowledges the potential importance of "liquid electrolyte based batteries" as an emerging technology for energy storage, it opined that it is essential to recognize that this technology is still at a nascent stage of development and empirical data supporting its widespread adoption is currently limited. Given the evolving nature of energy storage technologies and the need for robust empirical evidence to inform regulatory decisions, the Commission has decided to retain the proposed definition of "Storage" as outlined in the Draft Regulations. The proposed definition encompasses a broad range of established energy storage methods and technologies while also allowing for the inclusion of any other technology capable of storing various forms of energy and delivering that energy as electricity.

h. Definition of Useful Life

Commission's Proposal:

1.24. As per Regulation 2(1) (hh) of the Draft Regulations, Useful Life has been proposed as below:

"(hh) 'Useful Life' in relation to the project, including a dedicated evacuation system, from the date of commercial operation of such project, shall mean the following: -

<i>i Wind power project</i>	<i>25 years</i>
<i>ii Biomass power project with Rankine cycle technology</i>	<i>25 years</i>
<i>iii Non-fossil fuel based co-generation project</i>	<i>25 years</i>
<i>iv Small hydro Project</i>	<i>40 years</i>
<i>v Municipal solid waste based power project/ Refuse derived fuel based power project</i>	<i>20 years</i>
<i>vi Solar PV power project/ floating solar project/ Solar thermal power project</i>	<i>25 years</i>
<i>vii Biomass gasifier based power project</i>	<i>25 years</i>
<i>viii Biogas based power project</i>	<i>25 years</i>
<i>ix Renewable hybrid energy project</i>	<i>Minimum of the Useful Life of different RE technologies combined for Renewable Hybrid Energy Project for</i>



Composite Tariff as specified under Regulation 70.

x Renewable energy with storage project

Same as the Useful Life of the project, assuming that there is no storage”

Comments Received:

1.25. **Suryaa Chamball Power Limited, Rajasthan Biomass Power Developers Association,** has requested the Commission to revise the useful of Biomass power plants from 25 years to 30 years.

1.26. **UPSMCA** requested to reconsider the useful life of non-fossil fuel-based co-generation projects as 20 years as prescribed in the extant 2020 Regulations.

1.27. **Greenesol Power Systems Pvt. Ltd., CNIM Martin Pvt. Ltd., Zenith Energy Services Pvt. Ltd, Waste to Energy Research & Technology Council, Mr. K Sreenivasa Rao, CII, and RE Sustainability Limited** have requested the Commission to revise the MSW project life to 25 years. **Avant-Garde** also suggested that the project life of 20 - 25 years should be there for a well-maintained plant using segregated waste.

1.28. **Mr. Shanti Prasad** has suggested that it would be appropriate to specify the useful life of components of battery storage projects, namely, Lithium ion / sodium ion / solid state batteries and inverters, and to consider depreciation charges for them separately or to consider it based on data available while considering project specific petition but useful life should not be less than 5 years for batteries and 10 years for inverters. Alternatively, their replacement be considered towards additional capitalisation.

1.29. **Mr. Shanti Prasad** has further suggested the Commission specify the useful life of the storage project as 25 years

1.30. **ISMA** has requested the Commission to examine the useful life mentioned for Bagasse-based power projects.

Analysis and Decision:

1.31. Biomass power projects have been developed and operated in India by power developers for a significant time period as on date, and most of them have considered a useful life of 25 years. There is a lack of sufficient evidence to indicate that significant technical upgrades have extended the useful life of biomass power plants. Further, the stakeholders have also not provided specific practical examples to substantiate their request to increase the useful life. Further, as the boiler technology utilized in biomass power plants is similar to that of thermal



power plants, the Commission has decided to maintain the useful life of biomass power plant technologies at 25 years.

1.32. The Commission, during the framing of draft Regulations, has analysed the MSW/RDF projects that are already developed or being developed in India and found that most of the projects are under development or construction, with only a handful operating in their initial years of life. Therefore, the Commission does not have sufficient project data to revise the useful life. Further, MSW plants utilise incineration of waste to produce heat and during the incineration of the waste, a significant amount of chemicals are released in the boiler. These chemicals are highly corrosive in nature and have an impact on the metal parts, making them technically constrained to be in operating condition for longer years. Further, even the operating expenditures for maintaining the plant are significant, which has also been seen from the norms for O&M expenditure specifically due to the wear and tear of equipments due to the corrosion/chemical reactions. Therefore, the Commission is of the opinion that a useful life of 20 years for an MSW plant is appropriate, and the same needs to be retained as per the draft Regulations.

1.33. Regarding the useful life of storage facilities, the Commission highlights that battery storage will only be evaluated in conjunction with a renewable source, such as solar or wind, i.e., Renewable Energy with Storage project. Therefore, while determining the project-specific tariff for such projects, all the elements of useful life, as well as depreciation of the storage component, will be evaluated based on the submissions made by the developer, as well as market information available with the Commission. Therefore, the Commission opines that there is no specific need to define the useful life of battery storage and inverters.

2. Scope and extent of application & Eligibility Criteria

Commission's Proposal:

2.1. The scope and extent of application and Eligibility Criteria of these Regulations were proposed under as per Regulations 3 & 4 of the Draft Regulations:

"3. Scope and extent of application

These regulations shall apply to cases where the tariff, for a grid connected generating station or a unit thereof commissioned during the Control Period and based on renewable energy sources is to be determined by the Commission under Section 62 read with Section 79 of the Act:

Provided that in cases of wind power projects, small hydro projects, biomass power projects with Rankine cycle technology, non-fossil fuel based cogeneration projects, solar PV power



projects, floating solar projects, solar thermal power projects, renewable hybrid energy projects, renewable energy with storage projects, biomass gasifier based power projects, biogas based power projects, municipal solid waste based power projects, and refuse derived; fuel based power projects, these regulations shall apply subject to the fulfilment of eligibility criteria specified in Regulation 4 of these Regulations.

4. Eligibility Criteria

...

f) Renewable hybrid energy project – The rated capacity of generation from one renewable energy source is at least 33% of the total installed capacity of the renewable hybrid energy project, which operates at the same point of interconnection: Provided that energy is injected into the grid at the same interconnection point and metering is done at such a common interconnection point accordingly.

...”

Comments Received:

2.2. **Mr. Shanti Prasad** has commented that as per provisions of the Electricity Act read with Tariff policy, determination of the project-specific tariff can be undertaken only where the Central Government has not specifically provided for competitive bidding or its guidelines or has relaxed the provisions of competitive bidding for each specific case. This is thus the prerequisite of determination of project specific tariffs by the commission, and it needs to be incorporated in regulations 3, 4, and 7.

2.3. **Grid Controller of India Limited** has commented that as per the draft RE Tariff Regulations, the renewable energy with storage projects (both BESS and PSP) is envisaged under the Section 62 route, while the national framework for promoting energy storage system and Guidelines for procurement and utilization of Battery Energy Storage System issued by the Central Government envisage tariff determination and consequent adoption under competitive bidding route. Accordingly, the Grid Controller of India Limited has requested to provide clarity over the treatment of hybrid projects, where the storage part is under the competitive bid route while the rest of the RE parts are under the Section 62 route.

2.4. **Dr. Anoop Singh, IIT Kanpur**, has suggested that the 33% CUF requirement adopted from competitive bidding documents for hybrid projects is not applicable in the context of tariff regulations and recommended adjusting the CUF to reflect the practical realities of project performance.



2.5. **The Power Foundation of India** has commented that the draft Regulations provide the detailed tariff methodology for various Renewable Energy Projects, including small hydro, biomass, and Urban & Municipal Solid Waste, which would rarely qualify as inter-State projects or composite schemes, and thus should not be regulated by the Central Commission under Section 79 of the Act. For such intra-state projects, it is rather SERCs who should prudently determine the norms depending upon the local and geographical issues pertaining to the respective state.

Analysis and Decision:

2.6. The Commission has the power under Section 62 of the Electricity Act, 2003 to determine tariffs under a regulated tariff mechanism. Section 63 of the Electricity Act, 2003 applies only when the tariff of the respective project is determined under competitive bidding. Therefore, the Commission can determine project specific tariffs in respect of all the projects that do not come through the competitive bidding route. Hence, no change is required in the draft Regulations.

As already mentioned in the explanatory memorandum, renewable energy with storage project is at the early phase of development, and therefore establishing a standardised benchmark for specifying generic tariffs remains a challenge. Therefore, the Commission has provided for the determination of project-specific tariffs, which may be a composite tariff or differential tariff based on the time of day. On the suggestion of adjusting the CUF for hybrid Projects to reflect practical realities, the Commission would like to clarify that the minimum CUF specified in the Regulations for hybrid projects is 30% and not 33%. The eligibility criteria of at least 33% rated capacity for hybrid projects is in line with the policy framework issued by the Central Government and is adequate to ensure optimal utilisation of renewable resources and transmission infrastructure. Accordingly, the Commission decided to retain the eligibility criteria proposed for hybrid projects.

On the issue of clarity of RE projects with storage, the Commission is of the view that various business models may emerge for RE projects with storage. The Commission has already dealt with the petitions under project-specific tariffs for renewable energy projects with battery storage projects developed by the generating companies owned or controlled by the Central Government under Section 79 of the Act and that of adoption of tariff for standalone energy storage projects under Section 63 of the Act. Accordingly, the Commission would like to deal with such petitions on a case-to-case basis.

On the issue of jurisdiction of the Commission to specify the norms for Renewable Energy Projects such as small hydro, biomass MSW, etc., the Commission would like to clarify that



the Central Commission, under Section 79 of the Act, has been assigned the functions inter alia

to regulate the tariff of generating companies owned or controlled by the Central Government and to regulate the tariff of the generating companies having composite schemes of generating and selling in more than one State.

In view of the above, the Commission is required to determine the tariff for such generating stations irrespective of their size. In fact, the Commission has dealt with various petitions filed by the generating companies owned or controlled by the Central Government.

Further, Clause 6.4 of the Tariff Policy entrusts the responsibility on the Central Commission to frame guidelines for pricing of non-firm power especially from the nonconventional sources for the cases when procurement is not through the competitive bidding process.

The objective of the Regulations is to evolve the norms that could be applicable for the determination of tariffs for the generation of electricity from renewable energy sources of energy and which could also act as a guiding principle for the State Electricity Regulatory Commission in terms of Section 61(a) of the Act. The Commission has been issuing the RE Tariff Regulations since 2010 and does not agree with the view of the stakeholders on the jurisdiction of the Commission.

3. Control Period

Commission's Proposal:

3.1. The Control Period was proposed under Regulation 5 of the Draft Regulations:

"5. Control Period

The Control Period under these Regulations shall be from 01.04.2024 to 31.03.2027:

Provided that the tariff determined as per these regulations for the RE projects commissioned during the Control Period shall remain valid for the tariff period;

Provided further that the tariff norms specified in these regulations shall continue to remain applicable until notification of the revised norms through subsequent re-enactment of these regulations;"

Comments Received:

3.2. **The South Indian Sugar Mill Association** has suggested that any extension of the control period should occur only under exceptional circumstances, with compelling reasons recorded by the Commission and requested an explicit statement of intent to automatically



apply all applicable inflationary cost rises prescribed under the tariff regulations, considering the continuing tariff norms.

3.3. **ISMA** has suggested that extension of the control period should only occur with compelling rationale. **ISMA** has further commented that the draft regulation appears to be effective for only three years.

Analysis and Decision:

3.4. The Commission noted the above suggestion and opined that in case of any exceptional circumstances requiring the expansion of the Regulations, the escalation or inflationary cost parameters may need reconsideration. Therefore, in case the Regulations are extended beyond the control period specified under this Regulation, the Commission may stipulate specific conditions for extension. Accordingly, the Commission modifies the regulation in the CERC RE Tariff Regulations, 2024, as follows.

"5. Control Period

The Control Period under these Regulations shall be from 01.04.2024 to 31.03.2027:

Provided that the tariff determined as per these regulations for the RE projects commissioned during the Control Period shall remain valid for the tariff period;

Provided further that the tariff norms specified in these regulations shall continue to remain applicable, subject to such conditions as may be stipulated by the Commission, until notification of the revised norms through subsequent re-enactment of these regulations."

4. Generic Tariff

Commission's Proposal:

4.1. The Generic Tariff was proposed under Regulation 6 of the Draft Regulations:

"6. Generic Tariff

The generic tariff shall be determined by the Commission on an annual basis in accordance with these Regulations for the following types of renewable energy projects:

- a) Small hydro project;*
- b) Biomass power project with Rankine cycle technology;*
- c) Non-fossil fuel based co-generation project;*
- d) Biomass gasifier based power project; and*
- e) Biogas based power project*

f) Municipal Solid Waste based power projects and Refuse Derived Fuel based power projects;

Provided that the generic tariff determined for the year in which an RE project is commissioned shall be applicable for such RE Project of the same type and shall remain valid for the tariff period.”

Comments Received:

4.2. **Mr. Shanti Prasad** has commented that it would be appropriate that instead of the proposed provision, the generic tariff should apply to projects up to a specified capacity (say 20 - 25MW), and beyond this capacity, project-specific tariff determination should be undertaken and only for smaller capacity (say below 1 MW), the developer should have the option to seek project specific tariff determination.

4.3. **Several stakeholders** have suggested that there should not be a separate categorization for MSW, as the SWM Rules 2016 only prescribe for segregated RDF.

Greenesol Power Systems Pvt. Ltd. commented that there is no distinction between MSW and RDF abroad. The only aim is “Scientific disposal of large-scale Waste, and in a controlled environment” and there is only one categorisation which is “Energy from Waste”. The only aspect to be taken care of is compliance of the Plant with Norms of Emission as given in SWM Rules 2016.

4.4. **Zenith Energy Services Pvt. Ltd** has commented that Since SWM rules 2016 stipulate that only segregated, combustible fractions of MSW having a calorific value of 1500 kCal/kg should be used for Waste to energy. Therefore, the Commission’s proposal for direct incineration of collected MSW appears to exceed the stipulations of the SWM Rules 2016.

4.5. **Waste to Energy Research & Technology Council** has suggested that being a statutory body, CERC should refrain from proposing a disposal method such as "Mass Burn Incineration", which ex-facie is a violation of SWM Rules 2016, Gazetted by the Government of India. Therefore, it is requested that CERC may review its classification.

4.6. **RE Sustainability Limited** and **CII** have requested the Commission to reconsider defining of Mass incineration of MSW, which is not legally aligned with SWM Rules and NGT order

4.7. **Avant-Garde Systems and Controls Pvt. Ltd.** has commented that the proposal of directly incinerating the Mixed MSW without pre-processing, regardless of its technical feasibility, is not legally compliant with SWM Rules 2016.



4.8. **K Sreenivasa Rao** has commented that the distinction between MSW and RDF is not necessary because SWM rules 2016 prescribe only the segregated RDF having a CV of 1500 kcal/kg ought not to go to SLF but to WTE or cement plants.

4.9. **K Sreenivasa Rao** has also commented that SHR and GCV are generally not considered as parameters for tariff determination for Waste to Energy. However, for the notional purposes it may be considered as 3800 to 4200 Kcal/kwh for now.

Analysis and Decision:

4.10. The Commission noted the above suggestions and highlighted that the cost parameters as well as performance parameters of these technologies are dynamic and dependent on the project site-specific as well as project specific factors. These factors significantly vary across projects, unlike other Renewable Energy technologies. Therefore, the Commission opines that the option for a specific Tariff available only to a certain Renewable Energy Technology is appropriate and doesn't necessitate any change in the draft Regulations.

4.11. The Comments received have brought forth various concerns regarding the differentiation between MSW and RDF technologies, with stakeholders emphasizing the need for adherence to the Solid Waste Management Rules, 2016. The Commission has deliberated on these concerns and recognizes that the decision to exclude MSW-based projects from the generic tariff category signifies a strategic shift towards leveraging RDF technology for Waste-to-Energy endeavours. This decision is in accordance with the mandate of the Tariff Policy, which requires distribution licensees to procure power from all Waste-to-Energy plants, thereby emphasizing the utilization of waste for electricity generation.

By focusing on RDF technology, which utilizes segregated combustible fractions in compliance with Solid Waste Management Rules, the Commission aims to streamline waste management practices while promoting environmentally sustainable energy generation. The adoption of a unified tariff structure for RDF-based technology further simplifies the tariff determination process. This approach underscores the Commission's commitment to fostering initiatives that effectively manage waste resources while advancing renewable energy objectives.

Accordingly, the Commission has decided to specify the generic tariff only for RDF-based municipal solid waste projects.



5. Project Specific Tariff

Commission's Proposal:

5.1. The Project Specific Tariff was proposed as under as per Regulation 7 of the Draft Regulations:

"7. Project Specific tariff

a) Project specific tariff, on case to case basis, shall be determined by the Commission for the following types of renewable energy projects:

i. Solar PV power projects, floating solar projects and solar thermal power projects;

ii. Wind power projects (both on-shore and off-shore);

iii. Biomass gasifier based power projects and biogas based power projects – if a project developer opts for project specific tariff;

iv. Municipal solid waste based power projects and refuse derived fuel based power projects – if a project developer opts for project specific tariff;

v. Renewable hybrid energy projects;

vi. Renewable energy with storage projects; and

vii. Any other project based on new renewable energy sources or technologies approved by the Central Government.

b) Financial and operational norms specified in these regulations, except for capital cost, shall be the ceiling norms while determining the project specific tariff."

Comments Received:

5.2. **SAEL Limited** has suggested that 'Biomass Projects with Rankine cycle technology' be also included under Regulation 7

5.3. **Volthills Private Limited, Chikini Hydro Projects Pvt. Ltd., and Chhattisgarh Hydro Power LLP** have requested the Commission to include Small Hydro Projects in the list of renewable energy projects covered under the Project specific provision

5.4. **ISMA** has suggested expanding the scope of project-specific tariffs to include a wider range of renewable energy projects, such as biomass gasifier- based power projects, biogas based power projects, municipal solid waste-based power projects, and refuse derived fuel based power projects, to cater to diverse renewable energy sources.



Analysis and Decision:

5.5. As regards Biomass projects with the Rankine cycle, the Commission has considered the suggestion and modified the regulation in the CERC RE Tariff regulations, 2024.

"7. Project Specific tariff

a) Project specific tariff, on a case to case basis, shall be determined by the Commission for the following types of renewable energy projects:

i. Solar PV power projects, floating solar projects and solar thermal power projects;

ii. Wind power projects (both on-shore and off-shore);

iii. Biomass Projects, Biomass gasifier based power projects, and biogas based power projects – if a project developer opts for project specific tariff;

iv. Municipal solid waste based power projects and refuse derived fuel based power projects

..."

As regards Small hydro projects to be included in the project-specific provision, the Commission highlights that the key tariff parameters have been specified into two categories of regions/states reflecting the different conditions between these areas. Accordingly, the dynamics of the project conditions, such as the terrain have been considered while framing the Regulations. Therefore, the Commission opines that there is no requirement for the inclusion of Small Hydro Projects in the project-specific tariff provision.

6. Petition and proceedings for determination of tariff

6.1. The Petition and proceedings for the determination of tariff were proposed under Regulation 8 of the Draft Regulations:

Commission's Proposal:

"8. Petition and proceedings for determination of tariff

...

(2) A petition for determination of project specific tariff shall be accompanied by such fee as may be specified in the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time or any subsequent re-enactment thereof, and shall be accompanied by:

...

e) Consent from the beneficiary for procurement of power from renewable energy project at a tariff approved by the Commission, in the form of an initialled Power Purchase Agreement or Memorandum of Understanding; and

..."



Comments Received:

6.2. **SAEL Limited** has suggested that the Inclusion of ‘consent for procurement’ as a condition to project-specific tariff determination may lead to the setting of erroneous precedents. Therefore, it is submitted that such inclusion be deleted completely.

6.3. **JFE Engineering India Private Limited** has commented that for project-specific tariffs, consent from the procurer of power has been provided for applying project specific tariff application. Our request is to remove such prerequisites as the purchase of power by local DISCOM from WtE plants is mandatory.

6.4. **ISMA** has suggested streamlining the petition process for determining project-specific tariffs by simplifying documentation requirements and ensuring a transparent and efficient process for renewable energy project developers to seek tariff approvals.

Analysis and Decision:

6.5. As regards the consent from beneficiaries for procurement, the Commission has noted the suggestions from the stakeholders. The Commission notes that under specific schemes by the Central Government and State Government, such consent of the beneficiaries has been removed, and hence, to align the RE Tariff Regulations with such policy framework, the Commission has decided to exempt such projects and accordingly modified the provision as follows:

“8. Petition and proceedings for determination of tariff

...

(2) A petition for determination of project specific tariff shall be accompanied by such fee as may be specified in the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time or any subsequent re-enactment thereof, and shall be accompanied by:

...

(e) Consent from the beneficiary for procurement of power from renewable energy project, unless such requirement has been exempted by the Central or State Government; and

...”

7. Tariff Design

Commission’s Proposal:

7.1. The Tariff Design for generic tariff and Project specific tariff was proposed under Regulation 10 of the Draft Regulations

“10. Tariff Design



(1) The generic tariff shall be determined, on a levelized basis, considering the year of commissioning of the project, for the tariff period of the project:

Provided that for renewable energy projects having a single part tariff with two components, the fixed cost component shall be determined on a levelized basis considering the year of commissioning of the project while the fuel cost component shall be determined on a year of operation basis in the Tariff Order to be issued by the Commission.

(2) For the purpose of levelized tariff computation, a discount factor equivalent to the post-tax weighted average cost of capital shall be considered.

(3) The above principles shall also apply for project specific tariffs”

Comments Received:

7.2. **Abellon Clean Energy Limited and CII** have suggested that the Commission may consider not fixing a Levelized Tariff for WTE projects. Instead, it is suggested that a Hybrid Tariff Model be adopted where the fixed costs associated with the WTE projects are considered on a levelized basis, whereas the O&M and Fuel Cost components are accorded a differential treatment by fixing a quantum for the first 3 years of the project life along with escalation and a provision to revisit such costs in the following control period.

Analysis and Decision:

7.3. The Commission has consistently adhered to the practice of determining levelized tariffs and considers this methodology adequate. Therefore, the Commission has decided to retain the provisions of the tariff design in the Draft Regulations.

8. Treatment for Over-Generation

Commission’s Proposal:

8.1. T The treatment for Over-generation was proposed under as per Regulation 11 of the Draft Regulations:

“11. Treatment for Over-Generation

In case a renewable energy project, in a given year, generates energy in excess of the capacity utilization factor or plant load factor, as the case may be specified under these Regulations, the renewable energy project may sell such excess energy to any entity, provided that the first right of refusal for such excess energy shall vest with the concerned beneficiary. In case the concerned beneficiary purchases the excess energy, the tariff for such excess energy shall be equal to the tariff applicable for that year.”



Comments Received:

- 8.2. **Mr. Shanti Prasad** has commented that in consideration of the vagaries of nature, the provision of this regulation should have some permitted variation from CUF /PLF. That is, its provision should apply only for generation in excess of normative CUF (in %) + allowable % variation (say 5%). For example, if normative CUF is 20%, then this provision will come into operation beyond $20\%+5\%=25\%$.
- 8.3. **WBSECL** has suggested that the tariff of excess energy shall be limited to 75 percent as per CERC (Terms and Conditions of Tariff determination from RE Sources) Regulations, 2020, for the benefit of the consumers.
- 8.4. **Telangana State Power Coordination Committee** has suggested that to maintain the equilibrium, beneficiaries shall have the right to purchase excess generation at nil tariff, and the same shall not be allowed for sale to any third party. Also, in case of under generation, since the DISCOMs are forced to purchase power from open markets at higher prices, the beneficiaries shall be compensated at PPA tariff for any under-generation by the developers.
- 8.5. **SAEL Limited** has suggested that for the Biomass project, there exist no such MoP Competitive Guidelines, and therefore, treatment for over-generation shall be a commercial decision that the parties suitably incorporate under their respective offtake obligations.
- 8.6. **Chhattisgarh State Power Distribution Company Ltd.** has commented that the tariff for any excess generation of power by RE Generator to the concerned beneficiary should be half the normal rate of tariff as the generator is not required to put any extra effort or incur expense for such over generation.
- 8.7. **BESCOM** has suggested that the beneficiaries are obligated to procure the energy up to the agreed capacity utilization factor. The tariff determined for the energy up to CUF - includes all the costs incurred by the -Generator. Any revenue earned by the generator from energy beyond CUF is an incentive, and 85% of the agreed tariff shall be paid for excess energy.
- 8.8. **ISMA** has suggested that a balanced right of refusal should be ensured to prevent undue advantage based on market fluctuations.
- 8.9. **The South Indian Sugar Mill Association** had requested the Commission to consider that the right of refusal, when once exercised in any financial year during the tariff period, shall no longer be available except through mutual consent.
- 8.10. **Dr. Anoop Singh, IIT Kanpur**, has commented that since the tariff for original capacity already accounts for full cost recovery, the costs cannot be replicated. A proposal for 100 % of the determined tariff translates to over recovery of cost and thus is not in line with the



prudential cost recovery. The Stakeholder has further suggested that in case of tariff for excess energy generation from biomass fuel based generators, the excess energy may be purchased at the 100% of the approved variable charge. In the case of solar, wind, small hydro, and MSW/ RDF power plants, the excess energy above the normative CUF should be purchased at 30% of the determined tariff. Note that capital costs in the case of MSW/RDF are very high; even a 30% tariff for excess energy would translate into a significantly higher tariff for excess energy.

8.11. **Dr. Anoop Singh, IIT Kanpur**, has further commented that there is a need to clarify if the excess energy is on account of excess capacity of the plant (than that for which tariff is determined) or excess energy generation (due to better resources, e.g., solar or wind). The latter can only be known on a day ahead or few hours ahead basis, the regulation seems to refer to the former case. It is suggested that the draft Regulation should include a definition of excess generation/ Over-generation. It may be further clarified whether excess energy injected is to be considered on a rolling monthly basis or on a trued up on a yearly basis. It is further suggested that the billing and settlement for excess energy should be done on an annual basis only.

8.12. **GRIDCO Limited** submitted that for the Renewable Energy Projects which has been allowed Generic Tariff, any excess generation over the Normative CUF may be supplied free of cost to the Beneficiary(ies) only, and any less generation from the normative CUF due to deficit in rain or Grid unavailability may be compensated from the excess generation (beyond the normative CUF) in the adjacent Financial Years.

Analysis and Decision:

8.13. The Commission is of the view that the tariff norms are so formulated that all the costs are recovered at the normative CUF for the respective technologies and any excess generation is an incentive to the developers. It is important to note that due to the variability of the renewable energy generation, the projects may end up generating lower than the normative CUF, in which case the cost is not fully recovered by the developers through tariff. Therefore, a risk-reward mechanism is built in by way of these tariff principles so as to encourage the project developers to bring in investments in projects.

As the first right for refusal to buy the excess power is given to the procurer, the risk of the procurer is mitigated as the procurers always have an option to refuse this excess generation in case they get cheaper power from any other alternate source. Also, if the project is able to generate in excess, the developer can sell this in the market and get



compensated for it. This ability to monetize excess generation mitigates risks associated with the project and also encourages further investments in the renewable energy sector.

8.14. Accordingly, the Commission has modified the clause accordingly in the CERC RE Tariff Regulations, 2024.

“11. Treatment for Over-Generation

In case a renewable energy project, in a given year, generates energy in excess of the capacity utilization factor or plant load factor, as the case may be specified under these Regulations, the renewable energy project may sell such excess energy in the market under bilateral or collective transactions, provided that the first right of refusal for such excess energy shall vest with the concerned beneficiary. In case the concerned beneficiary purchases the excess energy, the tariff for such excess energy shall be equal to the tariff applicable for that year”

As regards clarification on excess generation, it is highlighted that the capacity utilization factor or plant load factor is calculated with respect to the total installed capacity of the project. Any generation cumulated over the year above the CUF or PLF for reasons attributed to better resource availability, system efficiency, etc. shall be treated as excess generation.

9. Capital Cost

Commission’s Proposal:

9.1. The capital cost was proposed as under as per Regulation 12 of the Draft Regulations:

“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 an inter-connection point.”

Comments Received:

9.2. **Dr. Anoop Singh, IIT Kanpur**, has commented that a capital cost benchmarking methodology should be evolved. This may also include ‘market trends’ covering efficient cost benchmarks in the international context. Higher weightage should be given to capital equipment procurement on a competitive tendering basis. There may be inherent data bias as ‘market trends’ may be reported from a limited set of deals. It has also suggested that the Commission should formulate a methodology for gauging market trends and provide higher weightage to recent deals.



9.3. **SECI** has suggested that provisions should be made in the capital cost to encompass unplanned expenses related to the erection of a renewable energy plant like those towards the development of the area, rehabilitation, resettlement, livelihood compensation, uplift of the local population, and R&R activities. SECI is of the view that these expenses are essential for the establishment of the project and should be considered as part of the overall investment.

Analysis and Decision:

9.4. The Commission has conducted a detailed analysis of the capital cost benchmarking associated with various Renewable Energy (RE) technologies. To benchmark the capital cost of each RE technology, the Commission thoroughly examined individual RE technology projects using the 'Actual project cost approach' and assessed capital cost information provided by IREDA for RE Projects. Additionally, the Commission analyzed the latest project-specific tariff orders issued by several State Electricity Regulatory Commissions (SERCs) to ascertain capital costs.

Upon reviewing the capital costs approved by various SERCs and in Project Specific Tariff Orders, the Commission noted marginal variations compared to the capital costs approved in its RE Tariff Regulations, 2020. Recognizing that State-wise capital costs undergo scrutiny by the Commission and considering the limited availability of actual data over the past three years, the Commission has revisited the capital cost norms for each RE technology for the upcoming control period utilizing the capital cost indexation mechanism.

To establish a trend in capital costs over the years, the Commission has incorporated escalation factors based on indices such as the Manufacturing Index, Wholesale Price Index, and Infrastructure Industry Index. These factors have been applied to the approved capital cost to normalize and compare regulated capital costs over the specified period.

In order to comprehensively assess the trajectory of these capital costs, the Commission has undertaken an extensive analysis of the Wholesale Price Index, Manufacturing Index, and Infrastructure Industry Index for the period FY 2020-2023.

This rigorous analysis ensures that the Commission's decision regarding capital cost norms for the upcoming control period is well-informed and reflective of industry dynamics.

9.5. Given the early stage of development for renewable energy storage projects, benchmarking the capital cost of storage is challenging. Moreover, the configuration of storage systems varies depending on renewable energy technologies and applications. As additional capitalization contributes to the overall capital cost, it should be factored in when determining tariffs on a project-specific basis.



10. Loan Tenure and Interest on Loan

Commission's Proposal:

10.1. The Loan Tenure and Interest on Loan were proposed as under as per Regulation 14 of the Draft Regulations:

"14. Loan Tenure and Interest on Loan

(1) Loan Tenure

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

(2) Interest on Loan

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

For project specific tariff, the normative loan outstanding as on the 1st of April of every year shall be worked out by deducting the cumulative repayment up to the 31st of March of the previous year from the gross normative loan.

(b) For the purpose of computation of tariff, the 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 the project developer, the repayment of the loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed;"

Comments Received:

10.2. **Greenesol Power Systems Pvt. Ltd.** has commented that a Simple Line of credit with concessional interest and 15 years of repayment commencing 2 years after COD to be extended at a Concessional Rate of Interest as in China, Vietnam, etc., may be considered.

10.3. **Averda Waste Management India Pvt Ltd. and CII** have suggested that the Interest rates should be kept at a 12% minimum.

10.4. **Zenith Energy Services Pvt. Ltd** has suggested that the Interest rate should be kept at 11%.

10.5. **BESCOM** has suggested that MCLR for 1-year tenor with 100 basis points .



- 10.6. **Abellon Clean Energy Limited and CII** have suggested that the applicable interest on a term loan may be determined as 11.95%
- 10.7. **JFE Engineering India Private Limited** has suggested the Commission consider the typical lending rate of 10.5% for the debt component.
- 10.8. **Dr. Anoop Singh, IIT Kanpur**, has requested the Commission to develop a methodology to capture 'market trends' for interest for term loans and working capital loans.
- 10.9. **GRIDCO Limited** proposed including a provision in the RE Tariff Regulations, 2024, for a propriety check on the source and terms & conditions of loans obtained to authenticate external funding. They suggest implementing a comprehensive mechanism to ensure that the applicable rate of interest aligns with market conditions and that borrowed funds are utilized effectively and efficiently at the appropriate time and competitive rates.

Analysis and Decision:

- 10.10. The current methodology, linking the interest rate to the SBI MCLR (one-year tenor) over the preceding six months, mirrors the prevailing interest rates offered by IREDA, PFC, and REC, as outlined in the Explanatory Memorandum, ranging from 8.90% to 10.45%.

The Commission is of the view that 200 basis points above the SBI MCLR represent the average rate at which projects secure loans. Hence, the provisions related to loan tenure and interest on loan are retained as proposed in the Draft Regulations.

11. Depreciation

Commission's Proposal:

- 11.1. The Depreciation was proposed under Regulation 15 of the Draft Regulations:

"15. Depreciation

(1) The value 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 a 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 the remaining depreciation shall be evenly spread during the 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 a pro rata basis.”

Comments Received:

11.2. **BESCOM** has suggested that land is not a depreciable asset, and hence, the cost of land should be excluded from capital cost while calculating the depreciation.

11.3. **Abellon Clean Energy Limited and CII** have suggested that the depreciation ought to be 7% for the first 10 years and 2% for the remaining useful life of the project.

11.4. **SECI** has suggested that the depreciation on storage may be charged on an SLN basis based on the life of the Storage/BESS, considering 10% as the salvage value as it may not be feasible to charge depreciation on BESS/Storage at the rate of 4.67% for 15 years because the life of Storage deployed is around 11 to 12 years and the end of this period same may or may not be replaced. A similar principle may be followed for the replacement cost of Storage/BESS.

Analysis and Decision:

11.5. The Commission has opted for the 'Differential Depreciation' method, which extends over the loan tenure and beyond, utilizing the 'Straight Line Method' to compute depreciation over the useful life. After careful consideration, the Commission has determined a depreciation rate of 4.67% per annum for a span of 15 years, with the remaining depreciation being spread over the remaining useful life of the Renewable Energy (RE) projects, taking into account the project's salvage value at 10% of the project cost.

Therefore, the Commission has decided to retain the provisions as specified in the Draft Regulations.

12. Return on Equity

Commission's Proposal:

12.1. The Return on Equity was proposed as under as per Regulation 16 of the Draft Regulations:

“16. Return on Equity

(1) The value base for equity shall be as determined under Regulation 13.

(2) The normative Return on Equity for renewable energy projects other than small hydro projects shall be 14%, and that for the small hydro projects shall be 14.5%. 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:

- 12.2. **Venika Hydro Projects Pvt. Ltd., Mosh Varaya Infrastructure Ltd., Madhya Bharat Power Corporation Ltd., Chhattisgarh Hydro Power LLP, Sarada Hydro Power LLP, Venika Green Power Pvt. Ltd.** have requested the commission to consider a minimum of 16% ROE for Small Hydro Projects, enable project developers to source equity for their projects.
- 12.3. **Averda Waste Management India Pvt Ltd.** and **CII** have commented that ROE @ 14.5% post tax in a developing but highly regulated economy like India is too low to attract investors or developers.
- 12.4. **Uttar Pradesh New & Renewable Energy Development Agency** has suggested that the Return on Equity for renewable energy projects be revised to 15.5%.
- 12.5. **WBSEDCL** has suggested that RoE should be 14% for all types of RE generation projects as per CERC (Terms and Conditions of Tariff determination from RE Sources) Regulations, 2020 for the benefit of the consumers.
- 12.6. **NLC India Limited** has suggested that the rate of return on equity be grossed up with the effective tax rate of the company for the respective financial year in line with the Thermal Tariff Regulation.
- 12.7. **BESCOM** has suggested that to retain the RoE at 14%
- 12.8. **Avant-Garde Systems and Controls Pvt. Ltd.** has commented that ROE is proposed as 14% grossed up with the MAT rate. This may be grossed up with the income tax rate of the plant with a post tax ROE of 15%.
- 12.9. **Abellon Clean Energy Limited and CII** have suggested that the applicable tax rate on ROE ought to be considered as 27.82%, and the resultant ROE post tax ought to be determined as 18%.
- 12.10. **JFE Engineering India Private Limited** has suggested that to attract more developers in WtE sector, RoE should be kept at 16%.
- 12.11. **NTPC Limited** has suggested that in order to promote small hydro projects and considering their long gestation period, the Commission may provide a RoE of 17% for small hydro projects instead of 14.5%.
- 12.12. **Grid Controller of India Limited** has suggested that, return on Equity (RoE) may be suitably deducted (by 1%) for persistent non-compliance of CEA Grid Standards.



12.13. **GRIDCO Limited** suggested that the rate of return on the equity contribution may be revisited by the Commission and re-determined under changed economic and market conditions on a yearly or bi-yearly basis for affording appropriate returns to the investors.

12.14. **SECI** suggested that the return on Equity (RoE) may also allow on the equity deployed on replacement of Storage/BESS for the remaining years of the useful life of the power plant as the replacement cost of Storage/BESS is very huge, which may be financed through equity at the time of replacement. **SECI** has also suggested allowing grossing-up the post-tax Return on Equity (RoE) of 14% with the Corporate Tax Rate from the first year itself.

Analysis and Decision:

12.15. The Commission has taken note of various stakeholder suggestions regarding the Return on Equity (RoE). Some stakeholders have suggested increasing the RoE to a range of 15.5% - 18%, while others have advocated maintaining it at 14%. Based on the Capital Asset Pricing Model elaborated in the Explanatory Memorandum, the Commission has determined the RoE to be 14%.

As regards the RoE of the Small Hydro projects, the Commission acknowledges stakeholders' input and recognizes the extended gestation period and inherent risks associated with such projects. Consequently, the Commission has decided to raise the RoE for Small Hydro projects to 15%.

The Commission has proposed a single composite Return on Equity (ROE) for the entire useful life of the plant. This approach eliminates the possibility of double accounting for ROE pertaining to both the plant and storage, thereby ensuring accuracy and consistency. Furthermore, distinguishing between the ROE tax and revenue models adopted by various companies is impracticable for accounting purposes, as it necessitates company-specific financial data, which would compromise revenue certainty.

13. Interest on Working Capital

Commission's Proposal:

13.1. The Interest on Working Capital was proposed under Regulation 17 of the Draft Regulations:

"17. Interest on Working Capital

(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, municipal solid waste based power projects and refuse derived fuel based power projects



and renewable energy with storage projects shall be computed in accordance with the following:

a) Operation and Maintenance expenses for one month;

b) Receivables equivalent to 45 days of tariff for the sale of electricity calculated on the 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 and non-fossil fuel based co-generation 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 expenses for one month;

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

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

...

(4) Interest on Working Capital shall be at an interest rate equivalent to the normative interest rate of three hundred and twenty-five (325) 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;”

Comments Received:

13.2. **Uttar Pradesh New & Renewable Energy Development Agency** has suggested revising the normative interest rate to three hundred and Fifty (350) basis points.

13.3. **WSEDCL** has suggested that considering SBI MCLR as on 15.12.2023 and 15.01.2024 @ 8.65% for one-year tenure and a maximum interest rate of 11.40% as mentioned in the Explanatory Memorandum, 325 basis point should be replaced by 275 basis point.

13.4. **SAEL Limited** has suggested that the interest on working capital has been suggested as the average of the Base Rate of State Bank of India prevalent during the previous year, plus 350 basis points, which has been considered by many states, including Maharashtra.

13.5. **Chhattisgarh State Power Distribution Company Ltd.** has commented that the working capital in respect of biomass power projects, biogas, biomass gasifier, and non-fossil fuel



based on gen projects should be computed considering two months fuel costs instead of four months as receivable is considered for 45 days of tariff for sale of electricity.

13.6. **BESCOM** has suggested that receivables equivalent to 60 days may be considered, and the due date period for payment may also be considered as 60 days.

13.7. **BESCOM** has also suggested that MCLR for a 1-year tenor prevailing in the last 6 months plus 200 basis points equal to 10.55% may be considered as interest on working capital.

13.8. **NTPC limited** has suggested that the existing provision of the rate of interest on IWC of SBI-MCLR +350 basis points may be retained.

13.9. **Dr. Anoop Singh, IIT Kanpur**, has requested the Commission to develop a methodology to capture 'market trends' for interest for term loans and working capital loans.

13.10. **GRIDCO Limited** commented that the interest seems to be on the higher side and suggested that it may be reduced to SBI one year MCLR without any spread to implement a cost reflective tariff.

Analysis and Decision:

13.11. The Commission is of the view that the proposed methodology, which ties the interest rate to the SBI MCLR (one-year tenor) over the last six months, reflects the current market conditions and 325 basis points above the SBI MCLR represents the average rate at which projects secure loans.

The prescribed receivables of working capital are in line with CERC (Terms and Conditions for Tariff) Regulations, 2024, and hence, the Commission has decided to retain the norms as specified in the Draft Regulations.

As regards Fuel Costs for biomass or bagasse projects, it is highlighted that these projects arrange fuel during the crop/crushing season and need to store it for longer periods to be utilised in the season when the crop is not available and non-crushing season. Accordingly, the Commission has specified the fuel cost for four months for the computation of working capital. Therefore, the Commission decides to retain the working capital norms specified in the draft Regulations.

14. Calculation of capacity utilization factor and plant load factor

Commission's Proposal:

14.1 The calculation of the capacity utilisation factor and plant load factor was proposed under as per Regulation 11 of the Draft Regulations:

"18. Calculation of capacity utilization factor and plant load factor:



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

Comments Received:

14.2. **Grid Controller of India Limited** has commented that the outage hours (outage on account of grid unavailability, planned outage, force majeure) may suitably be included in the regulation for the calculation of capacity utilization factor and plant load factor.

Analysis and Decision:

14.3. The provisions for the duration of unavailability of the grid and the generation compensation beyond the stipulated hours specified in the referred competitive bidding guidelines (Guidelines for Tariff Based Competitive Bidding Process for procurement of Firm and Dispatchable power from Grid connected Renewable Energy Power Projects with Energy Storage System, released on 9th June, 2023, by Ministry of Power) are specifically designed for competitively bid projects. However, the present proceeding is limited to framing regulations for the determination of tariff under section 62 of the Act, and the compensations for grid unavailability will be governed by relevant regulations apart from the provisions in the PPA with the beneficiaries.

15. Operation and Maintenance Expenses:

Commission’s Proposal:

15.1. The O&M Expenses were proposed as under as per Regulation 19 of the Draft Regulations:

“19. Operation and Maintenance Expenses

(1) Operation and Maintenance expenses shall be determined for the Tariff Period of the project based on normative O&M expenses specified in these regulations for the first year of the Control Period.

(2) Normative O&M expenses allowed during the first year of the Control Period, i.e. financial year 2024-25, under these regulations, shall be escalated at the rate of 5.89% per annum for the Tariff Period.”

Comments Received:

15.2. **WBSEDCL** has suggested that escalation % should be in line with CERC Tariff Regulations, 2024, to be published.

15.3. **BESCOM** has suggested that 5.72% as annual escalation for O&M expenses may be considered.

Analysis and Decision:



15.4. The Commission has noted the suggestions of the stakeholders and has modified the O&M escalation in line with the CERC (Terms and Conditions for Tariff) Regulations, 2024.

“19. Operation and Maintenance Expenses

(1) Operation and Maintenance expenses shall be determined for the Tariff Period of the project based on normative O&M expenses specified in these regulations for the first year of the Control Period.

(2) Normative O&M expenses allowed during the first year of the Control Period, i.e. financial year 2024-25, under these regulations, shall be escalated at the rate of 5.25% per annum for the Tariff Period.”

16. Rebate

Commission’s Proposal:

16.1. The Rebate was proposed as under as per Regulation 20 of the Draft Regulations:

“20. Rebate

(1) For payment of bills of the generating company through revolving and valid letter of credit on presentation or through National Electronic Fund Transfer (NEFT) or Real Time Gross Settlement (RTGS) payment mode within a period of 5 days of presentation of bills, a rebate of 1.5% on bill amount shall be allowed.

Explanation: In case of computation of ‘5 days’, the number of days shall be counted consecutively without considering any holiday. However, in case the last day or 5th day is an official holiday, the 5th day for the purpose of rebate shall be construed as the immediate succeeding working day.

(2) Where payments are made on any day after 5 days within a period of one month from the date of presentation of bills by the generating company, a rebate of 1% shall be allowed;”

Comments Received:

16.2. **The South Indian Sugar Mill Association and ISMA** have commented that there is neither additional incentive nor penalty for making the payment between the 6th and 29th day as well as between the 31st and 45th day and suggested that a uniform rebate of 3.33 bps (being pro rata interest component per day) be allowed and reckoned for each day of payment made prior the ‘45-day’ credit period from the date of presentation of bills.

16.3. **BESCOM** has suggested that the rebate may be revised to 2%



16.4. **NTPC limited** has suggested that a rebate of 0.5% may be allowed on the 30th day from the date of presentation, considering 1.5% on presentation. This will provide a uniform rebate without skewing the rate of rebate on the 30th day of the presentation.

16.5. **GRIDCO Limited** has suggested that for scrutiny of the bill, 10 days may be considered to process, and payment of the bill and rebate may be proportionate accordingly.

Analysis and Decision:

16.6. The Commission has acknowledged the suggestions put forth by the stakeholders and is of the view that the rebate provisions are in line with the CERC (Terms and Conditions for Tariff) Regulations, 2024. Therefore, the Commission has retained the norms of the rebate as provided in the Draft Regulations.

17. Late Payment Surcharge

Commission's Proposal:

17.1. The Late Payment surcharge was proposed under Regulation 21 of the Draft Regulations:

21. Late payment surcharge

In case the payment of any bill for charges payable under these regulations is delayed beyond a period of 45 days from the date of presentation of bills, a late payment surcharge as specified in the Ministry of Power - Electricity (Late Payment Surcharge and Related Matters) Rules, 2022 as amended from time to time shall be levied by the generating company."

Comments Received:

17.2. **BESCOM** has suggested that as Discoms are facing a financial crisis and struggling to pay the amounts within the trigger date, the due date may be considered as 60 days instead of 45 days and a firm interest rate of 12% p.a. without an increase of 0.5% for each month delay up to 3% over and above 12%.

17.3. **GRIDCO Limited** suggested that in the draft regulation, a period of 45 days may put undue financial pressure on the beneficiaries as the credit period they were getting against regulation 2009-14, i.e., 60 days with a Late payment surcharge (LPS) of 1.25%. It was suggested that the Late payment surcharge rate be linked to the SBI one-year MCLR due to the downward trend in lending rates.



Analysis and Decision:

17.4. The Commission has acknowledged the suggestions put forth by the stakeholders and is of the view that the late payment surcharge provisions are in line with the CERC (Terms and Conditions for Tariff) Regulations, 2024. Therefore, the Commission has retained the norms of the late payment surcharge as provided in the Draft Regulations.

18. Subsidy or incentive by the Central or the State Government

Commission's Proposal:

18.1. The treatment of subsidy or incentive was proposed as under as per Regulation 22 of the Draft Regulations:

"22. Subsidy or incentive by the Central or the State Government

(1) The Commission shall take into consideration any incentive, grant or subsidy from the Central or State Government, including accelerated depreciation benefit, availed by the project while determining the tariff under these regulations:

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, if availed, for the purpose of tariff determination:

i. Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate and corporate income tax rate as per relevant provisions of the Income Tax Act, 1961, as amended from time to time; and

ii. Capitalization of renewable energy projects during the second half of the fiscal year.

iii. Per unit benefit shall be derived on a levelized basis at a discount factor equivalent to the weighted average cost of capital.

(2) Any grant, subsidy or incentive availed by renewable energy project, which is not considered at the time of determination of tariff, shall be deducted by the beneficiary in subsequent bills after receipt of such grant, subsidy or incentive in suitable instalments or within such period as may be stipulated by the Commission.

(3) 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 beneficiary in subsequent bills raised by the particular Renewable energy project;"



Comments Received:

18.2. **BESCOM** has suggested that the beneficiaries bear the entire cost of expenditure of renewable energy projects, including the statutory charges. As such any generation-based incentive should be shared equally between the beneficiaries and power developer as followed in the case of sharing of carbon credits in RE projects and sharing of gains in respect of conventional projects.

18.3. **Avant-Garde Systems and Controls Pvt. Ltd.** has suggested that a mark-up charge of 20% may be requested for adjusting the subsidies/ grants/ incentives received from any states, i.e., 80% of such an amount be adjusted against the tariff bill.

18.4. **RE Sustainability Limited and CII** have requested the Commission to make it abundantly clear that the regime of tipping fees is beyond the jurisdiction of SERCs and such orders involving tipping fees as revenue out of power generation should be avoided.

Analysis and Decision:

18.5. As regards generation-based incentives, the Commission highlights that any generation-based incentive notified by the Government is purely an entitlement of the project developers, and there may not be any need to share the same with the distribution utilities. However, the subsidies/grants provided by the state/central government should go into reduction of the tariff of the project and, accordingly, need to be incorporated in the capital cost of the project.

As regards the tipping fee, this is paid by the Urban Local Bodies (ULBs) to the concessionaires, i.e., the MSW project developers for either processing of waste or disposal of residual solid waste at the landfill. The tipping fee is also defined in the Solid Waste Management Rules, 2016, notified by the Ministry of Environment, Forest and Climate Change and extracted as below: -

“tipping fee” means a fee or support price determined by the local authorities or any state agency authorised by the State government to be paid to the concessionaire or operator of waste processing facility or for disposal of residual solid waste at the landfill”

The responsibilities against the payment of tipping fees by the ULBs to the MSW project developers are prescribed in the Concession Agreement between the two. For example, for some projects, only segregation of the waste received at the project site is entrusted to the project developers, whereas in some projects the door-to-door waste collection is also included in the responsibility of the project developers. Therefore, it will be impracticable to specify a generic approach in this regard. The Commission is of the view that the decision



to include or exclude the tipping fee from the project tariff will be dependent on the evaluation of the concession agreement by the Commission for the specific project at the time of project development and approval of PPA.

However, it is a fact that the waste is delivered by the Urban Local Bodies (ULBs), even though free of cost at the project site. The wastes delivered is highly heterogeneous, and there is a requirement for waste segregation at the source. Therefore, significant expenditure needs to be undertaken for the segregation of the waste at the project site, the cost of which may or may not be compensated by way of a tipping fee. Therefore, such aspects will also be evaluated by the Commission at the time of project development and approval of PPA.

19. Statutory Charges

Commission's Proposal:

19.1. The Statutory charges was proposed as under as per Regulation 23 of the Draft Regulations:

"23. Statutory Charges

The renewable energy project developer shall recover from the beneficiaries the statutory charges imposed by the State and Central Government, such as water cess, and electricity duty on auxiliary consumption, subject to the maximum of normative auxiliary consumption."

Comments Received:

19.2. **Greenesol Power Systems Pvt. Ltd.** has commented that in the recent year, GST applicable for such WtE Plant has been increased from 5% to 12%, which has increased the burden on the Developers; Rather for such capital intensive plants, GST applicable must be made even "ZERO" as was offered initially for RE Projects against Project Authority certificate; Further, even Basic Customs Duty currently being charged is 5.5% (including cess) can be reduced to "ZERO" against CCD certificate such as issued by MNRE. **Greenesol Power Systems Pvt. Ltd.** has requested the Commission to take up with the concerned Govt. department to provide this support.

19.3. **Mr. Shanti Prasad** has commented that, in this regulation, it is to be clarified that changes in statutory levies vis-à-vis those not specifically covered in the specified parameter or the Commission's order shall only be recoverable.

19.4. **Chhattisgarh State Power Distribution Company Ltd.** has commented that Statutory charges, such as water cess and electricity duty on auxiliary consumption imposed by the state and central Government, whether tariff is determined on cost plus basis or on a



competitive bid basis case, should be borne by the RE generator, and should not be passed on to the consumers of the state because it is the generator who is earning the profit.

19.5. **BESCOM** has suggested that savings / credits etc., shall be passed on to the beneficiaries

19.6. **Grid Controller of India Limited** has suggested the Commission remove water cess from the clause.

Analysis and Decision:

19.7. The Commission has taken note of all the suggestions made by the Stakeholders. With regard to the GST, Basic Customs Duty, etc., to be made zero, it is highlighted that these aspects are not under the purview of the Commission, and the project developers may approach the appropriate authorities for suitable remedies, if any .

As regards the statutory charges specified in the Regulations, the Commission is of the view that the State Governments and the Central Government notify the levy of various statutory charges from time-to-time and the same cannot be assessed at the time of initiation of the 3-year control period under these Regulations. Therefore, any statutory charge not factored in while determining the tariff and which has an impact on the tariff needs to be passed on to the beneficiary.

As regards any revision in the statutory charges resulting in credits/discounts/reduction in the amounts already paid by the beneficiary, it implies that only the effective levy for each time period in line with notification of the State and Central Governments needs to be recovered by the project developers from the beneficiaries.

As far as the inclusion of water cess in the provisions of draft Regulations, the Commission is of the view that these levies/taxes/charges will be recoverable only if they are applicable under the statutes and rules notified by the relevant Governments. Accordingly, the provision has been modified in the Regulations.

20. Parameters for Wind Projects

a. Capacity Utilisation Factor

Commission's Proposal:

20.1. The capacity utilisation factor for wind power projects were proposed as under Regulation 25 of the Draft Regulations:

"25. Capacity Utilisation Factor

(1) Capacity utilization factor norms for this Control Period shall as follows:



<i>Annual Mean Wind Power Density (W/m²)</i>	<i>Capacity Utilization Factor</i>
<i>Up to 220</i>	<i>22%</i>
<i>221-275</i>	<i>24%</i>
<i>276-330</i>	<i>28%</i>
<i>331-440</i>	<i>33%</i>
<i>> 440</i>	<i>35%</i>

(2) The annual mean wind power density specified in sub-regulation (1) above shall be measured at a 100-meter hub-height.

(3) Wind power projects shall be classified into particular wind zone sites as per MNRE guidelines for wind measurement. Based on the validation of the wind mast by the National Institute of Wind Energy, the State Nodal Agency should certify the zoning of the proposed wind farm complex.”

Comments Received:

20.2. **Power Foundation of India** has suggested that the Commission may obtain actual CUF information from developers operating across various geographies of the country and thereafter conduct a scientific study considering actual CUF, technological advancements, site locations etc., to fix normative CUF for Wind Power Projects for the Control Period from FY 2024-25 to FY 2026-27.

Analysis and Decision:

20.3. As mentioned in the Explanatory Memorandum, in the absence of actual data, the Commission has decided to retain the CUF of Wind power projects as specified in the RE Tariff Regulations, 2020.

21. Parameters for Small Hydro Projects

a. Capital Cost

Commission’s Proposal:

21.1. The capital costs for small hydro projects were proposed under as per Regulation 27 of the Draft Regulations:

“27. Capital Cost



(1) The normative capital cost for small hydro projects during the first year of the Control Period, i.e. the financial year 2024-25, shall be as follows:

Region	Project 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	1200
	5 MW to 25 MW	1200
Other States	Below 5 MW	890
	5 MW to 25 MW	1027

(2) The capital cost for small hydro projects as specified for the 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:

21.2. **Mosh Varaya Infrastructure Ltd.** has requested the Commission to kindly consider a normative capital cost of Rs. 15 Cr/MW for SHP of 5 MW to 25 MW in other States.

21.3. **Mosh Varaya Infrastructure Ltd., Madhya Bharat Power Corporation Ltd., Chhattisgarh Hydro Power LLP, and Sarada Hydro Power LLP** have also requested the Commission to provide for capital cost indexation for arriving at the capital cost of the projects which commission during the second and third year of the control period.

21.4. **Madhya Bharat Power Corporation Ltd.** has requested the Commission to consider normative capital cost of Rs. 14 Cr/MW for SHP of 5 MW to 25 MW in other States.

21.5. **Volthills Private Limited and Chikini Hydro Projects Pvt. Ltd** have requested to increase the Capital cost of the ‘Other States’.

21.6. **Chhattisgarh Hydro Power LLP** has requested the Commission to consider a normative capital cost of Rs. 13.50 Cr/MW for SHP of 5 MW to 25 MW in other States. **Chhattisgarh**



Hydro Power LLP has further requested the Commission to allow additional allowance for capital cost per MW for such projects where the transmission line is above 10 Kms.

21.7. **Sarada Hydro Power LLP** has requested the Commission to consider a normative capital cost of Rs. 13 Cr/MW for SHP of 5 MW to 25 MW in other States.

21.8. **Power Foundation of India** has suggested the Commission to use the WPI index for manufactured products (other non-metallic mineral products, manufacturing of Electrical equipment, and Plant & Machinery) rather than WPI for all commodities and exclude the Infrastructure Industry Index for computing escalation factor.

21.9. **Power Foundation of India** has further suggested the Commission conduct a scientific study and revise the Capital cost for SHPs, giving due weightage to Size, Gestation Period, Geography, Grid Connectivity, etc.

Analysis and Decision:

21.10. As explained in the Explanatory Memorandum, the Commission has conducted a detailed analysis of the capital cost benchmarking associated with Small Hydro Projects. To benchmark the capital cost of SHPs, the Commission thoroughly examined capital cost for SHPs using the 'Actual project cost approach' and assessed capital cost information provided by IREDA. Additionally, the Commission analyzed the latest project-specific tariff orders issued by several State Electricity Regulatory Commissions (SERCs) to ascertain capital costs.

Upon reviewing the capital costs approved by various SERCs and in Project Specific Tariff Orders, the Commission noted marginal variations compared to the capital costs approved in its RE Tariff Regulations, 2020. Recognizing that State-wise capital costs undergo scrutiny by the Commission and considering the limited availability of actual data over the past three years, the Commission has revisited the capital cost norms for SHPs for the upcoming control period utilizing the capital cost indexation mechanism.

To establish a trend in capital costs over the years, the Commission has incorporated escalation factors based on indices such as the Manufacturing Index, Wholesale Price Index, and Infrastructure Industry Index. These factors have been applied to the approved capital cost to normalize and compare regulated capital costs over the specified period.

In order to comprehensively assess the trajectory of these capital costs, the Commission has undertaken an extensive analysis of the Wholesale Price Index, Manufacturing Index, and Infrastructure Industry Index for the period FY 2020-2023.



This rigorous analysis ensures that the Commission's decision regarding capital cost norms for the upcoming control period is reflective of industry dynamics.

b. Capacity Utilisation Factor:

Commission's Proposal:

21.11. The capacity utilisation factor for small hydro projects was proposed under Regulation 28 of the Draft Regulations:

"28. Capacity Utilisation Factor

The normative capacity utilization factor for the small hydro projects located in Himachal Pradesh, Uttarakhand, West Bengal, Jammu and Kashmir, Ladakh and North-Eastern States shall be 45%, and for other States, it shall be 30%:

Explanation: For the purpose of this Regulation, the normative capacity utilization factor is net of free power to the home State, if any."

Comments Received:

21.12. **PSPCL** has commented that the Commission has proposed 30% CUF for SHP for the State of Punjab, however maximum CUF achieved by SHP in the State is in the range of 72% to 82%. PSERC has also re-determined the CUF at 40% after taking into consideration the overall weighted average CUF of all 38 projects.

21.13. **GRIDCO Limited** requested the Commission to allow a normative CUF of 45% for the Small Hydro Projects of Odisha as the achieved average CUF for a 25MW plant is 59.22%, 20 MW plant is 45.54% and 24MW is 46.17%.

Analysis and Decision:

21.14. The Commission has taken note of the details submitted by the stakeholders.

The Commission acknowledges that the Punjab State Commission has carried out a detailed analysis of the state's small hydro generation by considering the generation of 38 SHPs for 5 financial years. The State Commission has found that the weighted average CUF for SHPs below 5 MW capacity works out to be 38%, and for SHPs of capacity 5MW to 25MW, the weighted average CUF works out to be 42%. Since these are state specific project data made available by the stakeholder and have already been validated by the State Electricity Regulatory Commission, this Commission is inclined to consider the same. Accordingly, the Commission has revised the CUF of the SHPs to 40%.

Regarding the submission made by GRIDCO, upon careful review and consideration of the details presented in these submissions, the Commission understands and recognises that



the PLF of small hydro power plants currently operating in Odisha is notably higher than the proposed benchmark of 30%. Specifically, these plants are reported to be operating at a PLF of approximately 45%.

Therefore, the Commission has decided to revise the provisions for the states of Punjab and Odisha in the CERC RE Tariff Regulations 2024.

“28 Capacity Utilisation Factor

The normative capacity utilization factor for the small hydro projects located in Himachal Pradesh, Uttarakhand, West Bengal, Jammu and Kashmir, Ladakh North-Eastern States and Odisha shall be 45%, for Punjab, it shall be 40% and for other States, it shall be 30%.”

c. Auxiliary Consumption:

Commission’s Proposal:

21.15. The auxiliary consumption for small hydro projects was proposed under Regulation 29 of the Draft Regulations:

“29. Auxiliary Consumption

Normative auxiliary consumption for the small hydro projects shall be considered as 1.0%.”

Comments Received:

21.16. **Mosh Varaya Infrastructure Ltd., Madhya Bharat Power Corporation Ltd., Chhattisgarh Hydro Power LLP and Sarada Hydro Power LLP** have requested the Commission to allow auxiliary consumption as 1.50%.

Analysis and Decision:

21.17. The Commission has noted the suggestions and is of the view that the norms specified in the draft are in line with the market trends. Hence, the Commission has retained the provisions as provided in the Draft Regulations.

d. Operation and Maintenance Expenses:

Commission’s Proposal:

21.18. The O&M expenses for small hydro projects were proposed as under as per Regulation 30 of the Draft Regulations:

“30. Operation and Maintenance expenses

(1) Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25 shall be as under:



Region	Project Size	O&M Expenses (Rs. lakh/ MW)
<i>Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States</i>	<i>Below 5 MW</i>	<i>49.54</i>
	<i>5 MW to 25 MW</i>	<i>37.15</i>
<i>Other States</i>	<i>Below 5 MW</i>	<i>39.90</i>
	<i>5 MW to 25 MW</i>	<i>28.90</i>

(2) Normative O&M Expenses allowed at the commencement of the Control Period, i.e. financial year 2024-25 under these regulations, shall be escalated at the rate specified in Regulation 19 of these Regulations for the Tariff Period.”

Comments Received:

21.19. **Venika Hydro Projects Pvt. Ltd.** and **Venika Green Power Pvt. Ltd.** have requested the Commission to consider the O&M Expenses of Rs. 45.0 Lakhs for below 5 MW and Rs. 35.0 Lakhs for 5 MW to 25 MW in ‘Other States’ category for the financial year 2024-25 with an escalation of 5.89% per annum for tariff period.

21.20. **Mosh Varaya Infrastructure Ltd.** has requested the Commission to consider normative O&M expenses for a project of 5 MW to 25 MW in 'Other States' as Rs. 36 lakhs/MW.

21.21. **Madhya Bharat Power Corporation Ltd.** has requested the Commission to consider normative O&M expenses for projects of 5 MW to 25 MW in ‘Other States’ as Rs. 34 Lakh/MW

21.22. **Telangana State Power Coordination Committee** has suggested that a fixed percentage of capital cost can be adopted as O&M expenses for the first FY of the control period, and thereafter the same can be escalated with a proposed escalation rate @ 5.89%.

21.23. **Chhattisgarh Hydro Power LLP and Sarada Hydro Power LLP** have requested the Commission to consider normative O&M expenses for project of 5 MW to 25 MW in 'Other States' as Rs. 35 lakh/MW.



Analysis and Decision:

21.24. As explained in the Explanatory Memorandum, the Commission has carried out the analysis of different cost components of each RE technology considering the actual data availability and operating norms considered by various SERCs. However, in the absence of actual data on O&M expenses, the Commission decided to continue with the existing approach for O&M expenses for the upcoming control period and the escalation rates have been calculated based on the average CPI and WPI indices by considering the weightage of 60:40 for WPI and CPI.

The Commission is of the view that there is neither sufficient justification nor actual data to warrant an increase in the O&M expenses within the 'Other States' category. Hence, the Commission has retained the provisions as provided in the Draft Regulations.

22. Parameters for biomass power projects based on Rankine cycle technology

a. Capital Cost

Commission's Proposal:

22.1. The capital cost for biomass power projects proposed under Regulation 31 of the Draft Regulations:

"31. Capital Cost

(1) The normative capital cost for the first year of the Control Period, i.e. financial year 2024-5 shall be as under:

<i>Biomass power projects based on Rankine cycle technology</i>	<i>Capital Cost (Rs. lakhs/ MW)</i>
<i>Project [other than rice straw and juliflora (plantation) based project] with water-cooled condenser</i>	638
<i>Project [other than rice straw and Juliflora(plantation) based project] with air-cooled condenser</i>	685
<i>For rice straw and juliflora (plantation) based project with water-cooled condenser</i>	697

<i>Biomass power projects based on Rankine cycle technology</i>	<i>Capital Cost (Rs. lakhs/ MW)</i>
<i>For rice straw and juliflora (plantation) based project with air-cooled condenser</i>	744

(2) The capital cost for biomass power projects based on Rankine cycle technology as specified for the 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:

22.2. **SAEL Limited** has requested the Commission to allow a normative capital at INR 11 Cr per MW and/or allow the inclusion of biomass projects with Rankine cycle under Regulation 7 i.e., allowing such projects to seek project specific tariffs from this Hon’ble Commission.

22.3. **Abellon Clean Energy Limited** has suggested that additional capital costs, storage of the biomass, amounting to approx. INR 90 lakhs to INR 1 Cr need to be considered in addition to the costs.

Analysis and Decision:

22.4. The Commission has considered the suggestion for the inclusion of biomass projects with the Rankine cycle under project specific tariff determination and has modified Regulation 7 accordingly.

The Commission has already considered an increase in the capital cost of biomass projects using the indexation method and presently doesn’t envisage any change in the same. Further, with the limitations of the data for relevant projects and cost components, additional cost for storage of biomass is not considered presently. However, the Commission may initiate a comprehensive study to assess the various aspects of the biomass projects subsequently and assess the various parameters, including fuel cost for the biomass projects.

b. Plant Load Factor

Commission’s Proposal:

22.5. The plant load factor for biomass power projects was proposed under as per Regulation 32 of the Draft Regulations:

“32. Plant Load Factor



For the purpose of determination of tariff, the Plant Load Factor shall be considered as 80%.”

Comments Received:

22.6. **Mr. Shanti Prasad** has commented that regulation 32 should provide that after the normative loan is so repaid fully, depreciation provided thereafter shall be utilised for capital additions (for refurbishing, renovation, and modernisation) and balance will notionally reduce the equity to be considered for return on equity.

22.7. **SAEL Limited** has commented that a minimum of one-year period is required for stabilization. Accordingly, a PLF of 60% for the first six months and 70% for the following six months is required to be allowed for 100% paddy straw/mustard husk or any other similar fuel based power plants for the first year

Analysis and Decision:

22.8. The Commission has noted the suggestions and does not find any reason to change the norms specified in the Draft Regulations. Hence, the Commission has retained the provisions as provided in the Draft Regulations.

c. Operation and Maintenance Expenses

Commission’s Proposal:

22.9. The O&M expenses for biomass power projects were proposed under as per Regulation 35 of the Draft Regulations:

“35. Operation and Maintenance expenses

Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25, shall be Rs.55.03 lakhs per MW and shall be escalated at the rate at the rate specified in Regulation 19 of these Regulations for the Tariff Period.”

Comments Received:

22.10. **Rajasthan Biomass Power Developers Association** has requested that this rate of escalation be made applicable to all biomass based power plants installed in different States of the country.

22.11. **Telangana State Power Coordination Committee** has suggested that a fixed percentage of capital cost can be adopted as O&M expenses for the first FY of the control period, and thereafter the same can be escalated with a proposed escalation rate @ 5.89%.

22.12. **Abellon Clean Energy Limited** has suggested that the normative O&M Expense for the first year of the Control Period be considered as INR 65 lakhs per MW.



Analysis and Decision:

22.13. The Commission has noted the suggestions and is of the view that the norms specified in the draft are in line with the market trends. Also, these norms will be applicable to all inter-state biomass power projects. Hence, the Commission has retained the provisions as provided in the Draft Regulations.

d. Gross Calorific Value

Commission's Proposal:

22.14. The GCV for biomass power projects was proposed under Regulation 37 of the Draft Regulations:

"37. Gross Calorific Value

The gross calorific value of biomass fuel, for the purpose of determination of tariff, shall be at 3100 kCal/kg."

Comments Received:

22.15. **Suryaa Chamball Power Limited** and **Rajasthan Biomass Power Developers Association** have commented that there is a normal experience of GCV deterioration due to the long 10 months of storage period and exposure to wind, rain and self-ignition characteristics. This norm may be applicable to all biomass power plants in all states of India.

22.16. **SAEL Limited** has suggested that for a project using paddy straw as fuel, the GCV ought to be considered as 2600 Kcal/kg

Analysis and Decision:

22.17. The Commission has noted the suggestions and does not find any reason to change the norms specified in the Draft Regulations, particularly in the absence of scientific data substantiating the stated issues. A decision on the suggestions will be considered after a detailed study. Hence, the Commission has retained the provisions as provided in the Draft Regulations.

e. Fuel Cost

Commission's Proposal:

22.18. The fuel cost for biomass power projects was proposed under Regulation 38 of the Draft Regulations:

"38. Fuel Cost



Biomass fuel price during the first year of the Control Period, i.e. financial year 2024-25 shall be as specified in the table below and shall be escalated at the rate of 3.45% per annum to arrive at the base price for subsequent years of the Control Period unless reviewed earlier by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 3.45% per annum shall be applicable on biomass fuel price.

State	Biomass prices for FY 2024-25 (Rs./MT)
<i>Andhra Pradesh</i>	<i>3983</i>
<i>Haryana</i>	<i>4534</i>
<i>Maharashtra</i>	<i>4637</i>
<i>Punjab</i>	<i>4742</i>
<i>Rajasthan</i>	<i>3958</i>
<i>Tamil Nadu</i>	<i>3918</i>
<i>Telangana</i>	<i>3983</i>
<i>Uttar Pradesh</i>	<i>4053</i>
<i>Other States</i>	<i>4260</i>

Comments Received:

22.19. **Suryaa Chamball Power Limited and Rajasthan Biomass Power Developers Association** have commented that it will be logical that the State wise biomass price decided by CERC and additional Fuel Handling costs and losses in Storage should be made applicable to all biomass plants in India.

22.20. **Suryaa Chamball Power Limited and Rajasthan Biomass Power Developers Association** have further commented that due to an increase in demand for biomass in the adjoining states, some traders started purchasing the biomass, hoarding the same, and transporting and selling it outside the State. This has resulted in the non-availability of biomass for power generation as well as other users.

22.21. **SAEL Limited** has suggested that the fuel cost escalation rate of a minimum of 7.5% per annum may be considered with a review every two years to have fuel costs aligned to market realities.



22.22. **Chhattisgarh State Power Distribution Company Ltd.** has requested the Commission to consider the average price of Rs.2952/MT of Biomass Fuel discovered in the tender invited by MARKFED for FY 2023-24 in respect of “Chhattisgarh” for the determination of tariff for Biomass generator for FY2024-25, which could be escalated at 3.45% as proposed in the draft, for subsequent years, instead of any arbitrary number.

22.23. **PSPCL** has commented that in earlier orders, it was highlighted that the proposed biomass and bagasse prices for the State of Punjab exceed the actual fuel cost. The Commission suggested that the same may be reviewed in the next control period. However, the methodology outlined in the draft regulations still relies on escalating previous fuel numbers, which may not accurately reflect costs. Regulatory bodies like PSERC and HERC have set lower fuel costs, suggesting that the prices should be aligned accordingly.

Analysis and Decision:

22.24. The Commission has taken note of the suggestions and, due to the unavailability of any reliable data, has adopted an indexation methodology to arrive at the fuel cost. However, the Commission takes cognizance of the fact that the ground realities with regard to fuel cost for each of the States may differ, and accordingly, a comprehensive study may need to be undertaken to reassess the fuel cost. Therefore, the Commission has added a proviso in the CERC RE Tariff Regulations, 2024,

“Provided that the Commission may review the biomass fuel price based on a study, consequent to which the table of biomass fuel price as provided in this Regulation shall stand modified with effect from the date of notification of the revised prices, by the Commission.”

23. Parameters for non-fossil fuel based co-generation projects

a. Plant Load Factor

Commission’s Proposal:

23.1. The plant load factor for non-fossil fuel-based co-generation projects was proposed as under as per Regulation 40 of the Draft Regulations:

“40. Plant Load Factor

The plant load factor for different States shall be as follows:



<i>State</i>	<i>Plant Load Factor (%)</i>
<i>Uttar Pradesh and Andhra Pradesh</i>	<i>45%</i>
<i>Tamil Nadu and Maharashtra</i>	<i>60%</i>
<i>Other States</i>	<i>53%</i>

Comments Received:

23.2. ISMA has suggested that the PLF of Tamil Nadu and Maharashtra be revised to 50%, as the current cane volume does not support the designated factor.

Analysis and Decision:

23.3. The Commission has noted the suggestion and believes that revising the norms necessitates a thorough study. Accordingly, the Commission has asked stakeholders to submit the relevant details.

23.4. Therefore, the Commission has retained the provisions as provided in the draft Regulation.

b. Auxiliary Consumption

Commission’s Proposal:

23.5. The auxiliary consumption for non-fossil fuel-based co-generation projects was proposed under as per Regulation 41 of the Draft Regulations:

“41. Auxiliary Consumption

The auxiliary consumption shall be considered as 8.5% for the computation of the tariff.”

Comments Received:

23.6. ISMA has requested the Commission to revise the Auxiliary consumption to a minimum of 9%.

23.7. UPSMCA submitted that the electricity consumption by way of Auxiliary Consumption is equal for bagasse-based co-generation plants as well as for biomass gasifier-based power plants. Therefore, different Auxiliary Consumption rates, as considered in the draft RE Regulations, are not justified. Therefore, it has been suggested that the auxiliary consumption for Bagasse-based cogeneration plants should be 10%.

Analysis and Decision:



23.8. The Commission maintains the stance that bagasse necessitates less processing compared to biomass. Additionally, given the shared equipment between sugar mills and power generation units, the provision outlined in the draft regulation has been retained in the CERC RE Tariff Regulations 2024.

c. Station Heat Rate

Commission's Proposal:

23.9. The SHR for non-fossil fuel based co-generation projects was proposed under as per Regulation 42 of the Draft Regulations:

"42. Station Heat Rate

The Station Heat Rate of 3600 kCal/ kWh for the power generation component alone shall be considered for the computation of tariff for non-fossil fuel based co-generation projects."

Comments Received:

23.10. ISMA has commented that low thermal cycles for cogeneration have led to higher bagasse per kWh consumption leading to higher variable costs.

Analysis and Decision:

23.11. The Commission has noted the suggestions and does not find any reason to change the norms specified in the Draft Regulations. Hence, the Commission has retained the provisions as provided in the Draft Regulations.

d. Fuel Cost

Commission's Proposal:

23.12. The fuel cost for non-fossil fuel-based co-generation projects was proposed under as per Regulation 44 of the Draft Regulations:

"44. Fuel Cost

(1) The price of bagasse for the first year of the Control Period, i.e. financial year 2024-25, shall be as specified in the table below and shall be escalated at the rate of 3.45% per annum to arrive at the base price for subsequent years of the Control Period unless specifically reviewed by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 3.45% per annum shall be applicable on bagasse prices.

<i>State</i>	<i>Bagasse Price for FY 2024-25 (Rs. /MT)</i>
<i>Andhra Pradesh</i>	<i>2249</i>



<i>Haryana</i>	<i>3199</i>
<i>Maharashtra</i>	<i>3152</i>
<i>Punjab</i>	<i>2815</i>
<i>Tamil Nadu</i>	<i>2423</i>
<i>Telangana</i>	<i>2248</i>
<i>Uttar Pradesh</i>	<i>2509</i>
<i>Other States</i>	<i>2723</i>

(2) For use of biomass other than bagasse in non-fossil fuel based co-generation projects, the biomass prices as specified under Regulation 38 shall be applicable.”

Comments Received:

23.13. **The South Indian Sugar Mill Association** has requested that fuel cost for FY 2024-25 should be (a) based on equivalent heat value at Rs.5530/ MT (b) but not below Rs.4220/ MT being the market price for bagasse for FY 2022-23 (actual sale of bagasse to TNPL is at the weighted average price of Rs.4220/ MT) (c) these shall further be subject to annual escalation for FY 2023-24 and 2024-25 to arrive at the bagasse price for FY 2024-25.

23.14. **UPSMCA** submitted that the bagasse price fixed for Uttar Pradesh does not reflect the actual market price and requested that the price be matched with the prevailing price, i.e. Rs. 3000 per MT. It has been further submitted that the invoices issued by sellers of bagasse have already been produced as also the study report on the pricing of Bagasse as conducted by IIM Lucknow before the Commission for FY 2022-23 and FY 2023-24. As per the reports submitted by UPSMCA, the average price of bagasse in UP is Rs. 2490/MT and according to the IIM report for UP, the bagasse price is Rs. 277.25/Quintal.

23.15. **The South Indian Sugar Mill Association, UPSMCA, and ISMA** have further requested the Commission to maintain the fuel cost escalation at 5% per annum.

23.16. **ISMA** has further commented that the proposed rate of bagasse for 2024 and its subsequent annual increase may impact the per-unit variable cost of power from 2024 to 2027.

Analysis and Decision:

23.17. The Commission has taken note of the suggestions and due to the unavailability of any reliable data, has adopted an indexation methodology to arrive at the fuel cost. However, the



Commission takes cognizance of the fact that the ground realities with regard to fuel cost for each of the States may differ, and accordingly, a comprehensive study may need to be undertaken to reassess the fuel cost. Therefore, the Commission has added a proviso in the CERC RE Tariff Regulations, 2024.

“Provided that the Commission may review the bagasse price based on study, consequent to which the table of bagasse price as provided in this Regulation shall stand modified with effect from the date of notification of the revised prices, by the Commission.”

e. Operation and Maintenance expenses:

Commission’s Proposal:

23.18. The O&M expenses for non-fossil fuel-based co-generation projects were proposed under as per Regulation 45 of the Draft Regulations:

“45. Operation and Maintenance expenses

Normative O&M expenses during the first year of the Control Period, i.e. financial year 2024-25, shall be Rs. 29.07lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for the Tariff Period.”

Comments Received:

23.19. **Telangana State Power Coordination Committee** has suggested that a fixed percentage of capital cost can be adopted as O&M expenses for the first FY of the control period, and thereafter the same can be escalated with a proposed escalation rate @ 5.89%.

23.20. **UPSMCA** submitted that the rates of O&M expenses proposed under the draft RE Regulations are lower than the rates of O&M expenses prescribed for 200/ 210/ 250 MW thermal power plants under Regulation 36 (1) of the CERC (Terms and Conditions of Tariff) Regulations, 2024 and are also lower than the rates of O&M expenses prescribed for Small gas turbine power generation stations under Regulation 36 (3) of the 2024 Tariff Regulations. Further, the O&M cost has increased due to an increase in wages and spares cost. Therefore, the rates of O&M expenses are to be increased and be kept at least equivalent to 250 MW TPPs as prescribed under the 2024 Tariff Regulations.

23.21. **ISMA** has requested the Commission to reevaluate the O&M cost for cogeneration, as it is significantly low compared to biomass.

Analysis and Decision:

23.22. As explained in the Explanatory Memorandum, the Commission has carried out the analysis of different cost components of each RE technology considering the actual data



availability and operating norms considered by various SERCs. However, in the absence of actual data on O&M expenses, the Commission decided to continue with the existing approach for O&M expenses for the upcoming control period, and the escalation rates have been calculated based on the average CPI and WPI indices by considering the weightage of 60:40 for WPI and CPI.

23.23. Regarding the revaluation of O&M expenses, the revision in norms necessitates a comprehensive examination. Therefore, the Commission requests stakeholders to kindly submit the pertinent details.

24. Parameters for solar PV power projects, solar thermal power projects and floating solar project

a. Capacity Utilisation Factor

Commission's Proposal:

24.1. The capital cost for solar PV power projects, solar thermal power projects, and floating solar projects was proposed under Regulation 47 of the Draft Regulations:

"47. Capacity Utilisation Factor

The Commission shall only approve capacity utilisation factors for project specific tariffs:

Provided that the minimum capacity utilization factor for solar PV power projects shall be 21%:

Provided further that the minimum capacity utilization factor for solar thermal power projects shall be 23%:

Provided also that the minimum capacity utilisation factor for floating solar projects shall be 19%."

Comments Received:

24.2. **Power Foundation of India** has suggested that the Commission may obtain actual CUF information from the developers operating across various geographies of the country and thereafter conduct a scientific study considering actual CUF, technological advancements, site locations, etc. to fix normative CUF for Solar Power Projects for the Control Period from FY 2024-25 to FY 2026-27.

24.3. **NTPC limited** has suggested that the Commission may please approve capacity utilisation factors for project specific tariffs. However, the minimum capacity utilization factor for solar PV projects may be considered as 19%.



24.4. **Grid Controller of India Limited** has suggested that the Commission may outline the modalities through which CUF may be fixed at the time of determination of tariff in the regulation.

Analysis and Decision:

24.5. As indicated in the Explanatory Memorandum, due to insufficient actual data, the Commission has opted to maintain the CUF of solar power projects as outlined in the RE Tariff Regulations, 2020.

The Commission considers that the current market trend for CUF has consistently ranged at 21% or higher. With technological advancements, project developers are deemed capable of achieving a CUF of 21% without difficulty.

b. Auxiliary Consumption

Commission's Proposal:

24.6. The auxiliary consumption for solar PV power projects, solar thermal power projects, and the floating solar projects was proposed under as per Regulation 49 of the Draft Regulations:

"49. Auxiliary Consumption

The Commission shall only approve auxiliary consumption for project specific tariffs:

Provided that the maximum auxiliary consumption for solar PV power projects shall be 0.75%;

Provided further that the maximum auxiliary consumption for solar thermal power projects shall be 10%;

Provided also that the maximum auxiliary consumption for floating solar projects shall be 0.75%."

Comments Received:

24.7. **NTPC limited** has suggested that the Commission may approve auxiliary consumption for project specific tariffs. However, the maximum auxiliary consumption for solar PV & Floating solar PV Projects may be kept at least at 2.5%.

Analysis and Decision:

24.8. The Commission has acknowledged the suggestions and reiterates that auxiliary consumption encompasses consumption associated with solar trackers, lighting, module cleaning, transformer losses, and similar factors. Therefore, the Commission has set auxiliary consumption at 0.75%



24.9. Further, the Commission sees no justification to revise the norms to 2.5%. Therefore, the Commission has retained the provisions as provided in the Draft Regulations.

25. Parameters for municipal solid waste-based power projects and refuse derived fuel based power projects

a. Capital Cost

Commission's Proposal:

25.1. The capital cost for municipal solid waste based power projects and refuse derived fuel based power projects was proposed under Regulation 62 of the Draft Regulations:

"62. Capital Cost

Normative Capital Costs for first year of the Control Period shall be as under:

<i>Technology</i>	<i>Capital Cost (Rs. Lakhs/MW)</i>
<i>MSW</i>	<i>1800</i>
<i>RDF</i>	<i>2100</i>

Comments Received:

25.2. **Greenesol Power Systems Pvt. Ltd., Averda Waste Management India Pvt Ltd., CII, and CNIM Martin Pvt. Ltd.** have commented that the cost of Processing of MSW is not included in this rate proposed and requested the Commission to revise the Capital cost to Rs. 25 Cr./MW

25.3. **Zenith Energy Services Pvt. Ltd** has suggested that the Capital cost to be revised to Rs. 25 -30 Cr./MW

25.4. **JBM** has suggested that the Capital cost be revised to Rs. 25 Cr./MW for MSW and Rs. 22 Cr./MW for RDF.

25.5. **Waste to Energy Research & Technology Council** has suggested revising the Capital cost similar to "Reciprocating Grate Type," Rankine cycle plants having the capital cost of Rs 22- 26 Cr /MW

25.6. **Avant-Garde Systems and Controls Pvt. Ltd.** has requested that the Capital cost be revised as Rs 20- 25 Cr /MW without the pre-processing plant of MSW.

25.7. **Mr. K Sreenivasa Rao** has commented that Capital costs for Waste to energy are not generally expressed in Rs/Cr, though all other forms of power plants are expressed so. The global practice is to express the cost as Rs INR per annual capacity of waste incineration.



Capital Costs for waste-to-energy plants range between Rs 12000 to Rs 14000/ton of annual waste incineration capacity. The practice of Cost per MW should be discouraged.

25.8. **RE Sustainability Limited and CII** have commented that the capital costs are generally mentioned as cost per annual capacity of waste disposal of the waste fired boilers and in terms of MW (e) output for the waste to energy industry.

25.9. **Abellon Clean Energy and CII** have requested the Commission to consider the capital cost application to MSW-based WTE projects using RDF in the range of INR 23 Crores / MW to INR 28 Crores / MW for the purpose of determination of tariff.

25.10. **JFE Engineering India Private Limited** has suggested that the capital cost be revised to Rs. 28 Crore per MW and corrected with NCV (Net calorific value) and power output.

Analysis and Decision:

25.11. As mentioned in the Explanatory Memorandum, the Commission has analysed the Capital cost data received from IREDA and has proposed the Capital cost of MSW and RDF projects.

Regarding the revision of the capital cost, the Commission has considered the suggestions submitted by the stakeholders and has revised the Capital cost of the RDF projects to Rs. 2200 Lakhs/MW. Further, as mentioned in earlier sections of the SOR, the Commission has considered stakeholders' suggestions and has removed the category of MSW technology.

The Commission has followed the methodology of specifying the Capital Cost in terms of Rs. Lakh/MW and finds the method adequate considering the present market trends. Hence, the Commission decides to retain the provisions as specified in the Draft Regulations.

b. Plant Load Factor

Commission's Proposal:

25.12. The plant load factor for municipal solid waste-based power projects and refuse derived fuel-based power projects was proposed under Regulation 63 of the Draft Regulations:

"63. Plant Load Factor

(1) Plant load factor for determining tariff for municipal solid waste based power projects and refuse derived fuel based power projects shall be:

<i>Sl. No.</i>	<i>Plant load factor</i>	<i>MSW</i>	<i>RDF</i>
<i>a)</i>	<i>During stabilisation period</i>	<i>65%</i>	<i>65%</i>



b)	<i>During the remaining period of the first year (after the stabilization period)</i>	65%	65%
c)	<i>2nd year onwards</i>	75%	80%

(2) The stabilisation period shall not be more than 6 months from the date of commercial operation of the project.”

Comments Received:

25.13. **Greenesol Power Systems Pvt. Ltd.** has commented that 7500 hours of working is a norm followed in this sector. However, all working hours do not translate to capacity generation, because waste is heterogeneous and seasonal.

25.14. **CNIM Martin Pvt. Ltd.** has commented that 75% PLF is reasonable.

25.15. **Zenith Energy Services Pvt. Ltd** has suggested that the National Tariff Policy prescribes 100% energy from WTE plants to be procured by DISCOMs. Hence, for the purpose of tariff determination, a norm of 75% may be considered.

25.16. **Waste to Energy Research & Technology Council** has commented that a PLF of 80% can be considered.

25.17. **Avant-Garde Systems and Controls Pvt. Ltd.** has requested that a PLF of 75% to 80% on an annual average be considered as a reasonable bench mark considering the seasonal variation in the incoming fuel.

25.18. **RE Sustainability Limited and CII** have commented that the plant load factor is only normative for the purpose of tariff determination, and the special dispensation given to the Waste to Energy sector by NTP should continue without any linkage to any normative of PLF either under the Generic order route or under project specific route

Analysis and Decision:

25.19. The Commission has noted the suggestions of the stakeholders and is of the view that the norms have been specified considering the present market trends and do not warrant any change.



c. Auxiliary Consumption

Commission's Proposal:

25.20. The auxiliary consumption for municipal solid waste based power projects and refuse derived fuel based power projects was proposed as under as per Regulation 64 of the Draft Regulations:

"64. Auxiliary Consumption

The auxiliary consumption for determination of tariff shall be considered as 15%."

Comments Received:

25.21. **Greenesol Power Systems Pvt. Ltd.** has suggested the Auxiliary consumption to be 10-12%, considering the additional requirement of Grate technology and especially the advanced Flue Gas Cleaning system being additional over other regular RE plants.

25.22. **JBM** has suggested that the Auxiliary Consumption be revised to 20%.

25.23. **Averda Waste Management India Pvt Ltd.** and **CII** have commented that the Aux requirement for lower capacity WtE plants would be higher at 18% or more.

25.24. **Waste to Energy Research & Technology Council and CNIM Martin Pvt. Ltd.** have commented that the Aux. Consumption of the plants should be up to 15%.

25.25. **Avant-Garde Systems and Controls Pvt. Ltd.** has requested that Aux. Consumption be revised as 12 to 16% for MSW based WTE Plant.

25.26. **K Sreenivasa Rao** has commented that it is customary to express the aux consumption in terms of kWh/ton of waste combusted. The aux consumption ranges between 50- 54 kWh/ton of combusted. The measurement as a % of generation is not followed as a norm in the WTE industry globally.

25.27. **Abellon Clean Energy Limited and CII** have requested that the auxiliary consumption for RDF based WTE projects be considered as at least 16%

Analysis and Decision:

25.28. The Commission has specified the norms after considering the present market trends. Hence, the Commission has not found any material reason to modify the norms. The methodology of specifying the auxiliary consumption for conventional as well as RE technologies is based on the quantum of energy consumed by auxiliary equipment of the generating station and transformer losses within the generating station and is expressed as a percentage of the sum of gross energy generated at the generator terminals of all the units



of the generating station. The Commission finds the method adequate and decides to retain the provisions as specified in the Draft Regulations.

d. Operation and Maintenance expenses

Commission's Proposal:

25.29. The O&M expenses for municipal solid waste-based power projects and refuse derived fuel based power projects were proposed under Regulation 65 of the Draft Regulations:

"65. Operation and Maintenance Expenses

Normative O&M expenses for the first year of the Control Period shall be as under:

<i>Technology</i>	<i>O&M expenses (% of Capital Cost)</i>
<i>MSW</i>	<i>6.5%</i>
<i>RDF</i>	<i>8.5%</i>

Comments Received:

25.30. **Greenesol Power Systems Pvt. Ltd.** has commented that Slagging, Erosion, and Corrosion cause O&M issues considering the heterogeneous nature of the Waste, further skilled manpower is required to address this challenge.

25.31. **Averda Waste Management India Pvt Ltd.** and **CII** have suggested that a minimum 8% O & M cost should be considered, indexed with WPI and CPI inflation, with a major maintenance of 5% every 5 years.

25.32. **CNIM Martin Pvt. Ltd. and Avant-Garde Systems and Controls Pvt. Ltd.** have commented that 8.5% of the capital cost towards O&M of WTE plants is reasonable and justified.

25.33. **Zenith Energy Services Pvt. Ltd** has suggested that the O&M expenses of 7% of the Capital cost with a consumer price index escalation should be provided.

25.34. **JBM** has suggested that the O&M expenses be revised to 7.5% of Capex for MSW and 9.5% of Capex for RDF.

25.35. **RE Sustainability Limited and CII** have suggested that 50% of the capital cost of waste fired boilers should be considered as an asset replacement fund in 15 years of life after the first 5 years after COD.



25.36. **Abellon Clean Energy Limited** and **CII** have requested the Commission for a hybrid tariff model wherein the O&M component is treated independently and periodically re-determined without a levelized treatment to the same.

25.37. **JFE Engineering India Private Limited** has suggested the normal O&M cost to be 8% and suggested major maintenance every 5 years (4% of CAPEX)

25.38. **Dr. Anoop Singh, IIT Kanpur**, has suggested that the Commission adopt efficient benchmarks for capital costs and operational parameters. He has further commented that to ensure that environmental goals for the 'utilisation' of municipal solid waste are achieved in a cost competitive manner, either competitive bidding based approach should be adopted for MSW based projects, or cost benchmarks should reflect cost efficiencies and encourage further cost reduction.

Analysis and Decision:

25.39. The Commission has established the norms after carefully considering the present market trends. Therefore, the Commission finds no significant rationale to modify these norms.

e. Fuel Cost

Commission's Proposal:

25.40. The fuel cost for municipal solid waste based power projects and refuse derived fuel based power projects were proposed as under as per Regulation 66 of the Draft Regulations:

"66. Fuel Cost

No Fuel Cost shall be considered for the determination of tariffs for MSW and RDF power projects."

Comments Received:

25.41. **Abellon Clean Energy Limited** and **CII** have requested the Commission to allow the supplementary fuel cost for co-firing of supplementary fuel Biomass in the range of 10%-15%.

25.42. **Averda Waste Management India Pvt Ltd.** and **CII** have suggested that at least 10% or more alternate fuel is required.

25.43. **CEA** has suggested that the proportion of the auxiliary fuel may be kept limited to the extent of 5%, and it may be mandated that only renewable based fuel say biomass be used as an auxiliary fuel.

25.44. **Dr. Anoop Singh, IIT Kanpur**, has suggested that the Commission must direct all MSW/RDF based power plants under this proposed draft regulation to monitor and record



the GCV of MSW/RDF used, SHR, and PLF on a monthly basis. This information would be valuable for the Commission to set standard benchmarks under the regulation in the future

Analysis and Decision:

25.45. The Commission has considered the suggestions and is of the view that due to the nature of waste being highly heterogeneous as well as high moisture content especially during the monsoon, it becomes difficult to maintain the temperature of the boiler. Further, the environmental norms compel the project developers to maintain a temperature of 850 °C during the operation of the plant in order to meet the emission norms. Further, for the boiler to reach the appropriate temperature for the burning of waste during start-up and to ensure that the remaining waste in the boiler is completely burned during shut-down, a certain amount of auxiliary fuel is required. Therefore, the Commission has determined to permit the utilization of any renewable energy source as an alternate fuel, not exceeding 5% of the annual consumption of RDF fuel, without any impact on tariff.

The Commission has modified the provisions in the CERC RE Tariff regulations, 2024.

“66. Fuel Cost

No Fuel Cost shall be considered for the determination of tariffs for RDF power projects.

Provided that for the purpose of start-up and shut down activity and temperature stabilisation during monsoon, alternate fuel from any other renewable energy source up to a ceiling of 5% of RDF consumed annually, shall be allowed without any additional impact on tariff.”

26. Parameters for Renewable Energy Hybrid Projects

a. Capacity Utilisation Factor:

Commission’s Proposal:

26.1. The capacity utilisation factor for renewable energy hybrid projects was proposed as under as per Regulation 68 of the Draft Regulations:

“68. Capacity Utilisation Factor

(1) The Commission shall determine only project specific capacity utilisation factor in respect of renewable hybrid energy projects, taking into consideration the proportion of rated capacity of each renewable energy source, as the case may be, and applicable capacity utilisation factor for such renewable energy sources, as the case may be:



Provided that the minimum capacity utilization factor for renewable hybrid energy projects shall be 30% when measured at the inter-connection point, where the energy is injected into the grid.”

Comments Received:

26.2. Dr. Anoop Singh, IIT Kanpur, has suggested that CUF for hybrid project needs to be defined by excluding ‘energy generation’ (discharged) by the storage capacity either by storing the energy generated by the hybrid project or that stored from other sources of generation/procurement. This should be explicitly mentioned to avoid grey areas for interpretation and potential legal disputes in the future.

Analysis and Decision:

26.3. After careful consideration, the Commission has decided that no change is required at this stage. The current regulatory regime, as proposed in Regulation 68, adequately addresses the capacity utilization factor for renewable hybrid energy projects. The minimum CUF of 30% at the interconnection point remains applicable. The Commission has specified a separate category for renewable energy with storage projects, which will take care of the storage component, for which the Commission will determine project specific tariffs. However, the parameters specified under the Renewable Hybrid Energy Projects are exclusive of the storage component.

27. Parameters for renewable energy with storage project

a. Storage Efficiency

Commission’s Proposal:

27.1. The storage efficiency for renewable energy with storage project was proposed under Regulation 72 of the Draft Regulations:

“72. Storage Efficiency

(1) The Commission shall approve the storage efficiency only for project specific tariffs:

Provided that the minimum efficiency for storage based on the technology of solid state batteries shall be 80%:

Provided further that the minimum efficiency for storage based on the technology of pumped storage shall be 75%:

(2) Efficiency of the storage component of renewable energy with a storage project shall be measured as the ratio of output energy received from storage and input energy supplied to the storage component of such project on an annual basis.”



Comments Received:

27.2. **Mr. Shanti Prasad** has commented that this regulation does not cover all storage technologies, namely, liquid electrolyte batteries (i.e., lithium ion, sodium ion batteries), flow batteries, fuels cells, etc. Minimum efficiencies for these should be specified.

27.3. **Grid Controller of India Limited** has suggested that a higher benchmark (keeping in view the BESS developed under competitive bidding) for storage efficiency for solid state batteries may be considered.

Analysis and Decision:

27.4. The Commission has noted the suggestion and believes that conducting a thorough study is essential to establish the minimum efficiencies of liquid electrolyte batteries, flow batteries, fuel cells, etc.

Regarding the proposal to raise the standard for storage efficiency of solid-state batteries, the Commission has reviewed the suggestion and appropriately adjusted the provisions in the CERC RE Tariff Regulations, 2024.

“(1) The Commission shall approve the storage efficiency only for project specific tariffs:

Provided that the minimum efficiency for storage based on the technology of solid state batteries shall be 85 %.”

b. Tariff determination for Energy Storage

Commission’s Proposal:

27.5. The determination of tariff for renewable energy with storage project was proposed under Regulation 74 of the Draft Regulations

“74. Tariff determination for Energy Storage

The tariff for renewable energy with storage project shall be a composite tariff or differential tariff based on the time of day, determined for energy supplied from the Project, including the energy supplied from the storage facility:

Provided that such tariff may be determined for the supply of power on round the clock basis or for time periods as agreed by the Project Developer and Beneficiary.”

Comments Received:

27.6. **Mr. Shanti Prasad** has commented that these regulations do not cover (i) Pumped storage cum hydro generation power plant having substantial reservoir storage fully filled by river /stream flows. That is, such power plants utilising full generation capacity during the rainy



season and in other seasons may have energy generation through pumped storage as well as rainy water pondage. (ii) Pumped storage hydro plant operating as service provider for pumped storage and retrieval of stored energy for one or more beneficiaries/ traders; **Mr. Shanti Prasad** has requested the Commission to cover these points.

Analysis and Decision:

27.7. The Commission takes note of the suggestion made by the stakeholder and highlights that for Renewable Energy with Storage projects, including the pump storage projects, project specific tariffs will be determined. Therefore, during the evaluation of the project, various aspects such as the configuration of the generation capacities, input power cost, etc. will be considered based on the data made available by the petitioners in the tariff petition proceedings, and as such, the above-mentioned aspects will be taken care while determining a composite or differential tariff. Therefore, no changes are required in the draft Regulations.

28. Miscellaneous

a. Deviation from norms

Commission's Proposal:

28.1. The deviation from norms was proposed as under Regulation 75 of the Draft Regulations

"75. Deviation from norms

Tariff for electricity generated from a generating station based on renewable energy sources may also be agreed upon between the generating company and beneficiary, in deviation from the norms specified in these regulations:

Provided that the levelized tariff of the project calculated on the basis of the norms specified in these regulations shall be the ceiling levelized tariff."

Comments Received:

28.2. **Telangana State Power Coordination Committee** has commented that The National Tariff Policy 2016 mandates procurement of power from RE based projects through competitive bidding alone except for the Waste to Energy projects. Thus, for better clarity, it may be noted that the tariff determined in accordance with the proposed parameters in the Regulation shall act as a ceiling tariff for proceeding with the competitive bidding process.



Analysis and Decision:

28.3. The scope of these regulations is limited to a determination of tariff under Section 62 read with Section 79 of the Electricity Act, 2003, for a grid connected renewable energy generating station or a unit thereof commissioned during the Control Period .

For RE projects under competitive bidding under section 63 of E Act 2003, the Commission's role remains limited to the adoption of tariffs. Therefore, the Commission views that no change is required under these Regulations to accommodate the suggestions of the Stakeholders.

29. General Comments

a. RPO provisions

Comments Received:

29.1. **Rajasthan Biomass Power Developers Association** has requested the Commission to fix separate RPO for biomass power.

29.2. **Mr. Shanti Prasad** has suggested that separate RPOs be specified by SERC for promoting bio mass, Bio-gas, bio-gasifier, and municipal waste energy projects. Mr. Shanti Prasad has further suggested that the Commission may consider appropriate action (e.g. advising central govt, discussion in forum of regulators, etc) for separate RPO.

Analysis and Decision:

29.3. The matter concerning RPO falls beyond the purview of the RE Tariff Regulations.

b. Tariff Related:

Comments Received:

29.4. **ISMA** has requested the Commission,

(1) to extend the validity of determined tariffs beyond the control period to provide long-term stability and assurance for investors in renewable energy projects.

(2) to propose provisions that incentivize the adoption of new renewable energy technologies by offering preferential tariffs or additional benefits for projects utilizing innovative and efficient technologies

(3) to provide clarity regarding the expected rate of power and potential changes in banking/utilization systems.



(4) to clarify the establishment date/year of the plant for any potential implications on the power tariff

Analysis and Decision:

29.5. As regards the extension of tariff beyond the control period, the Commission highlights that the tariff approved under these Regulations will be levelised tariff for the projects commissioned during the control period, and this tariff shall remain constant for the entire life of the corresponding project. Further, there is an imperative need to revisit the tariff norms after every 3-year control period, considering multiple changes in the sectoral environment in the Renewable Energy sector, especially with respect to the upgraded/updated technology of various Renewable Energy sources. However, incentives for adopting new and innovative or efficient technologies cannot be separately provided under these Regulations, as this would create a distinction between projects and project developers. It is envisaged that the adoption of new and innovative technologies, will enable the project developer to minimise their cost, resulting in a higher profit margin. which should sufficiently serve as an incentive.

29.6. Potential changes in banking / utilization system are beyond the scope of these Regulations.

c. Uniform Tariff for MSW/RDF

Comments Received:

29.7. **Greenesol Power Systems Pvt. Ltd.** has suggested that a uniform, consistent Pan India Tariff, on the lines of PR China is the need of the hour. Such Pan India Tariff is proposed as Rs 8 /kwh on a levelized basis for min. 10 years after COD.

29.8. **CNIM Martin Pvt. Ltd.** has requested the Commission to fix a tariff of, say, Rs. 7.50/kwh on an All India applicability basis for a fixed tenure of 10 years from the date of COD of WtE plants. If this fixed tariff on all India basis is implemented, it will be easier for ULBs to announce tenders based on gate fee/ tipping fee and achieve compliance with MSW management in line with SWM rules 2016.

29.9. **Zenith Energy Services Pvt. Ltd** has suggested that a Uniform all across country tariff for Waste to Energy like in China, Srilanka, Vietnam, etc., which be followed by SERCs automatically without resorting to diverse, complex, and at times perverse orders on Waste to Energy; further, an additional price of Rs. 0.35/kwh be fixed over and above the ceiling tariff for Waste to energy considering the location of the projects in remote areas.



29.10. **Waste to Energy Research & Technology Council** has suggested that a tariff of a minimum of Rs 7.50 /kwh is to be prescribed for WTE power to be mandatorily procured by DISCOMs in the concerned state.

29.11. **Mr. K Sreenivasa Rao** has also commented that,

(i) Tariff for WTE power should be considered on a pragmatic basis and usual methods of cost plus approach do not strictly apply.

(ii) A National tariff must be prescribed by the Union Government, obviating the need for multiple SERCs to determine complex methods and policies ranging from capital costs to reimbursement of tipping fees and to delve into SWM aspects without jurisdiction.

(iii) A tariff of Rs 7.50 /kwh is to be prescribed for WTE power to be mandatorily procured by DISCOMs in the concerned state. The state govt should take the burden of reimbursing the differential tariff to help lessen the burden on DISCOM as its obligation to promote compliance and Swatch India pledge as may be agreed between DISCOM and State Govt but to be monitored for compliance by SERCs in the ARR for DISCOMs. Such a National tariff is the call to be taken by Govt of India at this moment, which will empower the ULBs to call for bids based on completion and attract investment.

29.12. **RE Sustainability Limited and CII** have suggested that a national tariff for waste to energy, say Rs 7.50/kWh levelized to be prescribed and applicable all over India in all states without SERCs determining the tariff and without any provision for sharing of revenue nor tipping fee in any manner. The ULBs can carry out a transparent bidding process to select an operator for SWM for whom the National Tariff, say Rs 7.5/kWh for a period of 10 years is prescribed for bidding competitively the tipping fee.

29.13. **JFE Engineering India Private Limited** has requested the Commission to specify the minimum tariff as under,

5 – 10 MW = Rs 10/KWh

10 – 14 MW = Rs 9/KWh

14 – 20 MW = Rs 8.5/KWh

20 – 30 MW = Rs 8.0/KWh

Above 30 MW = Rs 7.8/KWh

Analysis and Decision:

29.14. The Commission takes note of the suggestions made by various stakeholders with respect to a single Pan India uniform Tariff. The Commission highlights that it has jurisdiction over



only the Central Government owned generating companies and the generation projects that enter into or have a composite scheme for the generation and sale of electricity in more than one state. The jurisdiction for determination of tariff for intra-state projects lies entirely with State Electricity Regulatory Commissions or Joint Electricity Regulatory Commission, as applicable, and as such it is not legally permissible for the Commission to determine Pan India uniform tariff. Therefore, the Commission has not made any changes in the draft Regulation in this regard.

d. MSW related

Comments Received:

29.15. **Averda Waste Management India Pvt Ltd. and CII** have further suggested that the Commission should advise all State ERCs that obtaining an NOC and signed draft PPA from Discom's should not be made obligatory for filing tariff petition in case of WtEs not being developed through tariff bidding route, but based upon concession agreement provision.

29.16. **K Sreenivasa Rao** has commented that Tariffs and tipping fees are the stumbling blocks for lack of development.

Analysis and Decision:

29.17. In regard to the consent/NOC and signed draft PPA from the beneficiary for procurement, the Commission is of the view that the consent/NOC/PPA may be exempted if the State or the Central government has exempted this provision or specified mandatory procurement by the respective distribution company in whose supply area the project is developed, through the policy provisions. The Commission has modified the clause accordingly in the CERC RE Tariff Regulations, 2024.

"8. Petition and proceedings for determination of tariff

...

(2) A petition for determination of project specific tariff shall be accompanied by such fee as may be specified in the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time or any subsequent re-enactment thereof, and shall be accompanied by:

...

(e) Consent from the beneficiary for procurement of power from renewable energy project, unless such requirement has been exempted through Policy issued by the Central or State Government; and

..."



e. Deviation Settlement Mechanism (DSM)

29.18. **UPSMCA** submitted that the deviation charges for Bagasse based cogeneration plants should not be treated similarly to coal based thermal power plants under CERC DSM Regulation,2022. Bagasse based power plants are infirm in nature and an ancillary by-product to the operation of sugar mills, and there is uncertainty in fuel type and availability, etc., which is beyond the generator's control. Bagasse-based cogeneration plants cannot be equated with coal-based power plants for the purpose of scheduling electricity and the consequent imposition of deviation charges. In view of the same, they requested that the Commission may declare in the upcoming RE Regulations that the deviation charges as per the 2022 DSM Regulations will not be made applicable to the Bagasse-based co-generation plants.

Analysis and Decision:

29.19. The Commission is of the view that levying deviation charges is a subject matter of the CERC (Deviation Settlement Mechanism and Related Matters) Regulations and is accordingly beyond the scope of the present regulations.

f. Request for inclusion of provisions of CERC (Terms and Conditions of Tariff) Regulations, 2024 w.r.t Thermal Power Plants into RE Tariff Regulations,2024 for Non-Fossil Fuel-Based Cogeneration Plants

29.29 **UPSMCA** submitted that several key provisions of 2024 Tariff Regulations related to thermal power plants (TPP), particularly regarding arrangements for capacity charges, renovation and modernization, and compliance with revised emission standards, allow TPPs to recover additional costs incurred for capacity enhancement, technological upgrades, and environmental compliance, subject to approval by the regulatory commission after a thorough assessment of various factors. UPSMCA requested the Commission to ensure similar benefits and considerations for non-fossil fuel-based cogeneration plants in the upcoming 2024 RE Regulations.

Analysis and Decision

29.30 The Commission is of the view that the determination of levelized tariffs in the RE Tariff Regulation 2024 follows a normative approach. Conversely, in the Tariff Regulation 2024, tariffs are determined using a cost-plus methodology and rely on actual data. A direct comparison between these two Regulations will be impractical as they operate on



fundamentally different principles. Consequently, adopting provisions that facilitate such a comparison could jeopardize the reliability and predictability of Renewable Energy investments, ultimately undermining RE certainty.

g. Misc. Comments

Comments Received:

29.31 **Power Foundation of India** has suggested that for interstate Solar and Wind Power Projects, if any, the Capital Cost should be considered on a case-to-case basis after a prudence check, when the Petition is filed before CERC, as in the case of conventional generators.

29.32 **JFE Engineering India Private Limited** has also suggested that suitable assurance of payment from DISCOM (via ESCROW) should be considered as it would mitigate one of the major risks while evaluating obtaining a loan for the project. Suitable mechanisms securitizing the payment to the Developer from the DISCOM ought to be implemented.

29.33 **Mr. K Sreenivasa Rao** has commented on the amendment of SWM 2016 for furnace temp. to 950 Degree C is not scientific and has no technical basis. This has the potential to cause a lot of corrosion and pose operational challenges to developers of WTE plants. International companies /developers are wary of this condition and a critical factor for not attracting investment into the sector. This aspect must be considered.

29.34 **NLC India Limited** has suggested that,

- i. Expenditure on infrastructure related to Forecasting & Scheduling of RE power incurred by Generators shall be allowed to be added to the capital cost of the project.
- ii. Expenditure on QCA charges and SLDC charges & Fees incurred by Generators shall be allowed to pass through to beneficiaries
- iii. Compensation for Curtailment of RE Power should be allowed whenever the generator fails to achieve normative CUF in the respective financial year.

29.35 **NTPC limited** has suggested that either a degradation factor of 0.7 per year may be provided or the generator be allowed additional capitalization to re-power the solar PV project within the contracted useful life, to overcome the module degradation and to meet the contracted generation.

29.36 **NTPC limited** has suggested the commission consider the net generation output in a year after considering the 2% non-availability of electrical systems consisting of modules,



inverters, inverter transformers, cables, power transformers, switchyard, etc, while calculating tariff of RE projects

Analysis and Decision:

29.37 With regard to the capital cost and tariff determination for wind and solar projects on a case-to-case basis, it is highlighted that the Commission, in the present Regulations, has already enabled project specific tariff determination for these technologies.

The payment security mechanism is already provided in the PPA of the respective beneficiaries for which the approval of the Commission is sought, and there is no need for change in the draft Regulations with respect to this.

The issues raised with regard to the SWM Rules 2016 doesn't come under the purview of the Commission and does not warrant any change in the draft Regulations.

The forecasting and scheduling related expenses and charges are considered O&M expenses, which need to be recovered as part of the O&M expenditure norms specified by the Commission in the Regulations and do not need changes or inclusion in the capital cost norms.

The net generation will be computed in line with the CUF norms specified for the respective Renewable Energy technologies, and the non-availability of any of the electrical systems is already accommodated in the CUF norms. Therefore, the Commission doesn't envisage any changes in the draft Regulations.

Sd
(Ramesh Babu Veeravalli)
Member

Sd/
)Jishnu Barua)
Chairperson



Annexure I - List of Stakeholders who submitted the written comments/suggestions/objections:

1. Abellon Clean Energy Ltd.
2. Avant-Garde System and Control Pvt Ltd
3. Averda Waste Management India Pvt Ltd
4. BESCO
5. Central Electricity Authority
6. Chhattisgarh Hydro Power LLP
7. Chhattisgarh State Power Distribution Company Ltd.
8. Chikini Hydro Projects Pvt. Ltd.
9. CNIM Martin Pvt. Ltd.
10. Confederation of Indian Industry (CII)
11. Greenesol Power Systems Pvt. Ltd.
12. Grid Controller of India Limited
13. GRIDCO Limited
14. Indian Sugar & Bio-energy Manufacturers Association (ISMA)
15. JBM
16. JFE Engineering India Private Limited
17. Madhya Bharat Power Corp. Ltd.
18. Mosh Varaya Infra. Ltd.
19. Madhya Pradesh Power Generating Company Limited
20. NLC India Limited
21. NTPC Limited
22. Power Foundation of India
23. Punjab State Power Corporation Limited
24. Rajasthan Biomass Power Developers Association
25. Re Sustainability Ltd.



26. SAEL Limited – Biomass
27. Sarada Hydro Power LLP
28. SECI
29. Suryaa Chambal Power Ltd.
30. Telangana State Power Coordination Committee
31. The South Indian Sugar Mill Association
32. Uttar Pradesh New & Renewable Energy Development Agency
33. Venika Green Project Ltd.
34. Venika Hydro Projects Ltd.
35. Volthills Private Limited
36. Waste to Energy Research & Technology Council
37. West Bengal State Electricity Distribution Company Limited
38. Zenith Energy Services Pvt Ltd
39. Shri Shanti Prasad
40. Shri Sreenivasa Rao
41. Dr. Anoop Singh (IIT Kanpur)
42. UP Sugar Mills Cogen Association



Annexure II – List of Stakeholders who presented their comments/suggestions/objections during Public Hearing

1. Dalmia Bharat Sugar and Industries Limited
2. GRID Controller of India Limited
3. JFE Engineering India Private Limited
4. SAEL Limited
5. Abellon Clean Energy Limited
6. Mr. Sreenivasa Rao
7. RE Sustainability Limited
8. NLC India Limited
9. Greenesol Power System Private Limited
10. NTPC Limited
11. Zenith Energy Services Pvt Ltd
12. The South Indian Sugar Mills Association
13. Chhattisgarh Hydro Power LLP
14. JBM Group
15. Indian Power Corporation Limited
16. Uttar Pradesh New & Renewable Energy Development Agency
17. Waste to Energy Research & Technology Council
18. Re Sustainability Ltd.
19. Dr. Anoop Singh (IIT Kanpur)

