

**BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS NO. 33-36, SECTOR-4, PANCHKULA-134113, HARYANA**

**DATE OF HEARING : 10.03.2021
DATE OF ORDER : 27.04.2021**

IN THE MATTER OF

Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulation, 2021, for the control period from FY 2021-22 to FY 2024-25 - Suo Motu.

Present: -

Shri Vikas Kadian, XEN, HPPC
Shri Sanjeev Kharbanda, Xen/Regulatory, HPGCL
Shri Amarjit Singh, Vice-President, Shree Cements Ltd.

Quorum

Shri R.K. Pachnanda,	Chairman
Shri Pravindra Singh Chauhan,	Member
Shri Naresh Sardana,	Member

ORDER

Brief Background

1. Section 61 read with Section 181 (2) of the Electricity Act, 2003 casts statutory obligation on the State Commission to promote co-generation and generation of electricity from renewable sources of energy and to make Regulations by way of notifications to carry out the said provisions of the Act.
2. In exercise of the powers conferred on it under Section 181 of the Act and all other powers enabling it in this behalf, the Commission had notified the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulation, 2017 which came into effect from the date of its notification in

the Haryana Government Gazette i.e. 24.07.2018. Subsequently some of the provisions of the said Regulations were amended / new clauses added by way of 1st Amendment dated 27th August, 2018 and 2nd Amendment dated 14th June, 2019, after following the due process prescribed for the purpose.

3. Regulation 4 of the Principal Regulations i.e. Haryana Electricity Regulatory Commission (Terms and conditions for determination of tariff for renewable energy sources, renewable purchase obligations and renewable energy certificates) Regulations, 2017, provides that revision of the Regulations is to be undertaken six months prior to the end of the first Control Period and in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised Regulations and the Control Period shall be deemed to have been extended up to the date of notification of the next Control Period. The Control Period prescribed under the Principal Regulations is from FY 2017-18 to FY 2020-21.
4. In view of the above, the Commission had prepared discussion paper for public / Stakeholders consultations and based on the feedback received on the discussion paper, the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulation, 2021 (hereinafter referred to as “HERC RE Regulations, 2021”) is being given a final shape by the Commission for notification.
5. The ibid discussion paper was placed in the public domain on 12.02.2021, inviting comments/objections from stakeholders on or before 03.03.2021. Further, a public notice was inserted in the Indian Express dated 25.02.2021 and Dainik Jagran dated 25.02.2021, inviting comments/objections and intimating the public hearing on 10.03.2021 through virtual court, using video conferencing.
6. In response, to the ibid public notice the following stakeholders filed their comments/suggestions/objections: -

- (a) Haryana Power Purchase Centre (HPPC), Panchkula.
- (b) Haryana Power Generation Corporation Ltd. (HPGCL), Panchkula
- (c) M/s. Shree Cements Ltd.

7. The objections / comments filed by the above-mentioned interveners and the Commission's view thereto are as under: -

8. **Issues raised by HPPC: -**

- i) Scope and extent of application mention below regulation 6(2) may be specified exclusively through a distinct provision.
- ii) Cost of biomass fuel has been proposed at Rs. 3500/MT for FY 2021-22. In this regard it may be noted that the Commission in its recent orders has considered the cost of paddy straw to the tune of Rs. 2000/MT. In absence of any research data the cost of Biomass may also be considered at par with the cost of paddy straw i.e. Rs. 2000 per MT.

It is further apprised that Andhra Pradesh, Tamil Nadu, Telengana, Uttar Pradesh, as per CERC RE Regulations, have pegged the biomass cost at Rs. 3300 to 3400/MT whereas other states at an average of Rs. 3557/MT only. The generic cost of biomass accordingly merges to the tune of Rs. 3400 per MT whereas actual cost of paddy to the tune of Rs. 2000 per MT. Considering 70:30 mix of biomass and paddy as mandated in the draft discussion paper, the biomass fuel prices merges to Rs. 2980/MT ($\text{Rs. } 0.7 \times 3400 + 0.3 \times 2000$) only.

In view of the above, the Commission may consider the cost of biomass fuel and align the same with market forces and in case of lack of suitable evidence may consider the same pegging the cost at Rs. 2000 per MT only in line with the cost considered by the Commission in its recent project specific tariff orders. Alternatively, cost of Biomass fuel for the purpose of ibid Regulations be pegged at Rs. 2980/- per MT only.

- iii) Escalation factor of 5% mentioned in regulation 45(2) be corrected as 2.93% in line with the escalation considered in general.

- iv) Cost of bagasse fuel have been proposed as Rs. 2000/- per MT at regulation 45 (1) which needs to be re-considered in view of following details:-
- a. The Commission in its order dated 03.09.2012 in HERC/PRO-10 of 2012 inter alia considered the contention of the project developers asking for consideration of the market rate of bagasse i.e. Rs. 1500 per MT for determination of tariff and rejected the same. In the said Order, the Commission had determined the bagasse cost at Rs. 662 per MT only for FY 2012-13. The relevant extract of the Order is reproduced below:
- “The Commission has considered the above submission on cost of bagasse and is of the view that for all practical purposes bagasse is a by-product incidental to the business of sugar manufacturing. Hence in the process of cane crushing, a part of the cane residues after extraction of cane juice which is further clarified and crystallized into sugar i.e. bagasse (the other being molasses) is utilised for firing the boilers and the remaining is the waste product which could be sold to users in the paper industry or utilised as fodder etc. However, the same can also be used for co-generation of power. Therefore, in effect, bagasse is available to the sugar mills free of cost and hence attributing opportunity cost in terms of market rate realized in case the same is sold to a third party may not be appropriate and would unjustifiably load the electricity so generated with fictitious cost. Hence the Commission does not agree with the intervener that the rate realised on sale of bagasse to a third party as reported by them needs considered for determining tariff for such incidental generation of power.”*
- b. On 20.11.2013, the Commission passed an Order in PRO – 15 of 2013 wherein the State Commission notified the generic tariff for bagasse-based projects to be commissioned during the FY 2013-14 and the levelized tariff for the projects commissioned was determined at Rs. 4.15 per unit whereas the tariff for FY 2013-14 was determined at Rs. 4.05 per unit. In the said Order, the private sugar mills/biomass developers pitched for pegging the cost of bagasse at Rs. 1859 per MT for FY 2012-13 and for FY 2013-14 as determined by the CERC. However, the Commission had considered the bagasse cost at Rs. 695 per MT for 2013-14. The relevant extract of the Order is reproduced below:

“10.3 Fuel Cost (Biomass & Bagasse):

Star Wire had submitted that a realistic level of biomass fuel price would be Rs. 3400/MT as being paid by them which ought to be considered by the Commission while determining generic tariff for biomass-based power projects in Haryana and the same needs to be escalated by 10% per annum. While Saraswati Sugar Mills Ltd. Had proposed that this Commission, for bagasse should consider CERC determined price of Rs. 1859 per MT for FY 2012-13 and for FY 2013-14 the same should be escalated at the rate of 10%.

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As far as cost of bagasse is concerned no data was submitted by the nodal agency i.e. HAREDA. The Commission reiterates that bagasse is available on site for co – generation. Hence no additional expenses are incurred in collection, storing, handling etc. The Commission had considered Rs. 662 / MT as cost of bagasse for FY 2012-13. Hence after considering an escalation factor of 5% as per regulation 52 of RE regulations, 2010, the bagasse cost for FY 2013-14 has been pegged at Rs. 695 / MT for the purpose of tariff determination for the projects to be commissioned in FY 2013-14.”

- c. From the above it is clear that the Commission was always of the considered view that the bagasse is by-product of sugar mills which is available on site for co-generation and therefore, no additional expenses are incurred in collection, storing, handling etc. Accordingly, the Commission in past had considered the market prices of bagasse and considered rates which are almost one third of the market prices.
- d. Considering the cost of bagasse as Rs. 695/- per MT, in year 2013-14 in line with previous reasoned orders of Hon'ble Commission, the cost of bagasse for FY 2021-22 works out to be Rs. 1027/- per MT considering an escalation of 5%. The Commission may consider the cost of bagasse as Rs. 1027/- per MT against the proposed Rs. 2000/- per MT in light of above-mentioned details and the approach adopted by the Commission in the past.
- v) The proviso to regulation 47 of discussion paper may either be deleted or be made independent to the main provision to remove ambiguity. Reference of HAREDA with

respect to bidding may also be deleted as power purchase is not their mandate. The part of regulation may be amended as under:-

“xxx

Notwithstanding to above, the Discoms may do reverse bidding with the lowest /last discovered tariff lowest of competitive bidding by HPPC or SECI, as base tariff.

xxx”

- vi) Proposed regulation 62 may be amended in view of the following:-
 - a) The Act by the virtue of section 86(e) embarks upon the responsibility to the Ld. Commission to determine the minimum percentage of renewable to be purchased vis-à-vis total consumption of electricity in the area of the distribution licensee. The Commission however is also responsible for ensuring reasonable tariff by regulating the electricity purchases of distribution licensee in an efficient manner.

It may be noted that the load curve of Haryana is not apt for accommodating the solar energy above a certain level owing to the limited flexibility of thermal generation. Whereas, the wind generation suits better in comparison to solar generation. The Commission, as per the provisions of the Act, may prudently decide the RPOs for obligated entities including Discoms in such a way that would not impact the electricity consumers of the State adversely besides meeting its overall objective of reducing carbon foot prints in line with national objectives. It will be prudent that solar and non solar RPO be merged to one so as Obligated Entities/Discoms/HPPC may consider sourcing renewable power compatible to demand curve of the State. The State is in receipt of reference dated 20.10.2020 from Shri Piyush Goyal Ld. Minister of Railways, Minister of Commerce and Industry and Minister of Consumer Affairs, Food and Public Distribution to the Government of India whereby inter alia intervention of State has been sought for merging of solar and non solar RPOs so as Indian railways may install additional solar power capacity on its own land rather arranging/installing non solar power plants due to technical constraints (**Annexure-A**). The Commission in its discussion paper however proposed interchangeability of RPOs to the extent of 15% only in line with MoP notification.

The Commission by the virtue of the Electricity Act, 2003 inter alia is empowered to specify renewable obligations for State Discoms. Accordingly, Commission may

consider to amend the regulation 62 suitably to make suitable provision to allow interchangeability between solar and non-solar RPOs so as resources be best utilized as per need besides meeting the overall objective of reducing carbon footprints.

- b) It may also be noted that despite firm PPAs/PSAs for renewable power the Discoms faces change/difficulty in meeting RPOs due to delay in commissioning of Projects on account of Force Majeure / Government delay or reasons beyond the control of Discoms/HPPC. Discoms/HPPC cannot be penalized for non-compliance of RPOs for reasons beyond their control. Equivalent purchase of RECs due to this shall adversely impact the tariff and consumers at large. As such, suitable provision for accounting generation loss due to delay in commissioning of renewable energy projects in lieu of force majeure/non-execution of project by the developers/conditions beyond the control of developer/change in law/Policy etc. be considered for the purpose of RPO compliance. SECI vide letter dated 01.10.2020 has already proposed similar relaxation to MNRE. Accordingly, it is proposed to insert following regulation after regulation 62(1):

(2) Every Obligated Entity may meet its RPO targets by –

- i. Own generation or procurement of power from RE developer or procurement of power from intermediary procurer*
- ii. Purchase from other licensee or*
- iii. Purchase of renewable energy certificate or*
- iv. Combination of above;*

Provided it will not be required to meet the shortfall by purchase of REC in case the obligated Entity had contracted to procure sufficient quantity of RE from the generator/intermediary procurer and it would have met its RPO obligations but for the delay in commissioning/cancellation of the project permissible in accordance with the provision of PPA/PSA.

- c) The proposed regulation 62(2) is contrary to the philosophy of the Commission mentioned in various ARR orders and HERC RE Regulations, 2017. The Commission may consider amending the same by specifying that ‘RPO shall be calculated in energy

terms as a percentage of total consumption of electricity excluding consumption met from RE sources and hydro sources'.

- d) Provision under the proposed regulations 62(5) and 62(6) are not clear and needs to be clarified. The Commission may consider to amend the ibid regulations suitably to have clarity.
- vii) Regulation 66(1) specifies the contract capacity up to 100 MW instead of 'cumulative contract capacity' shall be eligible for Banking. The discussion paper also provides that banking of RE power shall be allowed throughout the year, however, the drawl of banked power shall not be allowed during the peak months (July to mid-October). The banking facility so proposed for renewable generators enables them to inject their surplus power into the grid and withdraw the same as per their convenience. Whereas, Discoms have to manage for all kind of infirmities and absorb the DSM/ADSM penalties to accommodate infirm injection of renewable power. Needless to mention that the banking facility has cost associated with it. It is submitted that the cost of Renewable generation has reduced drastically in the recent years and it has been recognized at all levels that Solar and Wind generation in particular does not call for any preferential treatment. As the generation cost from these sources has declined to Rs. 2.00 per unit it would not be appropriate by any means to further subsidize the same at the cost of consumers at large.

Due to an abnormal spurt in the power purchase cost and deteriorating financial position of the Discoms of the State, the Government of Andhra Pradesh vide notification dated 18.11.2019 inter-alia has withdrawn the banking facility extended to the RE Generators. Further, the Hon'ble Karnataka Electricity Regulatory Commission in its discussion paper has proposed to discontinue the banking facility which had earlier been extended to solar, mini hydel, and wind power projects, for both REC and non-REC route-based projects.

Discoms already have to deal with the huge gap between the intra-day minimum and maximum demand which can be up to 2500 MW and the banking of RE power further adds challenge to that. The level of accuracy of demand forecast will become a matter of concern as the increase of RE power integration will pose huge challenge in maintaining Unscheduled Interchange (UI) between permissible limits. Further, Discoms/HPPC is not equipped with any facility to store the banked power for its future

use in an economical manner. Owing to the fact that no storage facilities are available with the Discoms/HPPC for storage of surplus power it would be rather impractical, challenging and uneconomical for Discoms/HPPC to grant banking facility to RE based generators.

It is pertinent in this regard to bring to the kind notice of Commission that Hon'ble Central Electricity Regulatory Commission (CERC) has now approved Green Term Ahead Market (GTAM) contracts on the Indian Energy Exchange (IEX) platform wherein RE Generators can trade their green energy and avail benefits of competitive prices and transparent and flexible procurement. Such contracts itself serves as a pool of energy and facilitates Renewable generators. The generator may opt to sell excess renewable power in energy exchanges and purchase subsequently as per his requirement. The power exchanges are thus by large acting as a pool which can be used effectively by renewable generators with impacting the Discoms.

Moreover, since the captive users are eligible for several concessions under the Electricity Act, 2003, facilitating banking facility to renewable based captive generators under the garb of promotion would lead to direct revenue loss to the Discoms which will ultimately be passed to consumers at large by the way of electricity tariff.

Thus, in view of the above, the Commission is requested to withdraw the banking facility and to delete the provision of Banking of RE Power from the Regulations.

- viii) Provision to proposed regulation 67 is contrary to the main provision as the same provides that Discoms/Transco shall bear the cost of augmentation of distribution/transmission system in general irrespective of PPAs with Discoms. Provision to regulation 67 be amended in line with main provision to remove ambiguity.
- ix) Proposed regulation 72(a) is related to solar rooftop projects only. Rooftop may clearly be inked to avoid ambiguity. Hon'ble Commission may consider amending the same accordingly.

Commission's View

The Commission has carefully examined the comments/suggestions filed by HPPC. The Commission observes that the changes suggested by HPPC in the provisions of the draft Regulations are mostly in consonance with the provisions

in Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 (CERC RE Regulations, 2020) and Ministry of Power Order dated 29.01.2021. Accordingly, finding some merit in the suggestions of the HPPC, the followings, have been incorporated in the draft Regulations:-

- i) A separate clause i.e. 6(3) shall be inserted in the Regulations as under:-
“These Regulations shall apply to the RE Power Projects set-up / to be set – up in Haryana and where the tariff is determined by the Commission u/s 62 of the Act for Grid Connected RE Projects up to an installed capacity of 2 MW.
- ii) The Commission has considered the submissions of the intervener on the issue of cost of biomass fuel that the same shall be reckoned with as the weighted average cost of biomass mix and actual cost of Paddy Straw. Hence, in order to promote usage of paddy straw so as to prevent its burning in the field leading to environmental issues, the Commission has considered it appropriate to consider 70% generic cost of biomass mix and 30% of the cost allowed by the Commission for Paddy Straw. Accordingly, the cost of biomass & biomass gasifier fuel for the FY 2021-22 shall be Rs. 3,000/MT.
- iii) Further, as far as bagasse, used as fuel in the co-generation power projects of Sugar Mill is concerned, the fact remains that bagasse is available in the premises of the Sugar Mills and the capacity of the co-generation power plants ought to be designed considering the quantum of bagasse available depending on the cane crushing capacity (Tons Crushed Per Day) of the Sugar Mills. At times there could be some surplus bagasse available including in the absence of co-generation facility. In such an event bagasse may be sold off as a source of fiber for pulp production or other possible usage. In the present case the Commission is concerned with co-generation based on internally available bagasse in the premises of the Sugar Mills, hence some quantity

sold in the market could be at a varying price which cannot form the basis of benchmarking the fuel cost in the present case. Resultantly, for arriving at the cost of bagasse for the FY 2021-22, the Commission has considered the base price at Rs. 695 / MT (FY 2013-14) and escalated the same by 5% per annum to arrive at Rs. 1027 / MT.

- iv) The intervener has submitted that as per CERC Renewable Energy Regulations 2020 specify the O&M escalation rate of 3.84% per annum. The ibid escalation factor has been calculated based on the five years (FY 2014-15 to FY 2018-19) average of CPI (4.92%) and WPI (1.31%) indices and by considering the weightage of CPI and WPI in the ratio of 70:30. Thus, the escalation factor worked out to be 3.84%. Whereas, the Commission vide its order dated 04.08.2015 in 4th amendment, 2014 of HERC RE Regulations 2010 had considered that fuel procurement, fuel handling etc. is labour intensive and given a wide range of fuel is used in the plants the escalation ought to be more linked with CPI than WPI.

The Commission, after due deliberations, is of the considered view, that the general price levels in the country is continuously seeking lower levels; hence, for the purpose of escalation, it will be appropriate to assign a little higher weightage to the wholesale price levels as the same has comparatively higher impact on the recurring cost of O&M including salary / wages and administrative expenses. Consequently, the Commission for the purpose of O&M escalation has assigned a weightage of 55% and 45% to CPI. Considering this methodology the escalation factor works out to be 2.93% and shall be considered by the Commission both for O&M expenses as well as fuel cost.

- v) The Commission has taken note of the submission of intervener and tends to agree with the same that it is the Distribution Licensee(s) /HPPC who are responsible for power procurement including from RE Sources to fulfill its Universal Service Obligation of supplying electricity to the consumers in their licensed area(s) and RPO mandate in a cost-effective

manner. Hence, reference to HAREDA with respect to bidding in Regulation clause 47 shall be deleted.

- vi) Considering the difficulty being faced by obligated entities in complying with even the existing level of RPO obligation, with limited RE sources in the State, surplus power scenario as well as system constraints in absorbing intermittent RE Power, the Commission is of the view that it may be difficult for the Discoms to comply with the RPO level specified by the Ministry of Power at this stage.

Accordingly, RPO for the FY 2021-22 has been kept as per the earlier Regulations of 2017 i.e. 8% for Solar and 3% for Non-Solar. The same is increased to 9% & 10% for FY 2022-23 & FY 2023-24, respectively for Solar and 5% & 6% for FY 2022-23 & FY 2023-24, respectively for Non-Solar. Further, RPO level for subsequent years shall be fixed at a later stage after monitoring the position of RPO compliance by the obligated entities as well as availability of RE Power and trading in REC up to the FY 2023-24.

- vii) The Commission has taken note of the submissions of the intervener on 'banking of power' and observes that banking is a facility provided to the CPPs / Consumer; however, the same ought not to impose additional financial burden on the Discoms in an unreasonable manner which passes on to the ultimate consumers of electricity in Haryana. The Commission, as averred by the intervener (HPPC), is not inclined to withdraw the banking facility as such. However, The Commission is conscious of the fact that there is a need to curb gaming of the system under the garb of 'Group Captive', which is nothing but third-party sale, thereby depriving the Discoms of the revenue which they would have otherwise realised from Cross-Subsidy Surcharge and Additional Surcharge as well as avoidable cost of banking facility intended for the Consumer / Industry who set-up CPP primarily for its own use. Resultantly, the provision for 'banking of power' shall be modified to

cushion un-reasonable financial burden on the Discoms which ultimately passes on to the electricity consumers at large, as under:

- a) Banking shall be allowed to the captive power plant which are owned and operated by a single consumer with 100% equity holding in the CPP.
- b) Banking shall be allowed by DISCOMs up to a cumulative capacity of 100 MW. Provided that the Commission may review the provisions of banking taking after into consideration the financial impact on the DISCOMs. The Discoms are directed to prepare a report on the quantum of power banked during the first half of the FY 2021-22, revenue earned from the charges levied for extending the banking facility to the eligible entities vis-à-vis the computed revenue loss / cost.
- c) HPPC has submitted that financial implication on account of variation of renewable generation is Rs. 1.50/unit, as tabulated below:-

Item No.	Balancing Cost	Rs./ Unit
1	Total balancing charge for CGSs Coal and gas-based station (fixed +fuel charge for operating at lower PLF)(Rs/kWh)-Spread over renewable generation	0.06
2	Total balancing charge for Haryana Coal stations (fixed charge for operating at lower PLF)(Rs/kWh)- Spread over renewable generation	0.69
3	Impact of DSM charges per unit (Rs/kWh)- Spread over renewable generation	0.18
4	Impact on tariff (Rs./Unit) for Haryana DISCOMs for backing down Coal generation assuming solar and wind at Rs. 2.8/kWh and coal fuel charge at Rs. 2.5/kWh- Spread over renewable generation (Considering 25% on account of renewables)	0.075
5	Stand by charge (Rs/kWh)- Spread over renewable generation	0.23
6	Extra transmission charge (Rs/kWh)- Spread over renewable generation	0.26
	Total Impact- Spread over renewable generation (Rs/kWh)	1.50

Accordingly, in order to balance the equity in both sides, banking charges @ 1.50/unit shall be levied. Further, Open Access consumers/generators shall also pay Rs. 1.50/unit for injection/drawl of solar power in the grid as reliability charges.

d) Banked power not drawn as per schedule, shall be considered as dumped energy & shall lapse. The Discoms shall not be liable to pay for such dumped energy.

9. Issues raised by HPGCL

i) Clause 2(17):

- a) The definition of pooling substation needs to be clearly defined. It is understood that same would be the nearest substation of the utilities where dedicated evacuation line from the project will be connected.
- b) For all renewable energy Projects, inter-connection point should be the line isolator on outgoing feeder on HV side of generator transformer in the switchyard of generator because of following:-
 - i) The laying of transmission lines falls under the core competency of DISCOMs/transmission utility as the case may be. It is not easy for Generators with Small Scale Capacities to lay and maintain evacuation lines up to the pooling substations.
 - ii) The concept of putting interconnection point at pooling stations seems worthy of consideration where large number of projects at single location like in the solar parks are developed but not for the project specific locations for which these RE regulations are being finalized.
 - iii) It would always be in the interest of consumers of Haryana in case the interconnection point is in the switch yard of generator rather than at the pooling substation. Project developer will do loading of capital cost & expenses for the dedicated evacuation line while asking for the determination of project specific tariff under these regulations. Alternatively, if the interconnection point is fixed at generator substation, the transmission line

from project to nearest substation (existing) can be utilized by the utilities for other purposes also as and when needed.

- c) However, as far as RE projects selected through competitive bidding (s) is concerned and where tariff is adopted by the Commission under section 63 of the Act, the terms and conditions of the Guidelines as mentioned in section 63 of the Act and the bidding documents thereto shall prevail.

ii) Clause 6:

- a) The project specific tariff for projects awarded under Section 63 of the Act shall not be determined under these Regulations, as tariff discovered through competitive bidding is only adopted by the Commission. Thus, HERC is limiting its power to determine project specific tariff under RE regulations only upto 2 MW. The Commission is requested to either remove or increase the limit for promoting RE Power Generation in the State of Haryana. National tariff Policy allows SERC to determine tariff under Section 62 of the Act without any limit. The relevant clause 6.4 (2) is reproduced as under:-

“(2) States shall endeavor to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government. However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003. While determining the tariff from such sources, the Appropriate Commission shall take into account the solar radiation and wind intensity which may differ from area to area to ensure that the benefits are passed on to the consumers.”

- b) Further, there should be no limit for the determination of project Specific tariff for the State generating companies under these regulations. As per clause no 5.2 of national tariff policy also, the procurement of power from State Gencos can be done under section 62, without following competitive bidding process:

"5.2 All future requirement of power should continue to be procured competitively by distribution licensees except in cases of expansion of existing projects or where there is a company owned or controlled by the State Government as an identified developer and where regulators will need to resort to tariff determination based on norms provided that expansion of generating capacity by private developers for this purpose would be restricted to one time addition of not more than 100% of the existing capacity."

iii) Clause 10:

Status about Biomass Power plant with capacity less than 10 MW is not clear.

iv) Clause 11:

Cost of Conceptualization, feasibility study, design etc should also be included in the Capital cost. Apart from cases where land is acquired by developer on lease basis, necessary provision should also be incorporated for the projects where the land is purchased / owned by the Project developer.

v) Clause 17:

In the draft Regulation, the Commission has chosen to use an escalation factor of 2.93% instead of 5.72% in earlier Regulation 2017, to arrive at O&M expenses for the succeeding years of Control period. Inflation being a non controllable factor, it is humbly submitted that the 2.93% escalation rate as proposed by the Commission will not be sufficient in the existing inflationary atmosphere. In this regard, it is requested that a systematic method suiting to the existing economic scenario be adopted to calculate the O&M escalation factor or the escalation factor should be based upon the average inflation rates (WPI and CPI indices) of the immediately preceding years. CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 provides a higher escalation of 3.84% on O&M Expenses as compare to 2.93% as proposed in Draft regulation 2021.

vi) Clause 29:

In case of Small Hydro Project:

As per Regulation 2017, FY 2017-18 is the base year and O&M has been allowed to Rs. 0.29 Cr/MW (below 5MW) with escalation @ 5.72% for each year i.e. upto FY 2020-21. If this amount escalated @ 5.72% and be brought upto FY 2021-22, it comes to Rs. 0.36 cr/MW whereas O&M proposed in Draft Regulation (for Small Hydro Project) is considered Rs. 0.33 cr/MW for base year i.e. FY 2021-22 which is substantially low as compare to the actual calculated amount of Rs. 0.3622cr./MW. Under the Draft Regulation, the Commission while allowing Capital cost and O&M expenses of Small Hydro Projects, Biomass, Non-Fossil Fuel based project, Bio-gas projects doesn't consider the escalation of 5.72% as per Regulation 2017 to arrive at the base Figures for FY 2021-22.

vii) Clause 47:

The condition should be changed as under:

Provided that the norms including Capital Cost, CUF, Auxiliary Energy consumption, O&M expenses etc. and the tariff thereto for Solar PV / Thermal / Rooftop / Canal top / Water works, as per the technology approved by the MNRE, shall be determined on project specific basis depending on the prevalent market trend only if required i.e. in case i.e. in case the competitive bidding route for any reason does not take effect **and sufficient Power Purchase agreements are not signed by Discoms for purchase of solar power for meeting the RPO targets.**

viii) Clause 48:

The minimum Capacity Utilization Factor (CUF) for Solar PV project included in the draft RE Regulation seems to be on higher side. The CUF of HPGCL's 10 MW Solar Power Plant at PTPS, Panipat is around 19%. As per the Regulations, Commission shall determine the project specific tariff on case to case basis. If required, the Commission may consider higher CUF at the time of determination of tariff for any project. Further, the definition of Capacity utilization factor needs to be incorporated.

ix) Clause 50:

0.25% Auxiliary consumption is too low limit given. Specially, when module auto tracking & tilting systems are used. Similarly, in case of dry module cleaning there will

be higher auxiliary consumption. APC can be 0.5% for normal case and 1% if Tracking and dry cleaning is installed.

x) Others:

- a) A comparison sheet (Annex- A) has been prepared of Financial Parameters of HERC Regulation 2017, CERC Regulation 2020 and HERC Draft Regulation 2021. The highlighted parameters shows that there is substantial difference between CERC Regulation and HERC Regulation and the parameters proposed in Draft Regulation are much stringent than earlier Regulation of HERC as well as CERC.
- b) The project developers suffer a lot due to outages of generating plants on account of tripping/outages of evacuation line connected with network of DISCOMS/HVPL. In order to safeguard the interest of developers, suitable provision of deemed generation on account of non-availability of evacuation line, to be paid at the tariff approved by the Commission, should be incorporated in the regulations. Similar relief has been given to the generators by the Commission in the past also.
- c) Ministry of Power, Government of India vide letter dated 05.04.2018 (Annex-B) issued a scheme for thermal projects developed/being developed under section 62 of the Act namely 'Flexibility in generation and scheduling of thermal power stations to reduce emissions', wherein flexibility has been given to the generators stations to generate RE power and supply power under existing/future contractual agreements.

Commission's View: -

The Commission has considered the comments/suggestions filed by HPGCL. The Commission observes that 'Pooling Sub-Station' has been defined in clause 2(1)(q) of Haryana Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement and related matters for Solar and Wind Generation) Regulations, 2019, as under:-

“Pooling Sub-Station” means a Sub-Station consisting of a step-up transformer and associated switchgear to the Low Voltage (LV) side of which several Wind or Solar Energy Generators are connected:

Provided that, where a Generating Unit is connected through a common or an individual feeder terminating at a Sub-Station of a Distribution Licensee or the State Transmission Utility, such Sub-Station shall be treated as the Pooling Sub-Station for such Wind or Solar Energy Generator for the purposes of these Regulations.”

The same definition has been incorporated in clause 2(17) of the draft Regulations. Hence, no further change is required in the definition of pooling S/s as suggested by the Intervener.

Further, an effort has been made to keep the financial as well as technical parameters in line with the CERC RE Regulations, 2020 and HERC RE Regulations, 2017. However, the fuel cost has been reckoned with based on data / deliberations brought before this Commission in various cases involving biomass / paddy straw etc.

The deemed generation on account of non-availability of evacuation line, cannot form part of the Regulations and will be governed by the Terms & Conditions set forth in the respective Power Purchase Agreements signed by IPPs with HPPC.

The Commission has considered the submissions of the intervener for removing the determination of project specific tariff u/s 62 of the Act or increasing the limit for promoting RE based power projects in Haryana. The Commission is of the considered view that although the Act per.se. does not provide for any cap as such and option exists for determination of tariff by the Commission u/s 62 or adoption of tariff u/s 63. However, it has been observed that the competitive bidding route has yielded significantly lower tariffs vis-à-vis those determined by the SERCs. Hence, to keep the burden of Green Power slated for larger

integration in the coming years, the Commission is not inclined to accept the contention of the intervener on this issue.

The Commission has perused the submissions of the Intervener on regulation 10, 11, 17 & 29 and finds no ambiguity in the same that may call for any changes. The reasoning behind arriving at the escalation factor for O&M and Fuel Cost has already been considered / deliberated and decided earlier in the present Order.

The contention of the intervener on regulation 47 has been considered to extend the said provision by adding “....and sufficient Power Purchase Agreements are not signed by the Discoms for purchase of Solar power for meeting the RPO targets”. The Commission observes that besides the competitive bidding route for meeting RPO target, other options such as REC, GTAM as well as approval of source and tariff by this Commission for Solar power projects up to a capacity of 2 MW is available. Further, RPO compliance is also being monitored by the State Nodal Agency i.e. HAREDA as well as this Commission and appropriate directives are being issued to ensure compliance by the Discoms / Obligated entities. Hence, adding the proposed provision is redundant / superfluous.

The Commission has considered the submissions of the Intervener on CUF being on the higher side as the same in the case of HPGCL’s 10 MW Solar Power Plant at Panipat is around 19%. The Commission has perused its Order dated 22.11.2016 in Case No. HERC / PRO - 20 of 2016 and observes the following placed on record by HPGCL:

“That it has taken a challenge for achieving of the lowest price with a CUF of 21% (with de-rating @ 0.83% & Aux. Consumption of 0.5% p.a.) on the commitment of the EPC supplier which is beyond the industry benchmark of 19%”.

It is surprising to note that the CUF now claimed, on actual basis, is only about 19%. HPGCL needs to take up the matter with EPC supplier and submit a report to the Commission regarding the inefficiency in generation including the action

taken vis-à-vis the commitment of the EPC Supplier. The intervener needs to note that given the technological advancement as well as the AC:DC ratio the CUF has considerably improved. Further, CUF (Capacity Utilization Factor) is a widely used and understood terminology i.e. $\text{Energy Measured in kWh} / 365 * 24 * \text{Plant Capacity (AC)}$. Hence, there is no need, as such, to define the same in the Regulations.

Additionally, Auxiliary Energy consumption has been pegged after due deliberations, hence the contention of the Intervener to increase the same from 0.25% to 0.5% is without merit. The project developers are expected to adopt most efficient technology. In case, as averred by the Intervener, solar modules with auto tracking & tilting systems / dry module cleaning the auxiliary energy consumption would be higher is far from convincing as in such cases the Gross Generation would also increase thereby reducing the auxiliary energy consumption which is a percentage of Gross Generation.

Similarly, the proposed provision for 'deemed generation' as well as scheme for thermal projects developed/being developed under section 62 of the Act namely 'Flexibility in generation and scheduling of thermal power stations to reduce emissions', introduced by Ministry of Power, Government of India on 05.04.2018, cannot form part of the present Regulations. Hence, the same has not been considered.

10. Issues raised by M/s. Shree Cements:-

M/s Shree Cement Ltd. has submitted that it has a cement grinding unit at Panipat. The grinding unit has a HT supply connection of 8MVA with UHBVN. The Company also has 1247 KWp Captive Solar Power Plant located within its factory premises. Further, it is considering expanding its RE generation capacity by setting up a MW scale PV solar plant to meet its captive power requirement at the grinding unit. In this regard, comments/suggestions are as under:-

- i) Clause 2(17): Inter-connection point, for Co-located Solar PV Power Plant should be inserted as under:

In relation to co-located Solar PV Power Plant (i. e. within the same premises or in distant premises connected through a dedicated feeder) interconnection point shall be the line isolator on High Voltage (HV) side of the incoming feeder connecting the consumption plant with the grid.

The Commission has considered the above submissions and observes that Commission has dealt with the issue of inter-connection point as well as pooling sub-station. The same is defined at Regulation 2(1)17 to mean the interface point of renewable energy generating facility including Waste to Electricity projects with the transmission system or distribution system,

- a) in relation to wind energy projects, Solar Photovoltaic Projects, renewable hybrid energy projects and renewable energy with storage Projects, inter-connection point shall be line isolator on outgoing feeder on High Voltage (HV) side of the pooling sub-station;
- b) in relation to small hydro power, biomass power, Waste to Energy projects and non-fossil fuel-based cogeneration power projects and Solar Thermal Power Projects, the inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;

Other than the above, no separate dispensation is required, as suggested by the Intervener.

- ii) Clause 10(1): Dispatch principles for electricity generated from Renewable Energy Sources:

Following proviso regarding scheduling of Co-located RE Power Plant should be inserted at the end of the Regulation 10(1), as under:-

"Provided that Co-located RE energy plant, other than Bio-mass based plant, shall be exempted from scheduling."

The Commission has perused the aforesaid submissions and observes that the ibid provisions of the Regulations referred to is quite comprehensive as the

same provides for all renewable energy power plants, except for Biomass power plants of installed capacity 10 MW and above, shall be treated as 'MUST RUN' power plants. Biomass power with installed capacity of 10 MW and above shall be subjected to scheduling and dispatch as specified under Haryana Grid Code and other relevant regulations including amendments thereto. As a corollary biomass power plant below 10 MW shall be considered as 'must run' station (clarification as sought by HPGCL). Further, the scheduling and deviation settlement for solar and wind power shall be as per the Haryana Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2019 / Haryana Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2019, as may be amended from time to time.

Hence, no further changes in the Regulation (Supra) are required as suggested by the Intervener.

iii) Clause 62(1):

- a) Most LHPs are installed with long term PPA's with distribution licensees and there is hardly any merchant capacity of LHP available in the country. Under these circumstances, it is very difficult for obligated entities such as short-term open access consumers or captive power consumers to buy power from LHPs and fulfill proposed HPO. Therefore, applicability of HPO should be limited to Distribution Licensees only. For other obligated entities such as open access consumers and fossil fuel based captive generators, only Non-Solar RPO should be defined without further breakup into HPO and other non-solar RPO. Similar practice has been adopted by other SERC's such as Rajasthan Electricity Regulatory Commission in its RPO Regulation, wherein only total RPO (without segregating between Solar and Non-Solar) is defined for CPP & OA Consumers with capacity of less than 10 MW.
- b) Furthermore, the Hydro Energy Certificate mechanism referred to in the Regulation 62(7) to meet HPO is yet to be formulated by CERC. Therefore, the HPO should be incorporated only after the Hydro Energy Certificate

mechanism has been put in place by CERC and available to obligated entities for meet HPO requirement.

- c) Without prejudice to above suggestion, if the HPO is defined for all obligated entities, in the event of non-availability of hydro power from LHP sources, an obligated entity should be allowed to fulfill its HPO by other Non-Solar RE sources either by buying RECs or procuring RE power.

The Commission has considered the above objection and observes that about 147 GW of Hydro Power is expected to be added by the FY 27. Further, with continuous improvement in the Plant Load factor and free power available to the States with surplus power and comparatively low demand, availability of power from LHP ought not to be an issue. The Intervener may note that to maintain a level playing field no distinction can be made between the Discoms and other Obligated Entities including w.r.t. HPO and inter-changeability thereto. Hence, no change in the Regulation is required on this issue. Additionally, the HPO (%) is nil for the FY 22 and 0.35% in FY 23 going up to 2.82% in FY 30. This ought not be considered as onerous for meeting the HPO obligations specified in the Regulations.

- iv) Clause 62(2):

RPO shall be calculated in energy terms as a percentage of total consumption of electricity excluding consumption met from renewable energy sources including hydro sources (LHPs). Provided that there shall be no RPO on Obligated Entities defined under Regulation 2(23) (ii) and 2(23) (iii) on power consumed from Distribution Licensee.

The Commission has considered the above and is of the considered view that in case an obligated entity in Haryana is meeting a part of its consumption from RE Sources (Solar, Non-Solar, LHP) to that extent their obligations shall be accordingly reduced. As far as consumption of grid power (Haryana Discoms) is concerned, the Distribution Licensees, to that extent, is already fastened with

RPO; hence, such power ought not to be counted for arriving at energy required for RPO compliance.

v) Clause 62(11):

Provided, on achieving RPO (Solar/Non-Solar/HPO) compliance in excess of 100%, then 50% of the excess RE energy consumed by an obligated entity during a given financial year, shall be allowed to be carried forwarded for off-setting RPO of that particular category (Solar/Non-Solar/HPO) for the next year. The remaining 50% should contribute towards meeting the RPO of Discoms for that particular year in which excess energy is consumed by an obligated entity.

The Commission has considered the above and observes that the Intervener needs to note that the objective of RPO is to promote consumption of Green Power so as to gradually reduce the harmful effects of power generation and consumption of fast depleting fossil fuel. Hence, the RPO percentage determined by the Commission is the minimum that an obligated entity is expected to meet and there is no upper ceiling as such. Resultantly, 'carrying forward' as suggested by the Intervener lacks merit and hence un-acceptable.

vi) Provisio to Clause 62:

The term 'Central Level' is very vague and therefore should be replaced with specific agency name such as CERC/MoP/MNRE etc. or else should be omitted completely.

On the above issue, the Commission observes that the terminology "Central Agency" appearing in Regulation 63 is as per the heading of the said regulation is w.r.t. Certificates under the Regulations of the Central Commission. **Hence, no further elaboration of the same, as suggested, is required.**

vii) Clause 65 (2):

The National Electricity Policy, with a view to increase overall share of non-conventional energy sources in the national electricity mix, emphasizes the need to

exploit the feasible potential of non-conventional energy resources. Emphasis has also been placed to bring down cost of renewable energy by development of technologies and supporting it by suitable promotional measures.

Therefore, the focus of National Electricity Policy and Section 86 1 (e) of electricity act, from where the concept of RPO originates, is to increase the contribution of RE in the national energy mix rather than state level.

Since, the RE generation potential is not evenly distributed across states, the plant CUF and thereby cost of generation varies significantly from state to state. For example, states like Rajasthan, Gujarat, Maharashtra, Karnataka, have better Wind potential as compared to other states (including Haryana). Similarly, states like Uttarakhand, Himachal Pradesh rank high on hydro generation potential.

Therefore, in case a same legal entity has presence at more than one location (either within the same state or in different states) and if it consumes more RE energy than its RPO requirement at one such location, then such excess RE consumption at one location (in or outside Haryana) should be eligible to meet the RPO of its plant (located in Haryana), where it is in deficit of its RPO target. For example, SCL have wind plant of 29 MW in Karnataka and its consumption of wind power there is far in excess of its RPO requirement. Therefore, the excess consumption at Karnataka plant should be allowed to set off against its RPO for Haryana State.

It is submitted that, mandating, to consume the energy by its plant in Haryana, would only require it to wheel that energy from Karnataka to Haryana, thereby resulting into additional cost in terms of transmission charges and losses. Moreover, it will also burden the national grid thereby causing wastage of valuable national resources (Transmission Capacity). Further, if the RPO is applied on legal entity level, one can install large plants at single location in RE rich states thereby gaining economies of scale and produce RE energy at lower cost due to higher CUF and lower cost per MW of installation.

Furthermore, if we compare the REC mechanism with the above proposal, in REC also the energy gets generated/consumed at some other location (which can be outside Haryana) and only the financial transaction takes place through exchange of RE certificates. Thus, even in REC it is not necessary that the energy gets generated or consumed within the state of Haryana. On the same analogy RE energy consumed in excess of RPO requirement at a particular location should be eligible to fulfill RPO of plant of same legal entity, located in Haryana, in case of deficit in meeting RPO.

It is therefore submitted that on the principle of equity and to promote effective utilization of RE generation potential and have low cost RE generation, such a mechanism to offset RPO should be permitted.

The Commission has perused the above submissions at length and observes that it is open for any such obligated entity, in case they are eligible, to sell RECs emanating from the RE CGP / IPP in a State, other than Haryana, separately at the power exchanges approved by the CERC and the obligated entity in Haryana can purchase the requisite RECs from the exchange for RPO compliance in accordance with the HERC RPO targets in vogue. The Commission has also taken note of the fact that so far, no SERCs have allowed the dispensation as suggested by the Intervener. The Commission has carefully perused section 86(1)(e) of the Electricity Act, 2003. Requirement of renewable consumption, to offset RPO against conventional consumption in the geographical limit of a particular Discom, is not restricted within geographical limits of that particular Discom for a single legal entity thereby implying that excess renewable consumption in other geographical areas falling in different Discoms would satisfy the total RPO of the legal entity owning multiple manufacturing assets. It is observed the Section (Supra) provides for promotion of RE generation by providing suitable measure of connectivity with the Grid and sale of electricity to any person and also a percentage of the total consumption of electricity in the area of a distribution licensee. The Commission, as previously mentioned, has specified the requisite RPO percentage that can be fulfilled either by purchase of RE Power or RECs irrespective of the geographical area. Such statutory obligation / function of

SERC is State specific. Hence, any other interpretation given to the said Section of the Act is farfetched and un-acceptable unless such interpretation comes from a Court / Tribunal of competent jurisdiction.

Additionally, the provisions of National Electricity Policy has been perused. The Commission observes that they mostly refer to feasibility potential, additional RE Generation and encouraging private sector participation in RE generation. It is reiterated that, based on RE Potential in Haryana, the RPO targets have been fixed for the obligated entities in Haryana. Further, to encourage RE Generation and private sector participation thereto , the HERC RE Regulations as well as RE promotional policies of the State Government / HAREDA notified and amended from time to time as well as competitive bids for RE Power floated by the Discoms / HPPC provides for adequate opportunity for private sector participation and additional power generation from RE sources in Haryana.

In view of the above discussions, the Commission is of the considered opinion that no changes in the regulations, on this issue, are required.

viii) Clause 65 (3):

- a) In order to provide sufficient time to meet its RPO, Obligated entities should be provided time till 30th May following the relevant financial year. Similar facility is extended to obligated entities in Karnataka under KERC regulations, where RPO can be met by 30th May following the relevant financial year.
- b) The Open Access Permissions granted are as per HERC Open Access Regulations and/or CERC Open Regulations. Nowhere in these regulations or procedures framed thereunder requires an open access consumer to submit RPO details to DISCOM. Moreover, Compliance of RPO is dealt in HERC RE Regulations for which Nodal Agency is HAREDA. It is therefore submitted that there is no connection between the two subsections and stopping of Open Access on the ground of non-compliance of RPO is completely against the spirit of non-discriminatory open access provided in Electricity Act 2003.

- c) Maharashtra Electricity Regulatory Commission (MERC) has specifically ruled against such practices of not allowing open access in case RPO is not met. MERC in its Practice Directions for processing of Open Access Applications dated 19.10.2016 has specifically ruled that RPO compliance monitoring and verification is undertaken under separate Regulations and has no nexus with the processing of applications and the grant or otherwise of Open Access. Therefore, the condition that *".... Open Access shall not be granted to such consumers w.e.f. 01st May, till the time such Open Access Consumers fulfills RPO Obligations. Such Obligated Open Access Consumers shall have to submit the proof of compliance of RPO to DISCOMs"* must be deleted.

The Commission has considered the above objections and observes that for all dispensations / regulations the year is considered as the Financial year beginning 1st of April and ending on 31st March; hence, extending the same, for reckoning with RPO, is not feasible. Further, in order to enforce compliance of the RPO trajectory the open access consumers, it is essential to make such provision i.e. grant of open access subject to fulfillment of RPO and the same ought not to be construed as 'discriminatory'. As any consumer who is a defaulter on any account including RPO is not on the same footing as other consumers who comply with all the statutes / regulations. Hence, the objections of the Intervener are devoid of merit.

ix) Clause 66:

- a) Banking should be permitted from both Co-located as well as distant located RE based captive generating plants in the state.
- b) Further, power wheeled from outside the state for captive consumption should also be allowed to be banked in case the same doesn't get consumed.

The Commission has considered the above and observes that banking facility is allowed to the RE based CPP fully owned by the consumer. However, to cushion the adverse impact of such banked power brought from outside Haryana and not consumed, which may not also be required by the Discoms, the banking facility ought to be restricted to the contracted demand / sanctioned load of the

consumers. Hence, the suggestion of the intervener is iniquitous and unacceptable.

x) Clause 66 (1):

- a) Banking Charges should remain unchanged at 5% of power banked (in kind). The proposal to levy 1.50 Rs/Kwh as banking charges will put onerous financial burden on the renewable energy generators and will make their operations unviable.
- b) Levy of such high banking charges is also against the spirit of Section 86 (1) (e) of Electricity Act 2003, which defines promotion of co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to banking charges in cash would make setting up and wheeling in the state unviable for captive users.
- c) Without prejudice to the above submission of keeping the banking charges unchanged at 5% of energy banked (in kind), it is also submitted that levy of such charges cannot be adhoc and must be based on some scientific studies, supported by relevant data, Moreover, such charges are compensatory in nature to fulfil the losses of Discoms for providing such promotional facilities. These cannot be considered as revenue earning sources.

xi) Clause 66 (2):

The banked energy that remains unutilized at the end of financial year shall be paid at APPC of Haryana Discoms or at a rate decided by the HERC. Further, such unutilized power should be accounted towards RPO compliance of Discoms.

xii) Clause 66 (3):

The power that is banked during peak months i. e. from July to Oct should be allowed to be drawn during these (peak) months.

The Commission is of the view that restriction on banked power is also required during the peak load hours / periods as it would aggravate peak demand and additional costs for meeting power during the peak periods that would get passed on to the electricity consumers at large, which is avoidable. The Commission has considered the above objection and is of the view that banking of RE Power is a facility extended to the eligible RE generator and it imposes cost on the Discoms on several counts i.e. cost of grid integration as the solar generator may not be located near a load Centre, intermittent nature of such RE Power requiring additional capacity arrangements to step in when such power is not available etc. Further, payment for the banked power remaining un-utilized at the end of the financial year would adversely affect the revenue balance of the Discoms and also against the objectives of the banking facility. Hence, the same, as suggested by the intervener, lack merit as the same would tantamount to unjust enrichment at the cost of the Discoms and its ultimate consumers. Thus, no further changes in the regulations are required.

xiii) Clause 66 (5):

Open Access power through Bilateral transactions should be added in settlement priority at s.no. 5. Also Banked power should be accorded lower priority as compared to open access power. Therefore, the modified order of priority should be:

1. RE generation after deducting losses.
2. Captive Power
3. Open Access Power through Exchange
4. Open Access Power through Bi-lateral transaction
5. Banked Energy
6. Discom power

The Commission has considered the above suggestions and observes that the regulation provides for settlement of open access power through the power exchanges / bilateral. Hence, no further change in the aforesaid regulation is required.

xiv) Clause 72 (c):

No such Reliability charge is envisaged in Electricity Act 2003 on open access transactions involving solar power. Moreover, an open access consumer already pays transmission & Wheeling charges for utilizing transmission and distribution networks and levy of any extra charge that is not provided in the Electricity Act, is completely illegal and unlawful.

11. **Further, the Commission has adopted the ‘Electricity (Late Payment Surcharge) Rules, 2021’ notified by the Ministry of Power on 22.02.2021. Accordingly, Regulation clause no. 19 of the draft Regulations is replaced as under:-**

“19. Late payment surcharge. –

- (1) Late Payment Surcharge shall be payable on the payment outstanding after the due date at the base rate of Late Payment Surcharge applicable for the period for the first month of default.*
- (2) The rate of Late Payment Surcharge for the successive months of default shall increase by 0.5 percent for every month of delay provided that the Late Payment Surcharge shall not be more than 3 percent higher than the base rate at any time:*

Provided that the rate at which Late Payment Surcharge shall be payable shall not be higher than the rate specified in the agreement, if any.

Provided further that, if a distribution licensee has any payment including Late Payment Surcharge outstanding against a bill after the expiry of seven months from the due date of the bill, it shall be debarred from procuring power from a power exchange or grant of short-term open access till such bill is paid.

Whereas;

“base rate of Late Payment Surcharge” means the marginal cost of funds based lending rate (MCLR) for one year of the State Bank of India, as applicable on the 1st April of the financial year in which the period lies, plus five percent and in the absence

of marginal cost of funds based lending rate, any other arrangement that substitutes it, which the Central Government may, by notification, in the Official Gazette, specify;

Provided that if the period of default lies in two or more financial years, the base rate of Late Payment Surcharge shall be calculated separately for the periods falling in different years.

“due date” means the date by which the bill for the charges for power supplied by the generating company are to be paid, in accordance with the Power Purchase Agreement, Power Supply Agreement, as the case may be, and if not specified in the agreement, forty-five days from the date of presentation of the bill by such generating company.

“Late Payment Surcharge” means the charges payable by the distribution company to a generating company for power procured from it on account of delay in payment of monthly charges beyond the due date.”

The Petition is disposed of accordingly. **The Regulations attached herewith at Annexure “A” shall be notified in the Haryana Government Gazette.**

This order is signed, dated and issued by the Haryana Electricity Regulatory Commission on 27.04.2021.

Date: 27.04.2021	(Naresh Sardana)	(Pravindra Singh Chauhan)	(R.K. Pachnanda)
Place: Panchkula	Member	Member	Chairman

**HARYANA ELECTRICITY REGULATORY COMMISSION
BAYS NO. 33-36, SECTOR-4, PANCHKULA – 134112**

Date of Order : 27.04.2021

Regulation No. HERC/53/2021:- The Haryana Electricity Regulatory Commission, in exercise of the powers conferred on it by section 181 of the Electricity Act 2003 (Act 36 of 2003) and all other powers enabling it in this behalf, after previous publication, makes the following regulations:-

**Chapter – 1
General**

1. Short title, commencement, extent of application and interpretation._

- (1) These Regulations may be called the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2021.
- (2) These regulations shall come into force on the date of their publication in the Haryana Government Gazette.
- (3) These regulations shall extend to all grid connected renewable energy projects and obligated entities in the State of Haryana.

2. Definitions. –

- (1) In these regulations, unless the context otherwise requires,
 - (1) ‘Act’ means the Electricity Act, 2003 (36 of 2003);
 - (2) ‘Auxiliary energy consumption’ or ‘AUXe’ in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station, and transformer losses within the generating station, expressed as a percentage of gross energy generated at the generator terminal of the generating station during the period;
 - (3) ‘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, deoiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds whichever permissible; and the wood waste produced in some industrial operations;

- (4) 'Capital cost' means the capital cost as defined in the relevant sub regulations of these Regulations;
- (5) 'Central Agency' means the agency operating the National Load Dispatch Centre or such other agency as the Central Commission may designate from time to time;
- (6) "Certificate" means the renewable energy certificate issued by the Central Agency in accordance with the procedures prescribed by it and under the provisions specified in the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issue of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2009 as amended from time to time;
- (7) 'Central Electricity Regulatory Commission (CERC)' means the Central Electricity Regulatory Commission referred to in sub-section (1) of section 76 of the Act;
- (8) 'Commission' means the Haryana Electricity Regulatory Commission;
- (9) 'Conduct of Business Regulations' means the Haryana Electricity Regulatory Commission (Conduct of Business) Regulations, 2019 as amended from time to time;
- (10) 'Control Period or Review Period' means the period during which the norms for determination of tariff and other provisions specified in these regulations shall remain valid;
- (11) 'Floor Price' means the minimum price determined by the Central Commission in accordance with these regulations at and above which the renewable energy certificate can be traded in the power exchange;
- (12) 'Forbearance price' means the ceiling price as determined by the Central Commission in accordance with the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issue of Renewable energy

Certificate for Renewable Energy Generation) Regulations, 2010, as amended from time to time, within which the Certificate can be traded in power exchange;

- (13) 'Gross calorific value' or 'GCV' in relation to a fuel used in generating station means the heat produced in kCal by complete combustion of one kilogram of solid fuel or one litre of liquid fuel or one standard cubic meter of gaseous fuel, as the case may be;
- (14) 'Gross station heat rate' or 'GHR' means the heat energy input in kCal / kWh required to generate one kWh of electrical energy at generator terminals of a renewable energy generating station;
- (15) 'Hybrid Solar Thermal Power Plant' means the solar thermal power plant that uses other forms of energy input sources along with solar thermal energy for electricity generation, and wherein not less than 75% of electricity is generated from solar energy component;
- (16) 'Installed capacity' or 'IC' means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals/Solar Inverter in MW / MVA), as the case may be;
- (17) 'Inter-connection Point' shall mean interface point of renewable energy generating facility including Waste to Electricity projects with the transmission system or distribution system,
 - a) in relation to wind energy projects, Solar Photovoltaic Projects, renewable hybrid energy projects and renewable energy with storage Projects, inter-connection point shall be line isolator on outgoing feeder on High Voltage (HV) side of the pooling sub-station;
 - b) in relation to small hydro power, biomass power, Waste to Energy projects and non fossil fuel based cogeneration power projects and Solar Thermal Power Projects, the inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;

Whereas, 'Pooling Sub-Station' means a Sub-Station consisting of a step-up transformer and associated switchgear to the Low Voltage (LV) side of which several Wind or Solar Energy Generators are connected.

Provided that, where a Generating Unit is connected through a common or an individual feeder terminating at a Sub-Station of a Distribution Licensee or the State Transmission Utility, such Sub-Station shall be treated as the Pooling Sub-Station for such Wind or Solar Energy Generator for the purposes of these Regulations.

- (18) 'Non firm power' means the power generated from renewable sources, the hourly variation of which is dependent upon nature's phenomenon like sun, cloud, wind, etc., that cannot be accurately predicted;
- (19) "Levellised Tariff" means the tariff calculated by carrying out levelisation for 'useful life' of each technology considering the discount factor for time value of money.
- (20) 'MNRE' means the Ministry of New and Renewable Energy of the Government of India;
- (21) "Municipal Solid Waste" means and includes commercial and residential wastes generated in a municipal or notified area in either solid or semi solid form excluding industrial hazardous wastes but including treated bio-medical waste;
- (22) 'Non fossil fuel based co-generation' means the process in which more than one form of energy (such as steam and electricity) are produced in a sequential manner by use of biomass including Bagasse.
- (23) 'Obligated entity' means an entity in the State of Haryana which is mandated to fulfill renewable purchase obligation under these Regulations and include the following:-
 - i) Distribution licensee(s)
 - ii) Open Access consumers including short term open access consumers, and
 - iii) Fossil Fuel based Captive Power Plant of 5 MW and above including Fossil Fuel based Co-generation captive plant of 5 MW and above.
- (24) 'Operation and maintenance expenses' or 'O&M expenses' means the expenditure incurred on operation and maintenance of the project, or part

thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

- (25) “Power Exchange’ means any exchange operating as the power exchange for electricity as approved by the CERC;
- (26) ‘Preferential tariff’ or “Feed in Tariff’ means the tariff fixed by the Commission for sale of energy from a generating station based on renewable energy sources to a distribution licensee;
- (27) ‘Project’ means a generating station or the evacuation system upto inter-connection point, as the case may be, and in case of a small hydro generating station includes all components of generating facility such as dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;
- (28) ‘Renewable Energy’ means the electricity generated from renewable energy sources;
- (29) ‘Renewable Energy Power Plants’ means the power plants other than the conventional power plants generating electricity from renewable energy sources;
- (30) ‘Renewable Energy Sources’ means renewable sources such as small hydro, wind, solar including its integration with combined cycle, biomass (including Bagasse), bio fuel, urban or municipal waste and other such sources as approved by the MNRE;
- (31) ‘Small Hydro’ means Hydro Power projects with a station capacity up to 25 MW or as specified in the National Tariff Policy or by the Central Government from time to time;
- (32) ‘Pumped storage hydro project’ means a hydro power projects which generates power through water stored as potential energy, pumped from a lower elevation reservoir to higher elevation reservoir.
- (33) ‘Renewable energy with storage project’ means a combination of renewable energy project with storage or a combination of renewable hybrid energy project with storage at the same inter-connection point;

- (34) '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;
- (35) 'Solar PV power' means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic Cells;
- (36) 'Solar Thermal power' means the Solar Thermal power project that uses sunlight for conversion of heat energy into electricity through Concentrated Solar Power technology based on either line focus or point focus principle;
- (37) "Storage" means 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;
- (38) 'State agency' means the agency in the State of Haryana to be designated by the Commission to act as the agency for accreditation and recommending the renewable energy projects for registration and to undertake functions under these regulations;
- (39) 'Tariff period' means the period for which tariff / price for sale of power is determined by the Commission on the basis of norms specified in these Regulations;
- (40) 'Useful Life' in relation to a unit of a generating station including evacuation system shall mean the following duration from the date of commercial operation (COD) of such generation facility, namely:
- (a) Wind energy power project 25 years
 - (b) Biomass power project, non-fossil fuel cogeneration 20 years
 - (c) Small Hydro Plant 40 years
 - (d) Solar PV/Solar thermal power plants 25 years
 - (e) Processed Municipal Solid Waste (MSW) WtE based power projects – 20 years
 - (f) Biomass gasifier power plants 20 years
 - (g) Biogas power plants 20 years

- (h) Renewable hybrid energy project - Minimum of the Useful Life of different RE technologies combined for Renewable Hybrid Energy Project for Composite Tariff as specified under Regulation 57.
 - (i) Renewable energy with storage project - Same as Useful Life of project assuming that there is no storage
- (41) 'Year' means a financial year.
- (2) All other expressions used herein but not specifically defined herein but defined in the Act shall have the meaning assigned to them in the Act. The other expressions used herein but not specifically defined in the regulations or in the Act but defined under Haryana Electricity Reform Act, 1997 (Act 10 of 1998) or the Indian Electricity Grid Code or the Haryana Grid Code or the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff for Generation, Transmission, Wheeling and Distribution & Retail Supply under Multi Year Tariff) Regulations, 2019, as amended / reenacted from time to time, shall have the meanings assigned to them respectively in the Haryana Electricity Reform Act, 1997 (Act 10 of 1998) or the Indian Electricity Grid Code or the Haryana Grid Code or any other relevant Regulations in vogue , provided that such definitions in the Haryana Electricity Reform Act, 1997 are not inconsistent with the provisions of the Electricity Act, 2003;
- 3. **Eligibility Criteria.** – For the purpose of these regulations, a project shall be treated as renewable energy power project, as acknowledged by MNRE only, meeting the following criteria:-
 - (a) Wind power project – located at the wind sites having minimum annual mean Wind Power Density (WPD) of 200 Watt/m² measured at hub height of 100 meters and using new wind turbine generators;
 - (b) Small hydro project – located at the sites approved by State Nodal Agency / State Government / self identified sites using new plant and machinery, and installed power plant capacity to be lower than or equal to 25 MW at single location.

- (c) Biomass power project – Biomass power projects using new plant and machinery using biomass fuel sources.
- (d) Non-fossil fuel based co-generation project – The project that uses new plant and machinery, and is based on topping cycle mode of co-generation.

Topping cycle mode of co-generation – Any facility that uses non-fossil fuel input, including bagasse, for the power generation and also utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously:

Provided that for the co-generation facility to qualify under topping cycle mode, the sum of useful power output and one half the useful thermal output be greater than 45% of the facility's energy consumption, during crushing season.

Explanation- For the purposes of this clause,

- i) 'Useful power output' is the gross electrical output from the generator. There will be an auxiliary consumption in the cogeneration plant itself (e.g. the boiler feed pump and the FD/ID fans). In order to compute the net power output, it would be necessary to subtract the auxiliary consumption from the gross output. For simplicity of calculation, the useful power output is defined as the gross electricity (kWh) output from the generator.
 - ii) 'Useful Thermal Output' is the useful heat (steam) that is provided to the process by the cogeneration facility.
 - iii) 'Energy Consumption' of the facility is the useful energy input that is supplied by the fuel (normally bagasse or other such biomass).
 - iv) 'Topping Cycle' means a co-generation process in which thermal energy produces electricity followed by useful heat application.
- (e) Processed Municipal Solid Waste based WtE power projects – The project shall qualify to be termed as Municipal Solid Waste based WtE power projects, if it is using new plant and machinery and using Municipal solid waste as fuel source for generation of electricity.
 - (f) Solar PV and Solar Thermal Power Projects – Based on Technologies approved by MNRE / HAREDA.

- (g) Biomass Gasifier Power Projects - The projects shall qualify as gasifier based power project provided it is using new plant and machinery and having a grid connected system that uses 100% syngas/producer gas engine with MNRE approved gasification technology and shall use non fossil fuel as approved by MNRE.
- (h) Biogas Power Projects - The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that and uses 100% biogas fired engine with MNRE approved technology.
- (i) Renewable hybrid energy project – The rated capacity of generation from one renewable energy source is at least 25% of the rated capacity of generation from other renewable energy source(s), which operate at the same point of interconnection: Provided that energy is injected into grid at the same interconnection point and metering is done at such common interconnection point accordingly.
- (j) Renewable energy with storage project – The renewable energy project including renewable hybrid energy project that uses, partly or fully, renewable energy generated from such project to store energy into storage facility which is connected at the same point of interconnection as the renewable energy project.

Explanation:

The necessity of new plant and machinery shall be applicable where tariff is determined by the Commission under Section 62 of the Act as well as procurement of power by the Distribution Licensee(s) under Section 63 of the Act in case the bidding documents / guidelines so provides. The dispensation shall include the RE Projects where capital subsidy is claimed by the project developer.

Chapter – 2

Norms

4. **Control Period or Review Period.** – The Control Period for the purpose of tariff determination under these Regulations shall be from the FY 2021-22 to the FY 2024-25.

Provided that the benchmark capital cost and tariff for Solar PV rooftop, ground mounted, canal based / Water Works solar projects, wind power, small hydro shall be determined on case specific basis only.

Provided also that the revision in Regulations for next Control Period shall be undertaken at least six months prior to the end of the first Control Period and in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised Regulations and the Control Period shall be deemed to have been extended up to the date of notification of the next Control Period.

5. **Tariff Period.** –

- (1) The Tariff Period for Renewable Energy power projects shall generally correspond to their respective project life or as may be agreed upon in the PPA.
- (2) Tariff period under these Regulations is for Renewable Energy Power Plants with entirely new plant and machinery. The first year tariff shall be applicable from the CoD of the project and shall continue for 12 months from the CoD and thereafter the tariff for the second year shall be applicable on year to year basis i.e. for first 12 months from CoD, first year tariff shall be applicable, then for next twelve months second year tariff shall be applicable and so on and each period of such 12 months shall be termed as the tariff year.
- (3) Tariff determined as per these Regulations shall be applicable for Renewable Energy power projects, only for the duration of the Tariff Period as stipulated under Regulation 5(1).

6. **Project Specific tariff.** –

- (1) Subject to the “Scope and Extent of application” of these Regulations, the project specific tariff, on case to case basis, may also be determined by the Commission for the following types of projects:

- (a) Processed Municipal Solid Waste (WtE) Projects
 - (b) Poultry litter / Cow dung etc.
 - (c) small / micro hydro power projects of 25 MW and below
 - (d) Renewable energy with storage projects
 - (e) Biomass project other than that based on Rankine Cycle technology application with water cooled / air cooled condenser.
 - (f) Non-fossil fuel based co-generation project
 - (g) Any other new renewable energy technologies that may be approved by MNRE i.e. Solid oxide fuel cell (SOFC) etc.
- (2) Determination of Project specific Tariff for generation of electricity from such renewable energy sources shall be in accordance with such terms and conditions as stipulated by the Commission.

Provided that the financial and operational norms as specified in these Regulations, shall be ceiling norms while determining the project specific tariff.

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

(3) Scope and extent of application:

These Regulations shall apply to the RE Power Projects set-up / to be set – up in Haryana and where the tariff is determined by the Commission u/s 62 of the Act for Grid Connected RE Projects up to an installed capacity of 2 MW except the general provisions for banking, RPO, Late Payment Surcharge / rebate etc. applicable for all concerned.

Provided that the Discoms/HPPC shall endeavor to purchase all electricity through competitive bidding route in accordance with the provisions of Section 63 of the Electricity Act, 2003

Provided where tariff is adopted by the Commission under section 63 of the Act, the terms and conditions of the Guidelines as mentioned in section 63 of the Act and the bidding documents thereto shall prevail.

Provided HAREDA shall endeavour to promote better and efficient usage of biomass disposal such as setting up of Compressed Bio Gas (CBG), ethanol, bio fuel, Green Hydrogen etc., so as incineration of biomass/bio waste/municipal waste even under controlled environment for electricity generation be minimized.

7. Petition and proceedings for determination of tariff. –

- (1) The Commission shall determine the indicative tariff on the basis of suo-motu petition at least six months in advance at the beginning of each year of the Control period for renewable energy technologies for which norms have been specified under the Regulations.
- (2) A petition for determination of project specific tariff shall be accompanied by such fee as may be specified in the HERC Fee Regulations in vogue and shall be accompanied by the following:-
 - a) Information in forms 1.1, 1.2, 2.1 and 2.2 as the case may be, and as appended to these regulations;
 - b) Detailed project report outlining technical and operational details, site specific aspects, premise for capital cost and financing plan etc.
 - c) A statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined.
 - d) A statement containing full details of calculation of any subsidy and incentive received, due or assumed to be due from the Central Government and/or State Government. This statement shall also include the proposed tariff calculated without consideration of the subsidy and incentive.
 - e) Following documents in case of petition for determination of project specific tariff by renewable energy projects, where tariff from such renewable energy sources is generally determined through competitive bidding process in accordance with provisions of Section 63 of the Act:
 - i. Rationale for opting project specific tariff instead of competitive bidding; and
 - ii. Competitiveness of the proposed tariff vis-à-vis tariff discovered through competitive bidding/ tariff prevalent in the market.
 - iii. Comparative details showing that the tariff proposed is aligned with the prevalent market conditions.
 - f) Any other information that the Commission may require the petitioner to submit.

- (3) The proceedings for determination of tariff shall be in accordance with the HERC (Conduct of Business) Regulations 2019, as amended from time to time.

8. Tariff Structure. –

- (1) The tariff for renewable energy technologies shall be single part tariff consisting of the following fixed cost components:-
- (a) Return on equity capital;
 - (b) Interest on loan capital;
 - (c) Depreciation;
 - (d) Interest on working capital including margin money;
 - (e) Operation and maintenance expenses;

Provided that for renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based cogeneration, single part tariff with two components, fixed cost component and fuel cost component, shall be determined. The fuel cost component may be subjected to escalation/de-escalation for computing levellised generic tariff for entire useful life of the project as provided in these Regulations.

Provided that MAT/Corporate Tax shall be a pass through on submission of supporting documents. The same shall be limited to applicable tax rate on the normative return on equity.

9. Tariff Design. –

- (1) The generic tariff, for the control period as per these Regulations, shall be determined, for the entire tariff period/useful life of the project.

Provided that for renewable energy projects having single part tariff with two components viz. fixed cost component shall be determined on levelized basis considering the year of commissioning of the project while fuel cost component shall be determined on annual basis and the same shall also be prospectively (i.e. from the date of the Order) applicable for the projects commissioned during the previous control periods.

The State Nodal Agency i.e. HAREDA shall collect the relevant data on fuel cost and submit the same to the Commission on a half yearly basis.

- (2) For the purpose computation of levellised tariff, the discount factor equivalent to weighted average cost of capital {Term Loan (R) and Return on Equity (RoE)} shall be considered i.e. $\{(R \times 0.7) + (RoE \times 0.3)\}$.

- (3) The above principles shall also apply for the determination of project specific tariff under these Regulations.

10. Dispatch principles for electricity generated from Renewable Energy Sources. –

- (1) All renewable energy power plants, except for Biomass power plants of installed capacity 10 MW and above, shall be treated as ‘MUST RUN’ power plants. Biomass power with installed capacity of 10 MW and above shall be subjected to scheduling and dispatch as specified under Haryana Grid Code and other relevant regulations including amendments thereto.
- (2) The scheduling and deviation settlement for solar and wind power shall be as per the Haryana Electricity Regulatory Commission (Forecasting, Scheduling and Deviation Settlement for Solar and Wind Generation) Regulations, 2019 / Haryana Electricity Regulatory Commission (Deviation Settlement Mechanism and related matters) Regulations, 2019, as may be amended from time to time.

Chapter – 3

Financial Principles

11. **Capital Cost.** – The norms for the Capital cost as specified in the subsequent technology specific chapters shall be inclusive of land cost, pre-development expenses, all capital work including plant and machinery, initial spares, civil work, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to the inter-connection point.

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost items along with its petition, including DPR, Lender's Engineer Report and justification (item-wise) for any time/cost over-run.

Provided further that in case where land for the project is acquired on lease basis, the cost of land to be considered as part of capital cost shall be determined as per the Land Lease Agreement (s).

12. **Debt Equity Ratio.** –

- (1) For generic tariff to be determined, based on suo motu petition, the normative debt equity ratio shall be 70: 30.
- (2) For Project specific tariff, if the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.

Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff. Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

Provided also that debt equity ratio shall be considered after deducting the amount of grant or capital subsidy received for the project for arriving at the amount of debt and equity.

Explanation-The premium, if any, raised by the generating company, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, subject to the ceiling limit of 30%, only if such premium

amount and internal resources are actually utilised for meeting the capital expenditure of the renewable energy project. The un-discharged liabilities, if any, shall be reduced from the capital cost.

13. Loan and Finance Charges. –

- (1) For the purpose of determination of tariff, loan tenure of 13 years shall be considered.
- (2) (a) The loans arrived at in the manner indicated above shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to March 31st of the previous year from the gross normative loan.

(b) For the purpose of computation of tariff, the normative interest rate shall be considered as the average Marginal Cost of funds-based lending rate (MCLR) (one-year tenor) of SBI prevailing during the last six months plus a margin of up to 200 basis points i.e. 2%.

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

14. Depreciation. –

- (1) The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The salvage value of the asset shall be considered as 10%.

Provided that, no depreciation shall be allowed to the extent of grant or capital subsidy received for the project. Provided further that land is not a depreciable asset, and hence, its cost shall be excluded while computing 90% of the original cost of asset eligible for depreciation.

- (2) Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan tenure and period beyond loan tenure over useful life computed on 'Straight Line Method'. The depreciation rate for the first 13 years of the Tariff Period shall be 5.38% per annum charged on the capital cost and the remaining depreciation (i.e. 90% of the capital cost as reduced by the depreciation charged

in first 13 years) shall be spread over the remaining useful life of the project from 14th year onwards.

- (3) Depreciation shall be chargeable from the first year of commercial operation.

Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

15. Return on Equity. –

- (1) The value base for computing equity eligible for return shall be lower of the two either 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under these Regulations.

- (2) The normative Return on Equity shall be as under:-

- a) 14% per annum calculated on normative Equity Capital.
- b) MAT/Corporate Tax applicable shall be considered as pass through.

Provided that the applicable MAT / Corporate Tax shall be separately invoiced as per the actual paid at the rate as declared by the Income Tax Department. The Generator shall raise the bill for reimbursement of MAT / Corporate Tax applicable on Return on Equity in 12 equal installments which shall be payable by the beneficiaries.

16. Interest on Working Capital. –

- (1) The Working Capital requirement in respect of wind energy projects, small hydro power, solar PV and Solar thermal power projects and Processed Municipal Solid Waste (WtE) projects shall be computed in accordance with the following :-

- a) Operation & Maintenance expenses for one month;
- b) Receivables equivalent to 2 (two) months of fixed and energy charges for sale of electricity calculated on the normative CUF / PLF;
- c) Maintenance spare @ 15% of operation and maintenance expenses.

- (2) The Working Capital requirement in respect of biomass power projects (Rankine Cycle Technology), Biomass Gasifier / Bio gas based projects and bagasse / non-fossil fuel based co-generation projects shall be computed as under:-

- a) Fuel costs for four months at normative PLF;

Provided that fuel cost for six months at normative PLF shall be provided for projects using Paddy Straw as single fuel.

- b) Operation & Maintenance expense for one month;
 - c) Receivables equivalent to 2 (Two) months of fixed and variable charges for sale of electricity calculated on the normative PLF;
 - d) Maintenance spare @ 15% of operation and maintenance expenses.
- (3) Interest on Working Capital, for the purpose of tariff determination, shall be computed at the average Marginal Cost of funds based lending rate (MCLR) (one year tenor) of SBI prevailing during the last available six months plus an appropriate margin not exceeding 200 basis points i.e. 2%.
- (4) In case of renewable hybrid energy projects, the Working Capital requirement shall be the sum of the Working Capital requirement determined as per norms applicable for renewable energy sources, in proportion to their rated capacity in the project.

17. Operation and Maintenance Expenses. –

- (1) ‘Operation and Maintenance or O&M expenses’ shall comprise repair and maintenance (R&M), establishment including employee expenses, and administrative and general expenses.
- (2) Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified in these Regulations for the first Year of the Control Period.
- (3) Normative O&M expenses allowed during the first year of the Control Period under these Regulations shall be escalated at the rate of 2.93% per annum over the Tariff Period.

18. Rebate. –

- (1) For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed.
- (2) Where payments are made other than through letter of credit within a period of 30 days of presentation of bills by the generating company, a rebate of 1% shall be allowed.

Explanation: In case of computation of 30 days, the number of days shall be counted consecutively without considering any holiday. However, in case the last day or 30th day is official holiday, the 30th day for the purpose of rebate shall be construed as the immediate succeeding working day.

19. Late payment surcharge. –

(1) Late Payment Surcharge shall be payable on the payment outstanding after the due date at the base rate of Late Payment Surcharge applicable for the period for the first month of default.

(2) The rate of Late Payment Surcharge for the successive months of default shall increase by 0.5 percent for every month of delay provided that the Late Payment Surcharge shall not be more than 3 percent higher than the base rate at any time:

Provided that the rate at which Late Payment Surcharge shall be payable shall not be higher than the rate specified in the agreement, if any.

Provided further that, if a distribution licensee has any payment including Late Payment Surcharge outstanding against a bill after the expiry of seven months from the due date of the bill, it shall be debarred from procuring power from a power exchange or grant of short-term open access till such bill is paid.

Whereas;

“base rate of Late Payment Surcharge” means the marginal cost of funds based lending rate (MCLR) for one year of the State Bank of India, as applicable on the 1st April of the financial year in which the period lies, plus five percent and in the absence of marginal cost of funds based lending rate, any other arrangement that substitutes it, which the Central Government may, by notification, in the Official Gazette, specify;

Provided that if the period of default lies in two or more financial years, the base rate of Late Payment Surcharge shall be calculated separately for the periods falling in different years.

“due date” means the date by which the bill for the charges for power supplied by the generating company are to be paid, in accordance with the Power Purchase Agreement, Power Supply Agreement, as the case may be, and if not specified in the agreement, forty-five days from the date of presentation of the bill by such generating company.

“Late Payment Surcharge” means the charges payable by the distribution company to a generating company for power procured from it on account of delay in payment of monthly charges beyond the due date.

20. Sharing of CDM Benefits. –

(1) The proceeds of carbon credit from approved CDM project, after deduction of expenses incurred by the generating company for registration and approval of the project as CDM project shall be shared between generating company and beneficiaries concerned in the following manner:-

- a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station i.e. 12 months from CoD;
- b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

Provided that in case the Concession Agreement or PPA has specific provision regarding sharing of CDM benefits, the same shall be applicable in such cases.

21. Sharing of Other Income – Other Income i.e. proceeds from sale of bio-fertilizer/bye products etc. shall be shared in equal proportion, by the generating company and the beneficiaries.

22. Subsidy or incentive by the Central / State Government. – The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, available across the board to all the generating company, for the renewable energy power plants while determining tariff under these Regulations.

Provided, where there is no up-front subsidy/grant/incentive, the tariff shall be worked out without subsidy/grant/incentive.

Provided further that any such assistance received by the generator shall be immediately passed on to the beneficiary.

Any grant, subsidy or incentives availed by renewable energy project, which is not considered at 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.

- 23. Taxes and Duties.** – Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government. Any tax / duty levied by the appropriate Government shall be allowed as pass through on actual incurred basis and should have been actually paid to the authority (ies) concerned.

Chapter – 4

Technology specific parameters for Wind Energy

24. Capital Cost. –

- (1) The capital cost for wind energy project shall include land cost Wind turbine generator including its auxiliaries, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and IDC. Provided in case of land obtained on lease, cost of land shall be taken as per lease agreement.
- (2) Given the limited potential for setting up wind energy projects in Haryana, the Commission, on an application received from a prospective wind power generator / developer and willingness of the Disocoms / HPPC to purchase such power, shall determine capital cost for wind energy projects, O&M expenses and tariff based on the market trends prevailing during the relevant year w.r.t. scheduled CoD of such projects on case specific basis only.

25. Capacity Utilization Factor. –

- (1) CUF norms for the control period shall be as follows:-

Annual Mean Wind Power	
Density (W/m ²)	CUF
Up to 220	22%
221- 275	24%
276- 330	28%
331- 440	33%
441 +	35%

Provided that the number of hours for calculation of CUF shall be 8766 hours.

- (2) The annual mean wind power density specified above shall be measured at 100 meter hub-height.
- (3) For the purpose of classification of wind energy project into particular wind zone class, the State-wise wind power density map prepared by Centre for Wind Energy Technology (C-WET) / MNRE / NIWE , shall be considered.

Provided that the Commission may by notification amend the schedule from time to time, based on MNRE guidelines / NIWE for wind measurement or by the private developer.

Provided in the case of wind measurement data submitted by wind power developer the same shall be acceptable in case it is validated by NIWE.

Chapter – 5
Technology specific parameters for Small Hydro Project

26. Capital Cost. –

- (1) The capital cost for small hydro / micro projects during the Control beginning the FY 2021-22, shall be as under:-

Size of project	Capital Cost (Rs. Crore / MW)
Below 5 MW	7.80
5 MW to 25 MW	9.00

Provided in the case of small / micro hydro power projects the Commission shall determine project specific tariff only and accordingly determine project specific capital cost as well as CUF, if required, based on case specific hydrological data.

- 27. Capacity Utilization Factor. –** Capacity Utilization Factor (CUF) for the small hydro projects shall be 56%. The normative CUF shall be net of free power to the State, if any, and any quantum of free power, over and above the free power notified by the Central Government, if committed by the developer by way of implementation agreement or otherwise, over and above the normative CUF, shall not be factored into the tariff. Provided further that the number of hours for calculation of CUF shall be 8766 hours.

- 28. Auxiliary Energy Consumption. –** Normative Auxiliary Energy Consumption, including transformation losses, for the small / micro hydro projects shall be 1.0%.

29. Operation and Maintenance Expenses. –

- (1) Normative O&M expenses for the first year of the Control period (i.e. FY 2021-22) shall be as under:-

Project size	O&M Expenses (Rs. Crore / MW)
Below 5 MW	0.33
5 MW to 25 MW	0.24

- (2) Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 2.93% per annum for the Tariff Period for the purpose of determination of tariff under these Regulations.

Chapter – 6

Technology specific parameters for Biomass based Power Projects

30. **Technology Aspect.** – The norms for tariff determination specified hereunder are for biomass power projects based on Rankine Cycle technology application using water cooled condenser and air cooled condenser, with Travelling grate or AFBC boiler.

31. **Capital Cost.** –

- (1) The normative capital cost, during the control period under these Regulations, for the biomass power projects using fuel other than Rice Straw/Stubble shall be Rs. 5.59 Crore / MW (Water Cooled Condenser) and Rs. 6.0 Crore / MW for projects using Air Cooled Condenser.

Provided for the project using Rice Straw / Stubble as single fuel for generation of power the Capital Cost, during the control period, shall be Rs. 6.10 Crore / MW (Water Cooled Condenser) and Rs. 6.52 Crore / MW for projects having air cooled condenser.

32. **Plant Load Factor.** –

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

33. **Auxiliary Energy Consumption.** – The auxiliary energy consumption shall be 10% in the case of projects equipped with water cooled condenser and 12% for air cooled condenser, for the purpose of tariff determination.

34. **Station Heat Rate.** – The Station Heat Rate for biomass power projects shall be 4125 kCal / kWh and 4063 Kcal / kWh for projects equipped with travelling grate boiler and AFBC boiler respectively. Provided for the project using Rice Straw / Stubble as single fuel for generation of power the Station Heat Rate, during the control period, shall be as under:-

Water Cooled – Travelling Grate	4200 kcal/kWh
Air Cooled – Travelling Grate	4200 kcal/kWh
Water Cooled – AFBC Boiler	4125 kcal/kWh
Air Cooled – AFBC Boiler	4125 kcal/kWh

35. **Operation and Maintenance Expenses.** –

- (1) Normative O&M expenses for the first year of the Control period (i.e. FY 2021-22) shall be Rs. 0.4642 Crore /MW.
- (2) Normative O&M expenses allowed at the commencement of the Control Period (i.e. FY 2021-22) under these Regulations shall be escalated at the rate of 2.93% per annum.

36. Fuel Mix. –

- (1) The biomass power plant shall be designed in such a way that it uses different types of non-fossil fuels available within the vicinity of biomass power project such as crop residues, agro-industrial residues, forest residues etc. and other biomass fuels as may be approved by MNRE, from time to time.
- (2) The Biomass Power Generating Companies shall have appropriate fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.
- (3) Use of Fossil Fuel shall not be permitted. However, at least 30% of the fuel requirement shall be met from Paddy Straw by all biomass/non- fossil based cogeneration plants.
- (4) The Project developer shall furnish monthly fuel (biomass mix) usage statement and monthly fuel (biomass mix) procurement statement duly certified by Chartered Accountant to the beneficiary (with a copy to appropriate agency that may be appointed / designated by the Commission for the purpose of monitoring fuel consumption and usage) for each month, along with the monthly energy bill.
- (5) Non-compliance of the aforesaid condition of fossil fuel usage by the project developer, during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such biomass based power project. In such cases the PPA(s) shall be terminated and the Discoms (beneficiaries) shall be under no obligation to make any payments for the power supplied by the seller in breach of the regulation on fuel usage.

Provided that the bagasse based co-generation projects, selling power to the Discoms under PPA approved by the Commission, shall be permitted to use biomass as fuel during the non-cane crushing season. In such cases the generators can approach the Commission for determination of tariff for the power generated using biomass as fuel.

The HPPC shall not refuse purchase of such power without the prior approval of the Commission.

37. **Calorific Value.** – The Calorific Value of the biomass fuel used for the purpose of determination of tariff shall be 3100 (kCal/kg).
38. **Fuel Cost.** – Biomass fuel price during first year of the Control Period shall be Rs. 3000 /MT and shall be escalated at the rate of 2.93% per annum for arriving at the levelised tariff for the entire useful life of the project.

Provided Further, that the Commission, for biomass / bagasse based power project, both existing and to be set up, may consider two part tariff wherein the fixed cost shall be the levelised tariff already determined for the existing projects and the fuel cost shall be as determined on a year to year basis so that the fuel cost remains aligned to the prevailing market conditions.

Provided that to gainfully utilize and thereby prevent burning of paddy straw / stubble in the farms, the Commission would endeavor to promote use of the same in the power projects. Hence, while determining fuel cost / GCV on a year to year basis applicable for the existing as well as to be commissioned biomass / bagasse power projects, appropriate price weightage could be considered. Designated Agency/HAREDA may provide the relevant data collected from the field on a half yearly basis for consideration of the Commission. However, the details of usage of paddy straw / stubble shall be certified by the IPPs and verified by HPPC based on the data emanating from the local authorities concerned.

Provided further, in case, the State Government procures paddy straw/stubble for onward distribution to the power projects, the fuel cost shall be accordingly adjusted.

Further, given the single fuel based generation for paddy straw / stubble based power projects in Haryana, working capital norms shall be accordingly determined.

Chapter – 7

Technology specific parameters for Non-fossil fuel based Cogeneration Projects

39. **Technology Aspect.** – A project shall qualify as a non-fossil fuel based Co-generation project, if it is in accordance with the definition as specified under these Regulations.
40. **Capital Cost.** - The normative capital cost for the non-fossil fuel based cogeneration projects shall be Rs. 4.925 Crores/MW during the control period, under these Regulations.
41. **Plant Load Factor.** –
- (1) For the purpose of determining fixed charge, the plant load factor for non-fossil fuel based cogeneration projects shall be computed on the basis of plant availability for number of operating days considering operations during crushing season and off-season.
 - (2) The number of operating days shall be 150 days (crushing) + 60 days (off-season) = 210 days operating days and the Plant Load Factor shall be 53%.
 - (3) Plant Load Factor for biomass based co-generation using fuel other than bagasse shall be 80%.
42. **Auxiliary Energy Consumption.** – The auxiliary energy consumption factor shall be 8.5% for the purpose of tariff determination.
43. **Station Heat Rate.** –Station Heat Rate of 3600 kCal / kWh for power generation component shall be considered for computation of tariff for non-fossil fuel based Cogeneration projects.
44. **Calorific Value.** – The Gross Calorific Value for Bagasse shall be considered as 2250 kCal/kg. Further, the Gross Calorific Value for Non Fossil Fuel based Cogeneration (other than Bagasse) shall be considered as 3100 kCal/kg.
45. **Fuel Cost.** –
- (1) The price of Bagasse shall be Rs. 1027/ MT and shall be escalated at the rate of 2.93% per annum for determination of levellised tariff for the entire useful life of the project.
 - (2) The price of other Non Fossil Fuel shall be Rs. 3000/ MT and shall be escalated at the rate of 2.93% per annum for determination of levelized tariff for the entire useful life of the project.

46. **Operation and Maintenance Expenses. –**

- (1) Normative O&M expenses during first year of the Control Period shall be Rs. 0.24 Crore / MW.
- (2) The normative O&M expenses allowed at the commencement of the Control Period i.e. the FY 2021-22 under these Regulations shall be escalated at the rate of 2.93% per annum.

Chapter – 8

Technology specific parameters for Solar PV Power Project

47. **Technology Aspects.** – Norms for Solar Photovoltaic (PV) power under these Regulations shall be applicable for grid connected PV systems that directly convert solar energy into electricity and are based on the technologies such as crystalline silicon or thin film etc. as may be approved by MNRE. The Commission shall not determine generic tariff under these Regulations and only project specific tariff, if required, shall be determined.

Provided that the Discoms may do reverse bidding with the lowest / last discovered tariff lowest of competitive bidding by HPPC or SECI, as base tariff.

Provided that the norms including Capital Cost, O&M expenses etc. and the tariff thereto for Solar Pv / Thermal / Rooftop / Canal top / Water works, as per the technology approved by the MNRE, shall be determined on project specific basis depending on the prevalent market trend only if required i.e. in case the competitive bidding route for any reason does not take effect. The broad guiding parameters shall be as under:-

48. **Capacity Utilisation Factor.** – The Commission shall approve capacity utilization factor for project specific tariff determination.

Provided that the minimum capacity utilisation factor for Solar PV project including floating solar project shall be 21%.

Provided that the minimum capacity utilisation factor for Solar Thermal project shall be 23%.

49. **Operation and Maintenance Expenses.** –

- (1) The O&M Expenses shall be determined based on prevalent market conditions.
- (2) Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 2.93% per annum.

50. **Auxiliary Energy Consumption.** – The auxiliary energy consumption shall be 0.25% of the gross generation.

Chapter – 9

Technology specific parameters for Biomass Gasifier based Power Project

51. Technology Aspects. –

- (1) A process achieved by reacting biomass at a high temperatures without combustion / incomplete combustion, with a controlled amount of oxygen and/or steam resulting in production of combustible gases consisting of a mix of Carbon Monoxide (CO), Hydrogen (H₂) and traces of Methane (CH₄), which shall be called synthesis gas to be used as fuel. The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that uses 100% syngas engine with MNRE approved gasification technology and shall use non fossil fuel as approved by MNRE.
- (2) The useful life, for the purpose of these Regulations, for biomass gasification based Projects, shall be 20 years.
- (3) The normative Capital Cost, without capital subsidy, shall be Rs. 5.93 Crore / MW for the entire control period unless reviewed by the Commission. However, for determination of tariff, the capital subsidy/grant/ Central Financial Assistance, if available, shall be deducted from the capital cost.
- (4) The threshold Plant Load Factor (PLF), including stabilisation period, for the purpose of determining levellised generic tariff under these Regulations shall be 85%.
- (5) The Auxiliary Energy Consumption (AUXe), for the purpose of determination of levellised generic tariff under these Regulations, shall be 10%.
- (6) The Normative Specific Fuel consumption shall be 1.25 Kg./kWh.
- (7) The Normative Operation and Maintenance (O&M) expenses shall be Rs. 0.613 Crore / MW for the base year i.e. the FY 2021-22, the same shall be subject to an escalation factor @ 2.93% per annum from second year onwards.
- (8) The base year (FY 2021-22) fuel cost shall be Rs. 3000 / MT and the same shall be escalated @ 2.93% per annum for the purpose of arriving at generic levellised tariff for the entire useful life of the project.

Chapter – 10
Technology specific parameters for Biogas Power Project

52. Biogas based power projects. –

- (1) A technology for generation of power using a mixture of different gases produced by the breakdown of organic matter (anaerobic digestion with anaerobic organisms in the absence of oxygen / fermentation of biodegradable materials) i.e. produced from raw materials such as agricultural waste, manure, poultry droppings, cow dung, municipal waste, plant material, sewage, green waste or food waste. The projects shall qualify as biogas based power project provided it is using new plant and machinery and having a grid connected system that and uses 100% biogas fired engine with MNRE approved technology.
- (2) The useful life, for the purpose of these Regulations, for biogas based projects, shall be 20 years.
- (3) The normative Capital Cost, for the entire control period beginning the FY 2021-22 shall be Rs. 11.86 Crore/MW (after accounting for capital subsidy -Rs. 8.86 Crore / MW) unless reviewed earlier by the Commission.
- (4) The threshold Plant Load Factor (PLF), including stabilisation period, for the purpose of determining levellised generic tariff under these Regulations shall be 90%.
- (5) The Auxiliary Energy Consumption (AUXe), for the purpose of determination of levellised generic tariff under these Regulations, shall be 12%.
- (6) The Normative Fuel consumption shall be 3.0 Kg / kWh of substrate mix.
- (7) The Normative Operation and Maintenance (O&M) expenses shall be Rs. 0.626 Crore / MW for the base year i.e. the FY 2021-22, the same shall be subject to an escalation factor @ 2.93% per annum from second year onwards for determining levellised tariff for the entire useful life of the project.
- (8) The base year (FY 2021-22) fuel cost (Feed Stock Price) shall be Rs. 685 / MT and the same shall be escalated @ 2.93% per annum for the purpose of arriving at levellised tariff for the entire useful life of the project. Provided the cost recovery from digester effluent shall be set off against the Fuel Cost (feed stock price) while determining generic levellised tariff.

Chapter – 11

Technology specific parameters for Processed Municipal Solid Waste (WtE) based Power Projects based on Rankine Cycle Technology

53. A project shall qualify as MSW (WtE) based power project if it uses processed municipal solid waste and are based on Rankine cycle technology application, combustion or incineration, Bio-methanation, Pyrolysis and High end gasifier technologies etc.

(1) **Capital Cost.** – The normative capital costs during the entire control period under these Regulations, unless reviewed earlier by the Commission, shall be Rs. 15 Crore / MW.

(2) **Plant Load Factor (PLF).** –

(1) Threshold Plant Load Factor for determining fixed charge component of tariff for the municipal solid waste WtE projects shall be as under:-

PLF(%) processed MSW (WtE) based Power Projects

- a) During Stabilisation 65%
- b) During the remaining period of the first year (after stabilization) 65%
- c) From 2nd Year onwards 75%

(2) The stabilization period shall not be more than 6 months from the date of commissioning of the project.

(3) **Auxiliary Energy Consumption (AUXe)** – The auxiliary power consumption for the Waste to energy power projects using municipal solid waste shall be 15%.

(4) **Operation and Maintenance Expenses (O&M)** – The Normative O&M expenses for the first year of the control period under these Regulations i.e. FY 2021-22 shall be 6.5% of normative capital cost. The same shall be escalated @ 2.93% per annum to arrive at the levellised tariff for the entire useful life of the project.

Chapter – 12

Technology specific parameters for Renewable Hybrid Energy Projects

54. Capital Cost

The capital cost shall be determined on project specific basis considering the prevailing market trends.

55. Capacity Utilisation Factor

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 source, as the case may be: Provided that the minimum capacity utilization factor for renewable hybrid energy project shall be 30% when measured at the inter-connection point, where the energy is injected into the grid.

56. Operation and Maintenance expenses

The Commission shall determine only project specific O&M expenses considering the prevailing market trends.

57. Tariff

The tariff for a renewable hybrid energy project shall be a composite levelised tariff for the project as a whole by factoring in the tariff components upto the minimum of the useful life of the RE technologies combined for such RE hybrid Project:

Provided that, in case any of the RE technologies combined for RE hybrid project is left with further useful life, the levelised tariff for remaining useful life of such RE technology shall be determined separately, by factoring in the tariff components for the remaining useful life.

Chapter – 13

Technology specific parameters for Renewable Energy with storage project

58. Capital Cost

The capital cost shall be determined on project specific basis considering the prevailing market trends.

59. Storage Efficiency

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

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

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

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

60. Operation and Maintenance expenses

The Commission shall determine only project specific O&M expenses considering the prevailing market trends.

61. Tariff determination for Energy Storage

The tariff for renewable energy with storage project shall be a composite tariff or differential tariff based on 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 supply of power on round the clock basis or for time periods as agreed by Project Developer and Beneficiary.

Chapter – 14

Renewable purchase obligation (RPO) and Renewable Energy Certificate (REC)

62. Renewable Purchase Obligation. –

- (1) Every obligated entity including distribution licensee, consumers owning captive power plant and open access consumers including short term open access consumers in Haryana, shall purchase energy from renewable energy sources under the Renewable Purchase Obligation (RPO) as under:-

Year	Solar RPO*	Non Solar RPO			Total RPO
		HPO**	Other Non Solar RPO*	Total Non Solar RPO *	
2021-22	8.00%	0.00	3.00%	3.00%	11.00%
2022-23	9.00%	0.35%	5.00%	5.35%	14.35%
2023-24	10.00%	0.66%	6.00%	6.66%	16.66%
2024-25	To be specified later	1.08%	To be specified later	To be specified later	To be specified later
2025-26		1.48%			
2026-27		1.80%			
2027-28		2.15%			
2028-29		2.51%			
2029-30		2.82%			

** HPO within Non Solar Renewable Purchase Obligation (RPO) means “Hydropower Purchase Obligation, to be met from purchase of power/Hydro Energy Certificates from Large Hydropower Projects having capacity of more than 25 MW (LHPs) which come into commercial operation after 08.03.2019.

- (2) RPO shall be calculated in energy terms as a percentage of total consumption of electricity excluding consumption met from RE sources and hydro sources (LHPs).
- (3) Solar RPO may be met by power produced from solar power plants — solar photo voltaic or solar-thermal.
- (4) Other Non-Solar RPO (excluding HPO), may be met from any renewable source other than solar and LHPs.
- (5) HPO benefits may be met from the power procured from eligible LHPs commissioned on and after 8.3.2019 and upto 31.03.2030 in respect of 70% of the total generated capacity for a period of 12 years from the date of commissioning. Free power is to be provided as per agreement with the State Government and that provided for Local Area Development Fund (LADF), shall not be included within this limit of 70% of the total generated capacity.

- (6) HPO liability of the State/ Discom could be met out of the free power being provided to the State from LHPs commissioned after 08.03.2019 as per agreement at that point of time excluding the contribution towards LADF if consumed within the State/Discom. Free power (not that contributed for Local Area Development) only to extent of HPO liability of the State/Discom, shall be eligible for HPO benefit.
- (7) In case the free power, as above, is insufficient to meet the HPO obligations, then the State would have to buy the additional hydro power to meet its HPO obligations or may have to buy the corresponding amount of Hydro Energy Certificate to meet the non-solar hydro renewable purchase obligations.
- (8) The Hydro Energy Certificate issued under the mechanism developed by CERC shall be valid instruments for the discharge of the HPO obligations.
- (9) The above HPO Trajectory shall be trued up on an annual basis depending on the revised commissioning schedule of Hydro projects.
- (10) Hydro power imported from outside India shall not be considered for meeting HPO.
- (11) On achievement of Solar RPO compliance to the extent of 80% and above, remaining shortfall, if any, can be met by excess non-solar energy consumed beyond specified Non-Solar RPO for that particular year. Similarly, on achievement of Other Non-Solar RPO compliance to the extent of 80% and above, remaining shortfall if any, can be met by excess solar or eligible hydro energy consumed beyond specified Solar RPO or HPO for that particular year. Further, on achievement of HPO compliance to the extent of 80% and above, remaining shortfall, if any, can be met by excess solar or other non—solar energy consumed beyond specified Solar RPO or Other Non-Solar RPO for that particular year.
- (12) RPO for fossil fuel based Captive Power Plants (CPP) of 5 MW and above including Fossil fuel based co-generation captive plant of 5MW and above, shall be pegged at the RPO level applicable in the year in which CPP is commissioned. However, RPO of such plants commissioned up to 2018-19 shall be pegged at RPO applicable for the FY 2018-19. As and when the company

add to the capacity of the CPP, it will have to provide for additional RPO as obligated in the year in which new capacity is commissioned.

- (13) The DISCOMs, while complying with the RPO, shall ensure trade-off between REC & purchase of RE Power and take financial prudent action accordingly.

Provided further, such obligation to purchase renewable energy shall be inclusive of the purchases, if any, from renewable energy sources already being made by obligated entity concerned.

Provided also that the power purchases under the power purchase agreements for the purchase of renewable energy sources already entered into by the distribution licensees and consented to by the Commission shall continue to be made till validity of the Power Purchase Agreement approved by the Commission, even if the total purchases under such agreements exceed the RPO as specified in these regulations.

63. Certificates under the Regulations of the Central Commission. –

- (1) Subject to the terms and conditions contained in these regulations the Certificates issued under the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 shall be the valid instruments for the discharge of the mandatory obligations set out in these regulations for the obligated entities to purchase electricity from renewable energy sources.

Provided that in the event of the obligated entity fulfilling the renewable purchase obligation by purchase of certificates, the obligation to purchase electricity from generation based on solar as renewable energy source can be fulfilled by purchase of solar certificates only, and the obligation to purchase electricity from generation based on renewable energy other than solar can be fulfilled by purchase of non-solar certificates.

- (2) Subject to such direction as the Commission may give from time to time, the obligated entity shall act in consistent with the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 notified by the Central Commission and as amended from time to time in regard

to the procurement of the certificates for fulfillment of the Renewable Purchase Obligation under these regulations.

- (3) The Certificates purchased by the obligated entities from the power exchange in terms of the regulation of the Central Commission mentioned in sub regulation (1) of this Regulation shall be deposited by the obligated entities to the Commission in accordance with the detailed procedure issued by the Central Agency.

The Obligated Entities including the Power Utilities in Haryana under these Regulations may meet its RPO target by way of own generation or procurement of power from RE developer or by way of purchase from other licensee or by way of purchase of Renewable Energy Certificate or by way of combination of any of the above options. However, RE power generated in States other than in the State of Captive Generator, by an obligated entity shall not qualify for fulfilment of RPO in Haryana.

Provided that in the case of an obligated entity with conventional captive power generation plant as defined in the Electricity Act, 2003, may meet their RPO, solar and non solar as the case may be by self / own generation in Haryana of respective renewable power.

64. State Agency. –

- (1) The Commission designates Haryana Renewable Energy Development Agency (HAREDA) as the State Agency for accreditation and recommending the renewable energy projects for registration and to undertake functions in sync with regulation 38.
- (2) The State Agency shall function in accordance with the directions issued by the Commission and shall act in consistent with the procedures rules laid by Central Agency for discharge of its functions under the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 as amended from time to time.
- (3) The State Agency shall submit quarterly status to the Commission in respect of compliance of renewable purchase obligation by the obligated entities in the format as stipulated by the Commission and may suggest appropriate action to the Commission if required for compliance of the renewable purchase obligation.

- (4) If the Commission is satisfied that the State Agency is not able to discharge its functions satisfactorily, it may by general or special order, and by recording reasons in writing, designate any other agency to function as State Agency as it considers appropriate.

65. Effect of default. –

- (1) If the obligated entities do not fulfill the renewable purchase obligation as provided in these regulations during any year and also does not purchase the certificates, the Commission may direct the obligated entity to deposit into a separate fund, to be created and maintained by such obligated entity, such amount as the Commission may determine on the basis of the shortfall in the RPO determined under these regulations from time to time at the forbearance price notified by the Central Commission.

Provided that the fund so created shall be utilized, as may be directed by the Commission, for purchase of the renewable energy certificates.

Provided further that the Commission may empower an officer of the State Agency to procure from the Power Exchange the required number of certificates to the extent of the shortfall in the fulfillment of the obligations, out of the amount in the fund.

Provided also that the distribution licensee shall be in breach of its licence condition if it fails to deposit the amount directed by the Commission within 30 days of the communication of the direction or within such period as directed by the Commission.

- (2) Where any obligated entity fails to comply with the obligation to purchase the required percentage of power from renewable energy sources or the renewable energy certificates, it shall also be liable for penalty as may be decided by the Commission under section 142 of the Act.

Provided that in case of genuine difficulty in complying with the renewable purchase obligation because of limited availability of renewable energy or non-availability of certificates, the obligated entity can approach the Commission for relaxation or carry forward of compliance requirement to the next year. However, in normal circumstances, the renewable purchase obligation shall not be waived of.

Provided further that where the Commission has consented in writing on an application made by the obligated entity to carry forward of compliance requirement, the provision of regulation 65 (1) of these Regulation or the provision of section 142 of the Act shall not be invoked.

- (3) Where any obligated entity being an Open Access Consumer, fails to comply with the obligation to purchase the required percentage of power from renewable energy sources or the renewable energy certificates, on or before 30th April next following the relevant Financial Year, in addition to the consequences mentioned in sub clause 1 & 2 above, Open Access shall not be granted to such consumers w.e.f. 01st May, till the time such Open Access Consumer fulfills RPO obligations. Such obligated Open Access Consumers, shall have to submit the proof of compliance of RPO to DISCOMs.

66. Banking of RE Power. –

RE based captive generating plants of owner / consumer with 100 per cent equity holding in the CPP may bank power, up to contract demand for captive/own use on payment of the banking charges along with the transmission and distribution losses (Technical loss) for availing the open access on the transmission or distribution network of the licensees for banking and drawl of banked power from the Discoms after entering into the banking agreement with the Discoms concerned at the terms and condition specified as under:

1. The RE power shall be allowed to be banked with the distribution licensee(s), upto the cumulative contract capacity of 100 MW only, by levying banking charges @ Rs. 1.50/unit, after which the Commission shall review the provisions of banking taking into consideration of the financial impact on distribution companies.
2. The Energy Banked shall be permitted to be carried forwarded from month to month. The banked power shall be utilized within the same financial year failing which the unutilized energy at the end of the financial year shall lapse, and no compensation whatsoever shall be claimed/ paid for such lapsed banked energy, provided the solar energy banked during the last quarter of the financial year shall be carried forward to the next financial year.
3. Banked energy not drawn as per schedule, shall be considered as dumped energy & shall lapse.

4. The banking shall be allowed throughout the year, however, the drawl of banked power shall not be allowed during the peak months (May to September).

5. The drawl of banked power shall also be not allowed during peak load hours as mentioned in the ToD tariff approved by the Commission.

6. The Banked Energy Shall be calculated at the end of a month as follows:-

Banked Energy at the end of month (E_{bi}) = $\{E_g(1-\text{losses})-E_c\} * (1-b) + E_b(i-1)$

* E_g = Energy Generation for the i th month

* E_c = Energy consumption for the i th month

* $E_b(i-1)$ = Energy Banked at the end of previous month

* b = Banking charges in kind.

Further, as far as scheduling and deviation mechanism is concerned, the same shall be governed by the separate Regulations notified by the Commission.

The RE power shall be adjusted as first charge in order of consumption of energy by a consumer. The banking will be counted on daily basis for the purpose of monthly account.

Settlement of wheeled energy at consumer End shall be in the following order of priority:

1. RE generation after deduction of losses.
2. Captive Power
3. Banked Energy
4. Open Access Power through Exchange / Bi-lateral transactions
5. Discom power

67. **Cost of Evacuation System.** – The State transmission utility or the Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line up to a distance of 10 km. from the inter-connection point, in case power is supplied to DISCOMs under PPA. In case the distance between the inter connection point and point of grid connectivity is more than 10 KMs then the cost of transmission line for the distance beyond the 10 KMs shall be borne equally between the Independent Power Producer and the licensee. However, for canal based solar power projects, the transmission lines shall be provided by the utilities, free of cost, irrespective of the distance of the project from the substation, subject to the conditions that the solar power is generated and utilized within the state of Haryana and is counted towards RPO of the Distribution Licensee(s).

Transmission/Distribution Licensee shall bear the cost of Extra High Voltage (EHV)/ High Voltage (HV) transmission line up to a distance of 10 km and shared cost after 10KM, only in the case where the power is to be supplied to DISCOMs under approved PPA. RE Power producers installed by Independent Power Producers (IPP) for merchant sale or captive consumption, should bear the cost themselves. It is further clarified that the terms & conditions for cost of evacuation of power in respect of PPA entered into by DISCOMs/HPPC with RE Power Producers under competitive bidding, shall be governed by the terms of such PPA.

Further, the power utilities concerned, on being informed about the Scheduled Commissioning Date (SCOD), shall complete the evacuation system well in time.

68. (1) Notwithstanding anything contained in any other Regulation(s) notified by the Commission, Wheeling and Transmission Charges will be exempted for the entire life of the project from the date of commissioning for all Captive Solar Power Projects which have submitted applications to Haryana Renewable Energy Development Agency (HAREDA) for registration of project, purchased land or have taken land on lease for thirty years and have bought equipment & machinery or invested at least Rs. one crore per Mega Watt for purchase of equipment & machinery for setting up of such Captive Solar Power Projects till 13th February, 2019, while cross subsidy surcharges and additional surcharges are not applicable for Captive Solar Power Projects as per provisions of HERC Regulations (Electricity Act 2003). For determining the investment of Rs. One crore per MW, payment for equipment should be made into the bank accounts of equipment supplier before 13th February, 2019 and proof of the same is to be submitted.

(2) No waiver of wheeling and transmission charges, cross subsidy surcharges and additional surcharges shall be given to solar/non solar power Projects set up by IPP/generators for third party sale.

(3) Against the waivers, Renewable Purchase Obligation (RPO) benefit will be provided to Power Utilities.

However, the losses, as determined by the Commission, shall be recovered in kind by the Haryana Power Utilities. Further, banking charges as per these Regulations, shall be applicable so that the Haryana Power Utilities are not burdened un-reasonably.

69. **Cluster of rooftops of public / private buildings.** – Some percentage capacity (to be fixed from time to time) for the setting up of ground mounted mega watt scale grid connected power plants, to meet the solar RPO shall be developed by setting up of grid connected rooftop solar power plants. For that the offers shall be invited by Renewable Energy Department, Haryana/HAREDA from the independent power producers for development of grid connected rooftop solar power plants, of capacity ranging from 250 kWp to 1 MW, on a cluster of public private buildings on the last lowest tariff discovered and conveyed by HPPC. The entire power produced by power producers who set up plants within four years from the date of notification of this policy shall be purchased by the HPPC or any entity of Haryana Govt. Alternatively, the developer can also supply/provide the power for the captive use of the premises where the system is installed along with net meter and can sell the remaining power to HPPC or any entity of Haryana Govt. on the last lowest tariff discovered and conveyed by HPPC or to third party as per HERC regulations.

The rooftop space available in the government organization, institutions, buildings or vacant land of the same can also be provided on lease/rent to the Independent Power Producer/ RESCO developer for setting up of solar power projects.

For such sites the lease/rent rate shall be decided by a Committee of Deputy Commissioner of concerned district, PWD (B&R) Department and the Department owning the building. The developer can also supply/provide the power for the captive use of the premises where the system is installed along with net meter and can sell the remaining power to HPPC on the minimum last tariff discovered and conveyed by HPPC or to third party as per the HERC Regulations.

70. **Discount Factor.** – The discount factor for working out levelised generic tariff shall be the weighted average cost of capital (WACC).

Chapter – 15

Miscellaneous

71. The levelized tariff of the project calculated on the basis of the norms, specified in these regulations shall be the ceiling levelized tariff.
- 72.
- a) The provisions, if any, contained in any other regulation relating to reduction of contract demand shall not be applicable for Rooftop Solar PV Power.
 - b) In case of additional cost on account of GST, the generator can approach the Commission with necessary details for allowing additional tariff.
 - c) The imbalance charges as per Open Access Regulation will not be applicable for Solar Power generated and consumed within the State in real time. However, Open Access consumers/generators shall pay Rs. 1.50/unit for injection/drawal of solar power in the grid as reliability charges.
73. **Power to Relax.** – The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected may suo moto relax any of the provisions of these regulations or on an application made before it by an interested person.
74. **Issue of orders or directions.** – Subject to the provisions of the Act and these regulations, the Commission may, from time to time, issue orders and procedural directions with regard to the implementation of these regulations and specify the procedure to be followed on various matters, which the Commission has been empowered by the regulations to direct and matters incidental thereto.
75. **Power to amend.** – The Commission may, at any time, add, vary, modify or amend any of the provisions of these regulations.
76. **Power to remove difficulties.** – If any difficulty arises in giving effect to any of the provisions of these regulations, the Commission may, by general or special order, make such provisions, which in the opinion of the Commission are necessary or expedient to do so.
77. **Savings.** – Nothing in these Regulations shall limit the inherent power of the Commission to make such orders as may be necessary to meet the ends of justice or to prevent abuses of the process of law / statutes. Nothing in these Regulations shall bar

the Commission from adopting, any other procedure, which may be at variance with any of the provisions of these Regulations, as long as they are in conformity with the provisions of the Electricity Act, 2003 and the policies framed by the Central / State Government thereto.

Provided that the reasons for any such deviating shall be recorded in writing.

Provided also that nothing in these regulations shall, expressly or implicitly, bar the Commission from dealing with any matter under these Regulations or exercising any power under the Act for which no regulations have been framed.

Date: 27.04.2021	(Naresh Sardana)	(Pravindra Singh Chauhan)	(R.K. Pachnanda)
Place: Panchkula	Member	Member	Chairman

APPENDIX

Form-1.1: Template for (Wind power projects/ Small hydro projects/ Solar PV power projects/ Solar thermal power projects/ Renewable energy hybrid power projects /Renewable energy with storage projects)

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Capacity Utilization Factor (CUF)	%	
			Auxiliary Consumption	%	
			Commercial Operation Date (COD)	dd/mm/yyyy	
			Useful Life	Years	
2	Project Cost	Capital Cost	Normative Capital Cost	Rs. Crore/ MW	
			Capital Cost	Rs. Crore	
			Capital Subsidy, if any	Rs. Crore	
			Net Capital Cost	Rs. Crore	
3	Financial Assumption	Debt Equity	Tariff Period	Years	
			Debt	%	
			Equity	%	
		Debt Component	Total debt amount	Rs. Crore	
			Total equity amount	Rs. Crore	
			Loan Amount	Rs. Crore	
			Moratorium Period	Years	
			Repayment Period (incl moratorium)	Years	
			Interest Rate	%	
		Equity Component	Equity Amount	Rs. Crore	
			Return on Equity for First 20 years	% p.a.	
			Return on Equity after 20 years	% p.a.	
			Discount Rate	%	
		Depreciation	Dep Rate for 1st 15 years	%	
			Dep rate 16th year onwards	%	
		Incentives	GBI, if any	Rs. Crore	
			Period for GBI	Years	
4	O& M Expenses	Normative O&M Expense		Rs. Lakh/MW	
		O&M Expenses p.a.		Rs. Crore	
		Escalation Factor		%	
5	Working Capital	O&M Expenses		Month	
		Maintenance Spares	% of O&M Expenses	%	
		Receivables		Days	
		Interest on Woking Capital		% per annum	

Form-1.2: Template for (Biomass/MSW/RDF)

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Aux Consumption	%	
			PLF (1st year)	%	
			PLF (2nd year onwards)	%	
			Commercial Operation Date	dd/mm/yyyy	
			Useful Life	Years	
2	Project Cost	Capital Cost/ MW	Normative Capital Cost	Rs. Crore /MW	
			Capital Cost	Rs. Crore	
			Capital Subsidy, if any	Rs. Crore	
			Net Capital Cost	Rs. Crore	
3	Financial Assumption	Debt Equity	Tariff Period	Years	
			Debt	%	
			Equity	%	
		Debt Component	Total debt amount	Rs. Crore	
			Total equity amount	Rs. Crore	
			Loan Amount	Rs. Crore	
			Moratorium Period	Years	
			Repayment Period (including moratorium)	Years	
			Interest Rate	%	
		Equity Component	Equity Amount	Rs. Crore	
			Return on Equity for First 20 years	% p.a.	
			Return on Equity after 20 years	% p. a.	
			Discount Rate	%	
		Depreciation	Dep Rate for 1 st 15 years	%	
			Dep rate 16 th year onwards	%	
		Incentives	GBI, if any	Rs. Crore	
			Period for GBI	Years	
4	O&M Expenses	Normative O&M Expenses		Rs. Lakh/MW	
		O&M Expenses p.a.		Rs. Crore	
		Escalation Factor		%	
5	Working Capital	O&M Expenses		Month	
		Maintenance Spares	% of O&M Expenses	%	
		Receivables		Days	
		Interest on WC		%	

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
6	Fuel Related assumptions	Station Heat Rate	During 1st year	kcal/kWh	
			2nd year onwards	kcal/kWh	
		Fuel Type and mix	Biomass Fuel Type-1	%	
			Biomass Fuel Type-2	%	
			Municipal Solid Waste	%	
			Refuse Derived Fuel	%	
			Fossil Fuel (Coal)	%	
			GCV of Biomass Fuel Type-1	kcal/kWh	
			GCV of Biomass Fuel Type-2	kcal/kWh	
			GCV of MSW	kcal/kWh	
			GCV of RDF	kcal/kWh	
			GCV of Fossil Fuel (Coal)	kcal/kWh	
			Biomass Price (Fuel Type-1)/ Yr 1	Rs./MT	
			Biomass Price (Fuel Type-2)/ Yr 1	Rs./MT	
			MSW Price/ Yr 1	Rs./MT	
			RDF Price/ Yr 1	Rs./MT	
			Fossil Fuel (Coal) Price/ Yr 1	Rs./MT	
			Fuel Price Escalation Factor	% p.a.	

Form-2.1: Template for (Wind power projects or Solar PV power projects /Solar thermal power projects): Determination of Tariff Components

[illegible][illegible][illegible][illegible][illegible]

**Form-2.2: Template for (Biomass power projects, municipal solid waste based power projects, refuse derived fuel based power projects or non-fossil fuel based co-generation plants):
Determination of Tariff Components**

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[illegible][illegible][illegible][illegible]

Form-2.3: Template for (Small Hydro projects): Determination of Tariff Components

[illegible][illegible][illegible][illegible][illegible][illegible]

[illegible]