

**PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
SCO No. 220-221, SECTOR 34-A, CHANDIGARH**

**Petition No. 42 of 2014 (Suo-Motu)
Date of Order: 05.09.2014**

In the matter of: Determination of generic levellised generation tariff for Renewable Energy Power Projects for FY 2014-15.

Present: Smt. Romila Dubey, Chairperson
 Shri Virinder Singh, Member
 Shri Gurinder Jit Singh, Member

ORDER

The Punjab State Electricity Regulatory Commission (Commission) in its Order dated 19.07.2012 in petition no. 35 of 2012 (Suo-Motu) for adoption of Central Electricity Regulatory Commission (Terms & Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (CERC RE Regulations, 2012) and determination of generic levellised generation tariff for Renewable Energy Power Projects (RE Projects) for FY 2012-13, after due process, adopted the said Regulations with State specific modifications in respect of Non-fossil fuel based Co-generation Projects and also determined the generic levellised generation tariff for RE Projects for FY 2012-13. Subsequently, the Commission determined the generic / levellised generic tariff for RE Projects for FY 2013-14 vide its Order dated 25.06.2013 in petition no. 37 of 2013 (Suo-Motu).

2. Central Electricity Regulatory Commission (CERC) vide Notification No.L-1/94/CERC/2011 dated 18.03.2014 amended the CERC RE Regulations, 2012 called CERC (Terms & Conditions for Tariff determination from Renewable Energy Sources) (First Amendment) Regulations, 2014 (First Amendment, 2014). Further, CERC, vide its Order dated 15.05.2014 in petition no. SM/354/2013 (Suo-Motu), has determined the generic levellised generation tariff for RE Projects for FY 2014-15. The said CERC RE Regulations, 2012, First Amendment, 2014 and the Order dated 15.05.2014 are available on CERC website www.cercind.gov.in.

3. Keeping the above in view, the Commission directed that a Staff Paper be prepared for determination of the generic levellised generation tariff for RE Projects for FY 2014-15. Accordingly, the Staff Paper was prepared and a Public Notice published on 12.07.2014 in the leading newspapers namely, The Tribune,

Hindustan Times, The Indian Express, Punjabi Tribune and Amar Ujala inviting comments/suggestions from various stakeholders. The last date for receipt of comments/suggestions was 06.08.2014. Simultaneously, the Staff Paper was uploaded on the website of the Commission. Copy of the Public Notice was also sent to Government of Punjab, Punjab State Power Corporation Ltd., Punjab State Transmission Corporation Ltd. and Punjab Energy Development Agency for obtaining their views / comments on the Staff Paper. The Commission took on record and considered all the objections received before the Public Hearing held on 13.08.2014 for which a Public Notice was published in the aforementioned newspapers on 05.08.2014. The following firms / developers attended the Public Hearing and / or submitted their comments / suggestions:

- i) Malwa Power Private Limited, Faridabad.
- ii) Dee Development Engineers Limited, Faridabad.
- iii) Universal Bio-Mass Energy Pvt. Ltd., Distt. Ferozepur.
- iv) Biomass Power Producers Association, Mohali.
- v) Green Planet Energy Private Limited, Chandigarh.
- vi) Viaton Energy Pvt. Ltd., Hyderabad.
- vii) Punjab Biomass Power Ltd., Distt. Patiala.
- viii) Chadha Sugars and Industries Ltd., Noida.
- ix) Punjab Energy Development Agency, Chandigarh.
- x) Punjab State Power Corporation Limited, Patiala.

A summary of the issues raised and views of the Commission thereon are contained in Annexure-2 of this Order.

4. The Commission notes that in the First Amendment, 2014, enclosed as Annexure-1 of this Order, CERC has amended CERC RE Regulations, 2012 revising certain norms for Biomass Power Projects only, including Regulation 34 relating to normative capital cost for such projects. The provision in the amended Regulation and prior to the amendment is as under:

Regulation 34, 'Capital Cost':

Provision in CERC RE Regulations, 2012	Provision in First Amendment, 2014
The normative capital cost for the Biomass Power Projects based on Rankine cycle shall be ₹445 Lakh/MW (FY 2012-13 during first year of Control Period) and shall be linked to indexation formula as	The normative capital cost for the Biomass Power Projects based on Rankine cycle shall be as under: <ol style="list-style-type: none"> a. ₹ 540 Lakh/MW for project [other than rice straw and juliflora (plantation) based project] with water cooled condenser; b. ₹ 580 Lakh/MW for project [other than rice straw and juliflora (plantation) based project] with air cooled condenser;

outlined under Regulation 35.	<p>c. ₹ 590 Lakh/MW for rice straw and juliflora (plantation) based project with water cooled condenser;</p> <p>d. ₹ 630 Lakh/MW for rice straw and juliflora (plantation) based project with air cooled condenser.</p>
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As per CERC Order dated 15.05.2014, the aforementioned amended normative capital cost is for FY 2013-14 and linked to indexation mechanism as outlined under Regulation 35. During Public Hearing on 13.08.2014, it was brought out that there are technical problems in running the Biomass Power Projects with only rice straw as fuel, as such, the Commission feels that it may not be fruitful to set up such projects for the time being. Also, the Commission notes that the normative capital cost for Biomass Power Projects with air-cooled condensers is much higher and would lead to still higher tariff which may not be economical and therefore not in the interest of the consumers of the State. **Therefore, the Commission decides to adopt the normative capital cost for Biomass Power Projects with water cooled condensers as ₹ 540 Lakh/MW (FY 2013-14). Accordingly, the normative capital cost for FY 2014-15 for such projects works out to ₹ 544.19 Lakh/MW after applying indexation mechanism specified in CERC RE Regulations, 2012 adopted by the Commission in its Order dated 19.07.2012.**

Further, in case a developer proposes to set up a Biomass Power Project with air-cooled condenser, it may approach the Commission for tariff applicability/determination for its project which should be duly approved by Punjab Energy Development Agency (PEDA). Similarly, if a developer wishes to set up a Biomass Power Project with proven technology for exclusive use of rice straw, it may approach the Commission for tariff applicability / determination for its project also duly approved by PEDA in this regard.

5. Considering the comments/suggestions received in response to the Staff Paper pleading for adoption of the amended norms in line with the First Amendment, 2014, the Commission has also perused the Orders of other State Electricity Regulatory Commissions (SERCs) for determination of tariff for Biomass Power Projects to be commissioned in FY 2014-15, which have been pronounced after the notification of the said First Amendment, 2014. A brief summary of the norms adopted and tariff determined by CERC and SERCs is depicted in the Table hereunder:

Summary of the norms adopted and tariff determined by the SERCs in brief

Parameters/ norms	CERC	KERC	MERC	RERC	PSERC
	Order dated 15.05.2014	Order dated 10.07.2014	Order dated 07.07.2014	Order dated 23.07.2014	Now approved
Capital Cost ₹ Lakh/MW (with water cooled condenser)	544.19	580 (with air cooled condenser)	480.43	526 (including 15 Lakh/MW for transmission line)	544.19
Auxiliary Consumption (%)	10 (11 during first year of operation)	10	10	10 (10.5 during first year of operation)	10
SHR (kCal/kWh)	4200	3900	3800	4200/ 4300 (stabili- zation period)	4000
GCV (kCal/kg)	3100	3300	3611	3400	3300
Specific fuel consumption (Computed) (kg/kWh)	1.35	1.18	1.05	1.24	1.21
O&M Charges (₹ Lakh/MW)	42.29	23.20	26.75	6.5% (of base Capital Cost)	26.82
Tariff determined by CERC/SERCs (₹/kWh)	7.97* 7.85** 7.42*** 7.07****	5.15	6.63	6.10	6.95

* Punjab; ** Maharashtra; *** Others; **** Rajasthan

It is seen that the parameters/norms adopted by other SERCs for determining the tariff for Biomass Power Projects to be commissioned in FY 2014-15 are well comparable with those specified in the CERC RE Regulations, 2012 adopted by the Commission vide its Order dated 19.07.2012. Accordingly, the Commission decides to continue with the same for determining the tariff for Biomass Power Projects to be commissioned in FY 2014-15 including Station Heat Rate (SHR) as 4000 kCal/kWh specified in the ibid Regulations, which was proposed as 3750 kCal/kWh in the Staff Paper. In view of the above, the tariff for Biomass Power Projects for FY 2014-15 has been determined by the Commission in accordance with the CERC RE Regulations, 2012 adopted by the Commission in its Order dated 19.07.2012 read with the amendment in respect of normative capital cost brought out in para 4 above.

6. In the First Amendment, 2014, under Regulation 44 'Fuel Cost' of the CERC RE Regulations, 2012 for Biomass Power Projects, an amendment has been made by adding an alternative procedure for deciding the biomass fuel price annually by the appropriate Regulatory Commission through an independent survey which could be carried out by constituting a State Level Committee. In this regard, it is brought out that the Commission had after a detailed exercise fixed the biomass fuel price as ₹ 2500 per MT for FY 2010-11 in its Order dated 30.09.2010 in petition no. 32 of

2010 (Suo-Motu). Thereafter, it was fixed as ₹ 2625 per MT for FY 2011-12 with 5% normative escalation in Commission's Order dated 31.10.2011 in petition no. 59 of 2011 (Suo-Motu). The same was considered by CERC for fixing the biomass fuel price for FY 2012-13 as ₹ 2756 per MT for Punjab in its Order dated 27.03.2012 in petition no. 35/2012 (Suo-Motu). The Commission, in its Order dated 19.07.2012 in petition no. 35 of 2012 (Suo-Motu), considering it reasonable and justifiable also fixed the biomass fuel price as ₹ 2756 per MT for FY 2012-13. Thereafter, for FY 2013-14, the biomass fuel price was fixed by the Commission as ₹ 2953.09 per MT in its Order dated 25.06.2013 in petition no. 37 of 2013 (Suo-Motu) after taking into account the escalation as per the indexation mechanism, in line with CERC Order dated 28.02.2013 in petition no. 243/SM/2012(Suo-Motu). In this Order also, the biomass fuel price for FY 2014-15 has been fixed as ₹ 3275.29 per MT similarly considering the escalation as per the indexation mechanism, which is same as fixed by CERC in its Order dated 15.05.2014.

In view of above, the Commission feels that the fuel price indexation mechanism specified in Regulation 45 of CERC RE Tariff Regulations, 2012 adopted by the Commission is a preferable option, which is fair and just to the developers as well as distribution licensee. Accordingly, the Commission decides to continue with the existing provision in the said Regulations.

7. For Non-fossil fuel based Co-generation Projects, the biomass fuel mix price for FY 2013-14 was fixed by the Commission as ₹ 2525.56 per MT in its Order dated 25.06.2013. **For FY 2014-15, the same works out to ₹ 2801.11 per MT after taking into account the escalation as per the indexation mechanism specified in CERC RE Regulations, 2012 adopted by the Commission. Further, the fuel price for Biomass Gasifier Power Projects and Biogas based Power Projects for FY 2014-15 would be as per CERC Order dated 15.05.2014.**

8. The variable component of tariff for Biomass Power Projects, Non-fossil fuel based Co-generation Projects, Biomass Gasifier Power Projects and Biogas based Power Projects has been calculated based on the fuel cost for FY 2014-15 fixed in paras 6 and 7 above. The variable component/cost will change each year based on whether a RE project developer opts for fuel price indexation mechanism or escalation factor of 5% specified in the RE Regulations at the time of signing the PPA. Hence, while calculating the total applicable tariff for such projects levellisation of only fixed component and the variable component for the first year of operation i.e. FY 2014-15, are considered.

9. The tariff for Small Hydro Projects and Solar Power Projects (PV and Thermal) would be the same as determined by CERC in its Order dated 15.05.2014. As regards Wind Energy Projects, although there is no installable potential for such projects in the State as per the Wind Power Density Map in the Indian Wind Atlas published by Centre for Wind Energy Technology in August 2010, in the event of such a project being established, tariff as determined by CERC in its ibid Order for Wind Zone-1 would be applicable.

10. **Accordingly, the generic tariffs for various RE Projects/Technologies to be commissioned during FY 2014-15 will be as indicated in Table below:**

Generic Tariff for RE technologies for FY 2014-15

Levelling Fixed Cost (₹/kWh)	Variable Cost (FY 2014-15) (₹/kWh)	Applicable Tariff Rate (₹/kWh)	Benefit of Accelerated Depreciation, if availed (₹/kWh)	Net Applicable Tariff Rate upon adjusting for Accelerated Depreciation benefit (3-4) (₹/kWh)
1	2	3	4	5
Biomass Power Projects				
2.54	4.41	6.95	0.17	6.78
Non-Fossil Fuel based Co-Generation Projects				
2.10	4.07	6.17	0.14	6.03
Biomass Gasifier Power Projects				
2.51	4.55	7.06	0.13	6.93
Biogas based Power Projects				
3.39	4.01	7.40	0.25	7.15

Particulars	Applicable Tariff Rate (₹/kWh)	Benefit of Accelerated Depreciation, if availed (₹/kWh)	Net Applicable Tariff Rate upon adjusting for Accelerated Depreciation benefit (2-3) (₹/kWh)
1	2	3	4
Small Hydro Power Projects			
Below 5 MW	5.25	0.43	4.82
5 to 25 MW	4.47	0.39	4.08
Wind Energy Power Projects			
Wind Zone-1	6.34	0.34	6.00
Solar Power Projects			
Solar PV	7.72	0.77	6.95
Solar Thermal	11.88	1.23	10.65

11. The Commission observes that in accordance with Regulation 22 of the CERC RE Regulations 2012 adopted by the Commission, any incentive or subsidy offered by the Central or State Governments if availed by a RE Project developer is to be taken into consideration while determining tariff. Accordingly, any subsidy including capital subsidy/Central Financial Assistance or generation based incentive (which is a substitute for accelerated depreciation benefit) available to the developer shall be required to be passed on to the utility on actual disbursement basis. Although per unit reduction on account of accelerated depreciation benefit has been quantified, reduction in tariff on account of other incentives and subsidies has not been specified. However, such incentives/subsidies cannot be generically determined and will have to be worked out by PSPCL on case to case basis.

In the circumstances, Punjab State Power Corporation Ltd. will, before signing the power purchase agreement with the developer, work out subsidy availed by the developer as per the formulae indicated in the applicable scheme framed by MNRE and reduce the tariff to that extent for a period of 12 years. However, for Biomass Gasifier Power Projects and Biogas based Power Projects, the subsidy granted by MNRE has already been accounted for, in the tariff calculations.

12. Further, Para 6.4 (2) of the Tariff Policy notified by Ministry of Power, Govt. of India on 06.01.2006 provides that procurement of electricity from renewable sources of energy for future requirements shall be done, as far as possible, through competitive bidding under Section 63 of the Electricity Act, 2003. Accordingly, the Commission decides that if tariff based competitive bids are invited for purchase of electricity from RE Power Projects and the per unit tariff offered by the lowest bidder is less than the aforementioned tariff, a petition shall be filed by the procurer for consideration and adoption of tariff by the Commission under Section 63 of the Electricity Act, 2003. The Commission further decides that till such time tariff based competitive bidding is resorted to, bidding may be carried out on the basis of discount to be offered by the prospective bidders on the generic tariffs determined by the Commission in this Order, which would be the maximum/ceiling tariff for the purpose.

13. The Commission also observes that as per Regulation 21 of the CERC RE Regulations 2012 adopted by the Commission, the proceeds of carbon credit from approved Clean Development Mechanism (CDM) project are to be shared between the generating company and concerned beneficiaries in the second year onwards after the Commercial Operation Date (COD) of the generating station. Thus 100% of the gross proceeds on account of CDM benefit are to be retained by the project

developer in the first year after the COD and the share of beneficiaries shall be 10% in the second year and progressively increase by 10% every year till it reaches 50%, whereafter the proceeds are to be shared in equal proportion. It is, however, clarified that sharing of the CDM benefit, if any, shall be applicable after the sale proceeds from Carbon Emission Reductions (CERs) are received by the project developer and not from the date of commissioning.

Sd/-
(Gurinder Jit Singh)
Member

Sd/-
(Virinder Singh)
Member

Sd/-
(Romila Dubey)
Chairperson

Date: 05.09.2014
Place: Chandigarh

[Click here for Annexure-1](#)

[Click here for Annexure-2](#)