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

Petition No. 35 of 2012 (Suo Motu)
Date of Order: 19.7.2012

In the matter of: Adoption of Central Electricity Regulatory Commission (Terms & Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 and Determination of generic levellised generation tariff for Renewable Energy Power Projects for FY 2012-13

Present: Ms. Romila Dubey, Chairperson
Er. Virinder Singh, Member
Er. Gurinderjit Singh, Member

ORDER

1. The Punjab State Electricity Regulatory Commission (Commission) in its Order dated 30.9.2010 in Petition No. 32 of 2010 (Suo Motu) in the matter of Determination of generic levellised generation tariff for Renewable Energy Power Projects (other than Solar) after the due process adopted the Central Electricity Regulatory Commission (Terms & Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2009 (CERC RE Regulations 2009) as amended from time to time, with the modifications brought out in para 3B for biomass fuel price and para 4 in respect of plant load factor for Non-fossil fuel based Co-generation Projects of the said Order. In the same Order, the Commission also determined the generic levellised generation tariff for Renewable Energy Power Projects (other than Solar) commissioned during FY 2010-11. As regards tariffs for Solar Power Projects, the Commission had issued a separate Order on 7.7.2010 in Petition No.26 of 2010 (Suo Motu) read with Commission's Order dated 8.7.2011. Subsequently, the Commission, after due process, in its Order dated 31.10.2011 in Petition No.59 of 2011 (Suo Motu) determined the generic levellised tariff for Renewable Energy Power Projects commissioned in FY 2011-12. The Control Period for the said Regulations was upto 31.3.2012.

2. Recently, Central Electricity Regulatory Commission (CERC), vide Notification No. L-1/94/CERC/2011 dated 6.2.2012, has notified Central Electricity Regulatory Commission (Terms & Conditions for Tariff determination from Renewable Energy

Sources) Regulations 2012 (CERC RE Regulations 2012) available on the CERC website www.cercind.gov.in wherein besides specifying norms for the technologies covered in CERC RE Regulations 2009 i.e. Biomass, Non-fossil fuel based Co-generation, Small Hydro, Solar (PV & Thermal) and Wind, norms have also been specified for two more RE technologies i.e. Biomass gasifier and Biogas. These Regulations are effective from 1.4.2012 and shall remain in force for a period of 5 years subject to certain provisos specified in Regulation 5. Subsequently CERC has, in due discharge of the mandate under Regulation 8 of the CERC RE Regulations 2012, determined the generic levellised tariff of the Renewable Energy Power Projects (RE Projects) for the first year of the five years' Control Period starting w.e.f. 1.4.2012 i.e. FY 2012-13 in its Order dated 27.3.2012 in Petition No.35/2012 (Suo Motu).

3. In view of the aforementioned developments brought out in Para 2, the Commission, in order to formulate its own Regulations on the Terms & Conditions for Tariff determination from Renewable Energy Sources as also to determine generic levellised tariff(s) for RE Projects to be commissioned in FY 2012-13, directed that a Staff Paper on the same be prepared. Accordingly, the Staff Paper was prepared and a Public Notice published on 14.4.2012 in the leading news papers namely The Tribune, The Times of India, The Indian Express, Punjabi Tribune and Amar Ujala inviting comments/suggestions from various stakeholders by 15.5.2012. Simultaneously, the Staff Paper was uploaded on the website of the Commission. The Commission took on record and considered all the objections received. A Public Hearing in this regard was held by the Commission on 8.6.2012 after issuing a Public Notice which was published in the aforementioned news papers on 19.5.2012. Copies of the Public Notices were 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 following firms/developers submitted their comments/suggestions:

- i) Green Planet Energy Pvt. Ltd., Chandigarh.
- ii) Malwa Power (P) Ltd., Faridabad.
- iii) Indian Acrylics Ltd., Chandigarh.
- iv) Chadha Sugars & Industries Pvt. Ltd., Noida.
- v) Viaton Energy Pvt. Ltd., Mansa.
- vi) Purab Urja Pvt. Ltd., Amritsar.
- vii) Shakti Enviro Greens Pvt. Ltd., New Delhi.
- viii) A2Z Maintenance & Engineering Services Ltd., Gurgaon.

ix) Moser Baer Clean Energy Ltd., New Delhi.

x) Punjab Energy Development Agency, Chandigarh.

xi) Punjab Biomass Power Ltd., Navi Mumbai.

xii) Dee Development Engineers Ltd., Faridabad.

A summary of the issues raised and views of the Commission thereon are contained in Annexure-1 of this Order.

4. The Commission notes that the Staff Paper proposed to adopt the CERC RE Regulations 2012 with the following amendments/proposals:

i) Plant Load Factor (PLF) and number of operating days:

to fix PLF for Non-fossil fuel based Co-generation Projects as 80% (instead of 53% specified by CERC) as specified by the Commission in Para 4 of its Order dated 30.9.2010 wherein detailed justification was given for the same, fixing the number of operating days for such plants as 292 days with 155 days on bagasse and 137 days on biomass fuel.

ii) Fuel Cost and Fuel Cost Escalation:

to fix the fuel price for bagasse and biomass with normative annual escalation of 3% (instead of 5% specified by the CERC), thereby specifying the same for FY 2012-13 as Rs.1560 per MT and Rs.2704 per MT respectively.

iii) Return on Equity (RoE):

to specify RoE for the first ten years as 19% (instead of 20% specified by CERC). The RoE for 11th year onwards was specified in line with CERC RE Regulations 2012 i.e. 24%.

iv) Norms/parameters for projects with capacity less than 1 MW:

to specify norms/parameters for projects with capacity less than 1 MW (kW scale projects) on pro-rata basis of the norms for MW scale projects.

v) Competitive Bidding:

that the concerned agency/distribution licensee may also consider to procure electricity from renewable sources of energy through competitive bidding on the basis of discount offered by the bidders on the generic tariff determined by the Commission considering the same as the maximum tariff(s) till such time tariff based competitive bidding is resorted to. The Staff Paper proposal was based on para 6.4 of the Tariff Policy notified on 6.1.2006 by Ministry of Power, Govt. of India, which provides for procurement of future requirement of electricity from renewable sources of energy, as far as possible, through competitive bidding under Section 63 of the Electricity Act, 2003.

The Commission notes that CERC carried out an exhaustive exercise and after following the due process, it notified CERC RE Regulations 2012 on 6.2.2012 and subsequently issued its Order on 27.3.2012 for determination of State specific tariffs for different types of RE projects/technologies for FY 2012-13. In the circumstances, it is felt that undertaking the entire exercise afresh is not necessary.

5. Accordingly, in order to adopt CERC RE Regulations 2012, the Commission's findings on the aforementioned issues, after taking into consideration the comments/suggestions of the stakeholders, are as hereunder:

i) <u>Plant Load Factor (PLF) and number of operating days for Non-fossil fuel based Co-generation:</u>

The Commission notes that the Staff Paper contained a proposal to continue with the PLF of 80% for Non-fossil fuel based Co-generation projects with 155 operating days on bagasse and 137 operating days on biomass mix fuel on the basis of the same having been so specified in the Commission's Order dated 30.9.2010.

The stakeholder(s) have suggested that keeping in view the PLF of 53% for Non-fossil fuel based Co-generation Projects specified in the CERC RE Regulations 2012, the Commission may reconsider the PLF of 80% proposed in the Staff Paper. It has been further suggested that number of operating days on bagasse operation earlier fixed by the Commission as 155 days and proposed in Staff Paper may also be reviewed, being un-achievable.

The Commission notes that the PLF of 80% for Non fossil fuel based Co-generation Projects was specified by the Commission in the earlier control period stating that the methodology of fixing the PLF for such plants on the basis of the number of cane crushing days for production of bagasse including off-season days adopted by CERC may not be realistic as it did not take into account the possibility that these plants could operate for the remaining portion of the year on other biomass fuel available in the State. In fact one of the objectors had specifically referred to the need for separately determining fuel cost of biomass in the case of Co-generation projects so that composite tariff during the crushing season and thereafter for the off-season could be determined. Considering the above, the Commission had observed that there was no reason why Co-generation projects should not be able to achieve the normative PLF as applicable to biomass based projects. Accordingly, with a view to optimize the generation from these plants besides providing additional benefits for the developer(s), the Commission had fixed the PLF as 80% for Non-fossil fuel based Co-generation projects. **The Commission is of the considered opinion that there is need to optimize generation from these Co-generation plants during off-season and as such specifies a PLF of 80% in case of Non-fossil fuel based Co-generation projects.**

However, in order to re-assess the number of operating days on bagasse operation for Non-fossil fuel based Co-generation Projects, the Commission called for the data/information afresh from the office of the Cane Commissioner, Punjab with regard to the number of operating days of the sugar mills in the

State. On the basis of the data so received, the average number of operating days for 3 years period (2009-10 to 2011-12) works out to 66 days for co-operative sugar mills & 97 days for private sugar mills with an overall average of 80 days. Similarly for 5 years period (2007-08 to 2011-12) and 6 years period (2006-07 to 2011-12), the co-operative sugar mills operated for an average of 83 and 82 days respectively and private sugar mills operated for an average of 105 and 112 days respectively. The overall average for all the co-operative and private sector sugar mills taken together for 3 years, 5 years & 6 years works out to 80, 88 & 93 days respectively.

The Commission notes that Punjab Energy Development Agency (PEDA), the designated Nodal Agency for promoting and developing the renewable energy projects in the State by Govt. of Punjab, has also suggested to the Commission to consider the crushing season of 80 days.

Taking a holistic view, the Commission decides to fix the number of operating days for the Non-fossil fuel based Co-generation Projects on bagasse operation as 100 days [80 days (crushing) + 25% i.e. 20 days (off-season)] and the remaining period during the year on biomass fuel mix for operation of such plants at a PLF of 80%.

Accordingly, tariff for Non-fossil fuel based Co-generation Projects has been determined on the basis of weighted average of various parameters for bagasse and biomass.

ii) <u>Fuel Cost and Fuel Cost Escalation:</u>

The Commission observes that the Staff Paper contained a proposal to adopt normative escalation in the bagasse and biomass fuel mix prices @ 3% per annum in place of 5% per annum in the current control period specified in the CERC RE Regulations 2012 on the premise that due to good harvesting season(s) in the region in the recent past, the fuel prices may not increase as sharply as in the past years.

Various stakeholders have suggested to adopt the normative fuel cost escalation @ 5% per annum as per CERC RE Regulations 2012 instead of 3% proposed in the Staff Paper. It has been averred that the projects coming up in FY 2012-13 onwards would be at a disadvantage as compared to the projects commissioned earlier as such projects are eligible for 5% annual escalation. It has been further reasoned that besides the increase in general inflation, higher cost of labour, transportation etc., competitive use of biomass/bagasse in industry and otherwise as a fuel, its availability is becoming scarce resulting in higher market price.

The Commission is inclined to accept the rationale given by the developers and decides to allow fuel cost escalation @ 5% per annum in line with the CERC RE Regulations 2012.

With regard to the fuel prices, the Commission observes that the Staff Paper contained the proposal to fix the biomass fuel mix price as Rs.2704 per MT for FY 2012-13 after applying 3% annual escalation on the biomass fuel mix price of Rs.2625 per MT fixed by the Commission for FY 2011-12 in its Order dated 31.10.2011. Similarly, the bagasse price was proposed as Rs.1560 per MT for FY 2012-13 in the Staff Paper after applying 3% annual escalation on the bagasse price of Rs.1515 per MT for FY 2011-12 fixed by the Commission in the same Order.

The Commission notes that a few developers in their comments /suggestions have pleaded for enhancement in the normative price for the biomass fuel. Punjab Energy Development Agency has suggested that the biomass and bagasse prices as fixed by CERC should be adopted.

In this regard, it is brought out that the Commission had, after a detailed exercise, determined the price of biomass fuel mix as Rs.2500 per MT for FY 2010-11 in its Order dated 30.9.2010 and thereafter for FY 2011-12, the same was fixed at Rs.2625 per MT with escalation @ 5% per annum in the Commission's Order dated 31.10.2011.

The Commission notes that in CERC RE Regulations 2012, the biomass fuel mix price for FY 2012-13 has been fixed as the median of three costs i.e. equivalent heat value approach for landed cost of coal for thermal power stations at respective States, SERCs specified norms for FY 2011-12 escalated with 5% and MNRE recommended price. In case of Punjab, these costs are Rs.2399 per MT, Rs.2756 per MT and Rs.2805 per MT respectively. The SERC determined price has been taken on the basis of Rs.2500 per MT for FY 2010-11 (fixed by the PSERC) and escalated @ 5% per annum for 2 years i.e. Rs.2756 per MT for FY 2012-13. **The median value being Rs.2756 per MT, the same has been specified as the biomass fuel mix price for FY 2012-13, which the Commission finds reasonable and justifiable.**

As regards bagasse price, the Commission had adopted the price of bagasse as Rs.1515 per MT for FY 2011-12 in its Order dated 31.10.2011. **Therefore, for FY 2012-13, agreeing to the comments/suggestions of the stakeholders for an escalation factor of 5%, the bagasse price is fixed as Rs.1591 per MT.**

Accordingly, the weighted average price of fuel for Non-fossil fuel based Co-generation projects works out to Rs.2357 per MT which is adopted by the Commission for tariff determination for FY 2012-13.

iii) <u>Return on Equity (RoE):</u>

The Commission notes that in the Staff Paper, it was proposed to continue with the existing normative RoE at 19% (pre-tax) per annum for the first 10 years and 24% (pre-tax) per annum from 11th year onwards.

Various stakeholders have suggested to adopt the RoE for the first 10 years as 20% as per CERC RE Regulations 2012. They have brought out that due to increase in interest rates by lenders and increase in MAT rate, there is need to review the proposal contained in the Staff Paper and allow 20% RoE for first ten years.

The Commission notes the provision in the Statement of Objects and Reasons dated 6.2.2012 (SOR) for CERC RE Regulations 2012. The SOR provides that the returns for renewable energy generation projects have been specified in pre-tax terms alone and prevalent tax regime including recent revision in terms of MAT rate and Corporate tax rate has been factored in while specifying Pre-Tax Return on Equity. Normative Return on Equity of 20% per annum for the first 10 years has been specified considering 16% post tax return on equity grossed up with prevailing MAT @20% [(Normal rate 18.5% + Surcharge 5% +

Education Cess 3%) = 16%/(1-20%)] and 24% per annum 11th year onward considering prevailing Corporate tax @ 32.445% (Normal rate 30% + Surcharge 5% + Education Cess 3%). Accordingly, pre-tax RoE has been stipulated at 20% per annum (pre-tax) for initial 10 years and at 24% per annum (pre-tax) for subsequent period. It has been further clarified in the SOR that any gains or losses on account of any change in tax rate, MAT or Corporate Tax, as the case may be, shall be to the account of the RE project developer since the returns have been regulated in pre-tax terms.

In view of the above, the Commission allows the normative RoE at 20% (pre-tax) per annum for the first ten years and 24% (pre-tax) per annum 11th year onwards in line with CERC RE Regulations 2012.

iv) Norms/parameters for projects less than 1 MW:

The Commission notes that in the Staff Paper, it was proposed that for determining the tariff in respect of plants with capacity less than 1 MW, the Commission may consider fixing various parameters on pro-rata basis for determining the tariff(s) for such power project(s).

The developers have suggested to specify separate norms for tariff determination for projects having capacity less than 1 MW.

The Commission notes that the Hon'ble Appellate Tribunal for Electricity vide its Judgment dated 3.4.2012 in Appeal No.146 of 2011 in the case of Shree Krishna Captive Energy Pvt. Ltd. Vs HVPNL and others for a 400 kilowatt biogas based project has given its findings on the issues raised by the Appellant in respect of Capital cost, Operation & Maintenance (O&M) Expenses, Auxiliary consumption, Interest on Term Loan and Life of the plant. In the said Judgment, the Hon'ble APTEL while stating that the Tribunal has not found fault with the State Commission's Impugned Order (Order dated 5.7.2011 of Haryana Electricity Regulatory Commission), recommended to the HERC to reconsider the tariff fixed for the Appellant's plant. The Hon'ble APTEL considered the Capital cost as Rs.440 Lac and O&M Expenses as Rs.16 Lac for the 400 kW Plant i.e. by computing the same on the basis of Rs.1100 Lac per MW and Rs.40 Lac per MW prorated for 400 kW Plant respectively specified in the CERC RE Regulations 2012. As regards the remaining three parameters i.e. Auxiliary consumption, Interest on Term Loan and Life of the plant, the same have been considered by the Hon'ble APTEL to be as per CERC RE Regulations 2012. This has also been suggested by PEDA for all types of renewable energy projects.

Accordingly, the Commission adopts the methodology specified by Hon'ble APTEL for projects having capacity less than 1 MW i.e. fixing the requisite norms/parameters on pro-rata basis.

v) Competitive Bidding:

The Staff Paper contained a proposal that the tariff(s) to be determined by the Commission for FY 2012-13 shall be considered the maximum tariff(s) and procurement of electricity from renewable sources of energy carried out through competitive bidding on the basis of discount offered by the bidders on the generic tariff determined by the Commission till such time tariff based competitive bidding is resorted to. In this regard, para 6.4 (2) of the Tariff Policy notified by Ministry of Power, Govt. of India on 6.1.2006 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.

The developers have suggested that it is not the appropriate time for implementing the competitive bidding for procuring power from RE Projects.

The Commission observes that in addition to the aforementioned provision in the Tariff Policy for future procurement of power from renewable energy sources, as far as possible, through competitive bidding, it has been provided in the SOR for CERC RE Regulations 2012 that there is no prohibition to invite competitive bids and in such a case the tariff determined under the CERC RE Regulations 2012 will not apply.

The Commission notes that Ministry of Power has, in February 2012, constituted a Committee to evolve competitive bidding guidelines for procurement of power from renewable energy projects by distribution licensees. The Commission further notes that NTPC's Vidyut Vyapar Nigam Ltd (NVVN) invited bids on the basis of discount offered by the bidders on the generic tariff determined by CERC for purchase of renewable energy from solar power projects under Jawaharlal Nehru National Solar Mission (JNNSM) for Phase-I, Batch-I in 2010-11 and Phase-I, Batch-II in 2011-12.

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.

6. The Commission, therefore, adopts the CERC RE Regulations 2012 with the modifications discussed in Para 5 above in respect of PLF and number of operating days for Non-fossil fuel based Co-generation Projects and bagasse price. Accordingly, the applicable generic tariff for Non-fossil fuel based Co-generation Projects for FY 2012-13 has been worked out by the Commission whereas tariffs for other technologies would be same as determined by CERC in its Order dated 27.3.2012.

7. In case of Biomass based Power Projects, Non-fossil fuel based Co-generation Projects, Biomass Gasifier Power Projects and Biogas based Power Projects, variable component of tariff is calculated based on the fuel cost for FY 2012-13. This variable component will change each year based on whether a Renewable Energy Power Project developer opts for fuel price indexation or escalation factor of 5%. 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. 2012-13), are considered.

8. As regards Wind Power Projects, the Commission had, in its Order dated 31.10.2011 [Petition No.59 of 2011(Suo-Motu)] while specifying the tariffs for the year 2011-12, observed that Ministry of New & Renewable Energy, Govt. of India vide circular no. 51/55/2011-WE dated 1.8.2011 had done away with the minimum requirement of Wind Power Density (WPD) of 200 watt/m^2 at 50 metre hub height for suitability of Wind Power Projects. As such, in the event of such a project being established, the specified tariff for Wind Power Projects would be applicable.

9. **Accordingly, the generic tariffs for the various types of RE projects/technologies to be commissioned during the year 2012-13 will be as indicated in Table-1:**

Table-1

Generic Tariff for RE technologies for FY 2012-13

Levellised Fixed Cost (Rs./kWh)	Variable Cost (FY 2012-13) (Rs./kWh)	Applicable Tariff Rate (Rs./kWh)	Benefit of Accelerated Depreciation, if availed (Rs./kWh)	Net Applicable Tariff Rate upon adjusting for Accelerated Depreciation benefit (3-4) (Rs./kWh)
1	2	3	4	5
Biomass based Power Projects				
2.12	3.71	5.83	0.13	5.70
Non-Fossil Fuel based Co-Generation Projects				
1.90	3.42	5.32	0.12	5.20
Biomass Gasifier Power Projects				
2.36	3.83	6.19	0.11	6.08
Biogas based Power Projects				
3.06	3.38	6.44	0.21	6.23

Particulars	Applicable Tariff Rate (Rs./kWh)	Benefit of Accelerated Depreciation, if availed (Rs./kWh)	Net Applicable Tariff Rate upon adjusting for Accelerated Depreciation benefit (2-3) (Rs./kWh)
1	2	3	4
Small Hydro Power Projects			
Below 5 MW	4.88	0.38	4.50
5 to 25 MW	4.16	0.34	3.82
Wind Energy Power Projects			
Wind Zone-1	5.96	0.60	5.36
Solar Power Projects			
Solar PV	10.39	1.04	9.35
Solar Thermal	12.46	1.24	11.22

10. Before parting with the Order, the Commission observes that in accordance with Regulation 22 of the CERC RE Regulations 2012, any incentive or subsidy offered by the Central or State Governments if availed by a RE developer is to be deducted while determining tariff. 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 can not be generically determined and will have to be worked out on the basis of project capacity. In the SOR for CERC RE Regulations 2012, it has been provided that any subsidy including capital subsidy/Central Financial Assistance or generation based incentive (which is a substitute for accelerated depreciation benefits) available to the developer shall require to be passed on to the utilities on actual disbursement 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 Ministry of New & Renewable Energy, Govt. of India (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.

11. The Commission further observes that as per Regulation 21 of the CERC RE Regulations 2012, 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.

In the comments/suggestions by the stakeholders, it has been brought out that process of approval and receipt of CDM benefit takes time and therefore the sharing of the same should be on actual receipt of the same. The Commission notes that in the SOR for CERC RE Regulations 2012, it has been provided 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 and accordingly, the Commission agrees with the same for implementation.

Sd/-	Sd/-	Sd/-
(Gurinderjit Singh) **Member**	**(Virinder Singh)** **Member**	**(Romila Dubey)** **Chairperson**

Date: 19.7.2012
Place: Chandigarh

Click here for Annexure-1