

**PUNJAB STATE ELECTRICITY REGULATORY COMMISSION
SITE NO.3, SECTOR 18-A, MADHYA MARG, CHANDIGARH**

**Petition No.17 of 2019(Suo-Motu)
Date of Order:13.09.2019**

In the matter of: Determination/fixation of levelised generic tariff for Renewable Energy Power Projects for FY2019-20.

Present: Ms.Kusumjit Sidhu, Chairperson
Sh.S.S.Sarna, Member
Ms. Anjuli Chandra, Member

Order

The Central Electricity Regulatory Commission, vide Notification dated 17.04.2017 notified CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017 (CERC RE Regulations, 2017) and vide Order dated 31.05.2017 determined the levelised generic tariff for Renewable Energy projects for FY 2017-18. These Regulations are effective from 01.04.2017 and shall remain in force for a period of 3 years from the date of commencement i.e. upto 31.03.2020. These Regulations are applicable until notification of the revised Regulations, for which the exercise is to be initiated six months prior to the expiry of these Regulations. The tariff determined under these Regulations for the RE Projects commissioned during the control period shall continue to be applicable for the entire duration of the Tariff Period as specified in the Regulations. The Punjab State Electricity Regulatory Commission vide Order dated 31.10.2017 in petition no. 50 of 2017 (Suo-Motu) adopted the CERC RE Regulations, 2017 and determined the levelised generic tariff for FY 2017-18.

2. CERC vide Order dated 28.03.2018 in petition no. 02/SM/2018 (Suo-Motu) determined the levellised generic tariff for RE Projects for FY 2018-19. The Commission vide Order dated 09.08.2018 in petition no. 23 of 2018 (Suo-Motu) determined the levellised generic tariff for RE projects for FY 2018-19 in line with the CERC RE Regulations, 2017 and CERC aforesaid Order dated 28.03.2018. The aforesaid Regulations and Orders are available on the respective websites of CERC i.e. www.cercind.gov.in and PSERC i.e. www.pserc.gov.in

3. CERC vide Order dated 19.03.2019 in petition no. 1/SM/2019 (Suo-Motu) has determined the State specific levellised generic tariff for different types/technologies of RE projects for FY 2019-20 as per the norms/parameters specified in CERC RE Regulations, 2017. A Staff Paper for determination of the levellised generic tariff for RE projects for FY 2019-20 was prepared based on this. The Staff Paper was uploaded on the website of the Commission and simultaneously a public notice was published on 29.05.2019 in the leading newspapers namely, The Tribune, Punjab Kesri and Ajit inviting suggestions & objections on the Staff Paper from various stakeholders. The last date for receipt of suggestions & objections was 21.06.2019. A copy of the public notice along with Staff Paper was also sent to Department of Power, GoP, Department of NRES, GoP, Punjab State Power Corporation Ltd., Punjab State Transmission Corporation Ltd. and Punjab Energy Development Agency for obtaining their views/comments on the same. One suggestion/objection was received by the due date and another three after the due date. The Commission decided to consider all the suggestions/objections. The list of 4 objectors is as hereunder:

- i) Punjab Energy Development Agency, Chandigarh (PEDA).

- ii) Shree Ganesh Edibles (P) Ltd., Khanna (SGEL).
- iii) Biomass Power Producers Association, Mohali (BPPA).
- iv) Punjab State Power Corporation Limited, Patiala (PSPCL).

The public hearing was held on 05.07.2019 which was attended by the representatives of PSPCL, PEDA & BPPA. The Commission has carefully gone through the suggestions and objections filed by various objectors. A summary of the issues raised and view of the Commission thereon are contained in Annexure-1 of this Order.

4. The salient norms / parameters as specified in the CERC RE Regulations, 2017 for the State of Punjab and as adopted by the Commission, are as under:

a) Capital cost of RE Projects

| Renewable Energy Projects | FY 2019-20 (Rs.Lakh/MW) |
|--|------------------------------------|
| 1. Biomass based Power Projects | |
| i) Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser | 559.03 |
| ii) Project [other than rice straw and juliflora (plantation) based project] with air cooled condenser | 600.44 |
| iii) For rice straw and juliflora (plantation) based project with water cooled condenser | 610.80 |
| iv) For rice straw and juliflora (plantation) based project with air cooled condenser | 652.20 |
| 2. Non-fossil fuel based Co-generation Projects | 492.50 |
| 3. Biomass Gasifier based Power Projects (after taking into account capital subsidy of Rs. 150 lakh/MW) | 442.88 |
| 4. Biogas based Power Projects (after taking into account capital subsidy of Rs. 300 lakh/MW) | 885.76 |
| 5. Small Hydro Power Projects | |
| i) Small Hydro Power Projects (below 5 MW) | 779 |
| ii) Small Hydro Power Projects (5 MW to 25 MW) | 707 |

b) Debt Equity Ratio

| Renewable Energy Projects | FY 2019-20 | |
|---|--------------------|----------------------|
| | Debt (Rs. Lakh) | Equity (Rs. Lakh) |
| 1. Biomass based Power Projects | | |
| i) Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser | 391.32 | 167.71 |
| ii) Project [other than rice straw and juliflora (plantation) based project] with air cooled condenser | 420.31 | 180.13 |
| iii) For rice straw and juliflora (plantation) based project with water cooled condenser | 427.56 | 183.24 |
| iv) For rice straw and juliflora (plantation) based project with air cooled condenser | 456.54 | 195.66 |
| 2. Non-fossil fuel based Co-generation Projects | 344.75 | 147.75 |
| 3. Biomass Gasifier based Power Projects | 310.02 | 132.87 |
| 4. Biogas based Power Projects | 620.04 | 265.73 |
| 5. Small Hydro Power Projects | | |
| i) Small Hydro Power Projects (below 5 MW) | 545.30 | 233.70 |
| ii) Small Hydro Power Projects (5 MW to 25 MW) | 494.90 | 212.10 |

c) O&M Expenses

| Renewable Energy Projects | FY 2019-20* (Rs. Lakh/MW) |
|--|------------------------------|
| 1. Biomass based Power Projects | 44.71 |
| 2. Non-fossil fuel based Co-generation Projects | 23.62 |
| 3. Biomass Gasifier based Power Projects | 59.05 |
| 4. Biogas based Power Projects | 59.05 |
| 5. Small Hydro Power Projects | |
| i) Small Hydro Power Projects (below 5 MW) | 32.41 |
| ii) Small Hydro Power Projects (5 MW to 25 MW) | 23.47 |

*O&M expenses for FY 2018-19 escalated by 5.72% per annum.

d) Auxiliary Power Consumption

| Renewable Energy Projects | Auxiliary Consumption |
|---|--|
| 1. Biomass based Power Projects | |
| i) using water cooled condenser | i) During first year of operation : 11% ii) From 2 nd year onwards : 10% |
| ii) using air cooled condenser | i) During first year of operation : 13% ii) From 2 nd year onwards : 12% |
| 2. Non-fossil fuel co-generation | 8.5% |
| 3. Biomass Gasifier based Power Projects | 10% |

| | |
|---------------------------------------|-----|
| 4. Biogas based Power Projects | 12% |
| 5. Small Hydro Power Projects | 1% |

e) **Station Heat Rate**

| Renewable Energy Projects | SHR (kCal / kWh) |
|---|---|
| 1. Biomass based Power Projects | a. 4200 : for project using travelling grate boilers; b. 4125 : for project using AFBC boilers |
| 2. Non-fossil fuel based co-generation (for power component) | 3600 |

f) **PLF/CUF of Biomass, Biomass Gasifier, Biogas projects, Non-fossil fuel co-generation projects and Small Hydro Power Projects**

| Renewable Energy Projects | PLF |
|--|--|
| 1. Biomass based Power Projects | 60% |
| a) During stabilization (6 months) | 70% |
| b) During remaining period of the first year | 80% |
| c) Second year onwards | |
| 2. Biomass Gasifier based Power Projects | 85% |
| 3. Biogas based Power Projects | 90% |
| 4. Non-fossil fuel based co-generation projects | 53% {CERC has taken the PLF as 53% for the State of Punjab considering the load factor 92% and the operation period as 210 days [150 days (crushing) + 60 days (off-season)]} |
| 5. Small Hydro Power Projects | 30% (CUF) |

g) **Calorific Value of the Fuel**

| Renewable Energy Projects | Calorific Value (kCal /kg) |
|---|-----------------------------------|
| 1. Biomass based Power Projects | 3100 |
| 2. Non-fossil fuel based co-generation (for power component) | 2250 (for bagasse) |

h) **Fuel Cost for RE Projects**

| Renewable Energy Projects | FY 2019-20* (Rs. /MT) |
|--|------------------------------|
| 1. Biomass fuel price for Biomass based Power Projects, Non-fossil fuel (Biomass) based Co-generation | 3771.17 |

| | |
|--|---------|
| Projects and Biomass Gasifier Power Projects | |
| 2. Bagasse price for Non-fossil fuel based Co-generation Projects | 2238.62 |
| 3. Fuel price for Biogas based Power Projects | 1354.66 |

*Fuel cost of FY 2018-19 escalated by 5% per annum.

i) Useful Life of Renewable Energy Projects

| | |
|--|--------------|
| Renewable Energy Projects | Years |
| 1. Small Hydro Power Projects | 35 |
| 2. Biomass based power projects | 20 |
| 3. Non-fossil fuel based co-generation Projects | 20 |
| 4. Biomass Gasifier based Power Projects | 20 |
| 5. Biogas based Power Projects | 20 |

5. Considering the norms/parameters as above as specified in the CERC RE Regulations, 2017 adopted by the Commission for various RE Technologies i.e. Biomass based Power Projects, Non-fossil fuel based Co-Generation Projects, Biomass Gasifier based Power Projects, Biogas based Power Projects and Small Hydro Power Projects for the State of Punjab shall be as hereunder:

Generic Tariff for RE technologies for FY 2019-20

| Levelling Fixed Cost | Variable Cost (FY 2019-20) | Applicable Tariff Rate (FY 2019-20) | Benefit of Accelerated Depreciation, if availed | Net Levelling Tariff Rate upon adjusting for Accelerated Depreciation benefit (3-4) |
|--|-----------------------------------|--|--|--|
| (Rs./kWh) | (Rs./kWh) | (Rs./kWh) | (Rs./kWh) | (Rs./kWh) |
| 1 | 2 | 3 | 4 | 5 |
| Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with water cooled condenser and travelling grate boiler | | | | |
| 2.90 | 5.74 | 8.64 | 0.11 | 8.53 |
| Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with air cooled condenser and travelling grate boiler | | | | |
| 3.05 | 5.87 | 8.93 | 0.13 | 8.80 |
| Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with water cooled condenser and travelling grate boiler | | | | |
| 3.01 | 5.74 | 8.75 | 0.13 | 8.63 |
| Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with air cooled condenser and travelling grate boiler | | | | |
| 3.18 | 5.87 | 9.05 | 0.14 | 8.91 |

| | | | | |
|--|-------|------|------|------|
| Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with water cooled condenser and AFBC boiler | | | | |
| 2.89 | 5.64 | 8.53 | 0.11 | 8.41 |
| Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with air cooled condenser and AFBC boiler | | | | |
| 3.05 | 5.77 | 8.81 | 0.13 | 8.69 |
| Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with water cooled condenser and AFBC boiler | | | | |
| 3.00 | 5.64 | 8.64 | 0.13 | 8.51 |
| Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with air cooled condenser and AFBC boiler | | | | |
| 3.17 | 5.77 | 8.93 | 0.14 | 8.80 |
| Bagasse based Co-Generation Projects | | | | |
| 2.85 | 3.91* | 6.76 | 0.15 | 6.61 |
| Biomass Gasifier Power Projects | | | | |
| 2.69 | 5.24 | 7.93 | 0.08 | 7.85 |
| Biogas based Power Projects | | | | |
| 3.43 | 4.40 | 7.83 | 0.19 | 7.64 |

| Particulars | Levelling Total Tariff (FY 2019-20) (Rs./kWh) |
|-----------------------------------|--|
| Small Hydro Power Projects | |
| Below 5 MW | 6.23 |
| 5 to 25 MW | 5.21 |

**As per Regulation 49(2) of CERC RE Regulations 2017 adopted by the Commission, for use of biomass other than bagasse in co-generation projects, the biomass prices as specified under Regulation 42 shall be applicable i.e. Rs. 3771.17 per MT(FY 2019-20). Accordingly, the Variable Cost for such co-generation projects shall be Rs. 4.79/kWh, applicable on the electricity generated exclusively using biomass (other than bagasse).*

6. For renewable energy technologies other than above such as Solar PV, Solar Thermal, Wind, MSW and RDF based projects with Rankine cycle technology, Biomass gasifier & Biogas based projects (if project developer opts for project specific tariff), Hybrid Solar Thermal Power projects, other Hybrid projects and any other new renewable energy technology approved by MNRE, as per Regulation 7, project specific tariff shall be determined by the Commission, on case to case basis, as per provisions in the CERC RE Regulations, 2017 adopted by the Commission.

7. In terms of Regulation '84. Deviation from norms', of the said Regulations, Tariff for sale of electricity generated from a generating station based on renewable energy sources may also be agreed between a generating company and Punjab State Power Corporation Limited (PSPCL), in deviation from the norms specified in these regulations subject to the conditions that the levellised tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levellised tariff calculated on the basis of the norms specified in these regulations.

8. The revised Tariff Policy notified by the Ministry of Power on 28.01.2016 provides under clause 6.4(2) as under:

“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..... ”

8.1 The Commission decides that 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.

8.2 For the technologies for which levellised generic tariff has not been determined by the Commission in this Order, tariff based competitive bidding may be resorted to for allotment of projects except for waste to energy projects. A petition shall be filed before the

Commission by the procurer for consideration and adoption of tariff determined in the competitive bidding process.

9. The Commission observes that in accordance with Regulation 23 of the said Regulations, any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefits if availed by a RE Project developer is to be taken into consideration while determining tariff. Accordingly, any incentive or subsidy offered by the Central or State Government available to the developer shall be required to be passed on to PSPCL on actual disbursement basis resulting in appropriate reduction in 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. Such incentives/ subsidies cannot be generically determined and will have to be worked out by PSPCL on case to case basis. In the circumstances, PSPCL will, before signing the PPA 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. However, for Biomass Gasifier based Power Projects and Biogas based Power Projects, the capital subsidy granted by MNRE has already been accounted for in the tariff calculations.

Sd/-

(Anjuli Chandra)
Member

Sd/-

(S.S. Sarna)
Member

Sd/-

(Kusumjit Sidhu)
Chairperson

Chandigarh
Dated: 13.09.2019

[Click here for Annexure-1](#)