

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

**Petition No. 53 of 2016
Date of Order: 06.12.2016**

Present: Shri D.S. Bains, Chairman
Shri S.S. Sarna, Member

In the matter of: Petition under Section 62 of The Electricity Act, 2003 read with Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (as adopted by the Commission) requesting the Commission to determine the tariff under the provisions of the said Regulations with respect to rice straw based biomass plants to be set up by the petitioner.

And

In the matter of: Sukhbir Agro Energy Limited, Registered Office: Faridkot Road, Guruharsahai, District Ferozepur, Punjab-152022 and corporate office: A-16, Ground Floor, Narain House, Green Park Main, New Delhi-110016

----Petitioner

Versus

1. Punjab State Power Corporation Limited (PSPCL), Head office at The Mall, Patiala.
2. State of Punjab, Department of Technology, Environment and Non Conventional Energy, Civil Secretariat, Chandigarh.
3. Punjab Energy Development Agency (PEDA), Department of Science and Technology of Punjab, Plot No. 1 & 2, Sector 33-D, Chandigarh.

----Respondents

ORDER

1. Sukhbir Agro Energy Limited (SAEL) filed this petition under Section 62 of The Electricity Act, 2003 (Act), read with Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (as adopted by the Commission) requesting the Commission to determine the tariff under the provisions of the said Regulations with respect to two rice straw based biomass power projects of 15 MW each to be set up on build, own and operate basis in the State of Punjab at village Jaitu, District Faridkot and village Ferozeshah, District Ferozepur.

2. The averments made by the petitioner are summarized hereunder:

- i) PEDA issued e-tender notice no. PEDA/PRJ/BM/2015-16/03 inviting proposals for setting up of rice straw based power generating plants in Punjab.
- ii) In view of the petitioner's proposal, PEDA issued a Letter of Award (LoA) to the petitioner for setting up two rice straw based power projects of 15 MW each on build, own and operate basis vide memo no. 6226 dated 19.02.2016.
- iii) In compliance of the Request for Proposal (RfP) and LoA, Detailed Project Reports (DPRs) for the said projects were submitted to PEDA. PEDA vide letter dated 06.06.2016 accorded approval to the DPRs subject to the petitioner satisfying Punjab State Electricity Regulatory Commission (Commission) on the aspects of proven technology, project cost and fuel cost, if so required. The petition for

determination of tariff has been filed in compliance of clause 2.7 of the RfP.

- iv) Rice straw is a residue of rice crop which, considered waste by farmers, is disposed of by burning in the fields due to high cost of collection and lack of economically viable options to utilize the same. This causes air pollution in the State of Punjab and also has detrimental impact to the neighbouring States and NCR. The use of rice straw as a fuel for the power plants has several socio-economic and environmental benefits such as:
- a) financial dividends to the farmers;
 - b) sufficient time to the farmers for preparation of land for the next crop due to efficient collection of rice straw using mechanized means;
 - c) direct and indirect employment to about 1000 persons;
 - d) contribute towards Non Solar RPO compliance by PSPCL.
- v) There is hardly any 100% rice straw based biomass power plant, therefore cost comparison is difficult.
- vi) CERC in Petition No. SM/03/2016 (Suo-Motu) vide its Order dated 29.04.2016 determined the generic levellised generation tariff for FY 2016-17 for biomass based power projects. The tariff for 100% rice straw/juliflora based biomass power projects with water cooled condenser and travelling grate boiler has been determined as ₹ 8.17 per kWh comprising the levellised fixed cost as ₹ 3.28 and variable cost as ₹ 4.88 per kWh. The net tariff after availing the benefit of accelerated depreciation (₹ 0.20 per kWh), works out to ₹ 7.97 per kWh.

- vii) The Commission in its Order dated 24.07.2015 in Petition No.43 of 2015 (Suo-Motu) for FY 2015-16 determined the tariff for biomass based power projects. The Commission directed that developers intending to set up 100% rice straw based biomass power projects, with proven technology for exclusive use of rice straw duly approved by PEDDA, may approach the Commission for tariff determination for such projects.
- viii) The tariff estimated for 100% rice straw based biomass power projects is ₹ 9.04 per kWh with levelled fixed cost as ₹ 3.70 per kWh and variable cost for first year as ₹ 5.34 per kWh on the basis of norms/parameters specified by CERC except for capital cost, fuel cost and PLF. The capital cost considered is ₹ 6.84 crore per MW as against ₹ 6.108 crore per MW considered by CERC. The difference is due to specially designed traveling grate boiler for the project including the research and design cost.
- ix) The rice straw will cost around ₹ 3655 per MT as against ₹ 3342.60 per MT fixed by CERC for FY 2016-17. The Commission in Order dated 24.07.2015 in Petition No.43 of 2015 for FY 2015-16 determined the same at Rs.3500.42 per MT with 5% annual increase. For FY 2016-17, the fuel cost is estimated to be ₹ 3675 per MT.
- x) The rice straw has to be removed from the fields in a short span of 15 to 25 days. For expeditious collection of rice straw, procurement of machinery/equipment is necessary. The cost of collection, stacking, storage, transport increases the capital investment and as such, generation cost. The committee constituted by the CERC, in its report dated

16.07.2013 emphasized for proper fuel pricing mechanism for operation of biomass based power projects & fixation of the same on the basis of independent survey at the beginning of year by a committee constituted by the State Commission.

xi) The petitioner is already using more than 50% rice straw in its 15 MW and 14.5 MW power plants in Uttar Pradesh and Punjab. Further, Plant Load Factor (PLF) of 75% is realistically achievable against 80% specified by CERC for 100% rice straw based biomass power projects.

xii) It is prayed as under:

- a) allow the petition in favour of the petitioner and the tariff for the electricity generation by 100% rice straw based biomass power projects be determined as ₹ 9.04 per kWh with ₹ 3.70 as levelled fixed cost and ₹ 5.34 as variable cost for the first year of operation based on the biomass price for FY 2015-16;
- b) allow applicability of tariff on the same principles and parameters to be updated in the actual year of commissioning of the projects as per RE Tariff Regulations of CERC as adopted by the Commission;
- c) approve constitution of Committee for determination of the cost of rice straw on annual basis for determination of variable cost on realistic basis; and
- d) allow any other relief which the Commission may deem just and proper in the facts and circumstances of the case.

3. The petition was admitted in the hearing on 21.06.2016. Vide Commission's Order dated 27.06.2016, the respondents were directed to file reply by 21.07.2016 and the petitioner to file

rejoinder, if any, by 28.07.2016. The next date for arguments was fixed as 04.08.2016.

4. PEDDA filed its reply on 28.07.2016. The submissions made in the reply are summarized hereunder:

- i) It is requested that the tariff for the petitioner's projects be determined based on CERC norms with fuel price as per CERC generic Tariff Order for FY 2015-16 dated 31.03.2015. The petitioner is entitled to the generic tariff for 100% rice straw based biomass power projects as determined by CERC except for cost of rice straw fuel/fuel price. The projects are environmental friendly and financially beneficial to the farmers as well as PSPCL.
- ii) PEDDA is not in agreement with the petitioner to allow variations in certain norms as specified by CERC as the same were fixed after wide consultations.
- iii) The fuel cost fixed by CERC for the year 2016-17 is ₹ 3342.60 per MT. The biomass price is not guided by the increase or decrease in the Wholesale Price Index (WPI) of high speed diesel (HSD) or coal etc. The price of fuel is being increased every year based on the increase in farm operating cost and demand.
- iv) The generic tariff be worked out based on the parameters adopted by CERC for 100% rice straw based biomass power projects for FY 2016-17 except that the fuel price may be retained as ₹ 3500.42 per MT fixed for FY 2015-16 subject to fulfillment of all the terms and conditions of allotment/ implementation including but not limited to using 100% rice straw as fuel.

- v) PEDA supports the petitioner for enhanced fuel cost and constitution of a committee to determine the price of rice straw every year in line with the recommendation of the committee constitute by CERC for the biomass based plants.

5. PSPCL filed its reply on 04.08.2016. The submissions made in the reply are summarized hereunder:

- i) As per clause 2.5 of the RfP, the developers were to be short-listed based on the net tariff quoted in rupees per kWh for each location/Tehsil for issuance of LoA. The successful biomass project developer was required to submit DPR to PEDA containing the execution summary, biomass technology overview, biomass resource assessment and technology selection, project description, risk assessment, project cost etc. along with the calculation of tariff. The DPRs were to be evaluated/approved by PEDA after which the developers were to file petition before the Commission within 15 days for tariff approval. The developer will sign an Implementation Agreement (IA) within 30 days with PEDA from the date of issue of Tariff Order and thereafter, within 45 days, the developers are required to sign the PPA with PSPCL for a period of twenty years from the date of commissioning of the project.
- ii) The petitioner is claiming tariff for sale of power from its rice straw based biomass power plants as ₹ 9.04 per kWh which is abnormally high and does not present a viable power purchase option. The power purchase cost is a pass through and the consumers in the State are to bear the high tariff claimed by the petitioner. The promotion of power generation

through the use of 100% rice straw as fuel cannot be allowed at the cost of electricity consumers in the State and by adversely affecting the financial operation of the State distribution utility. The mandate under Section 61(d) of the Act emphasizes to protect interest of the consumers.

- iii) The Commission while determining the generic levellised tariff vide its Order dated 24.07.2015 held that the 100% rice straw based biomass power projects with proven technology are to be approved by PEDDA before the petitioner approaches the Commission for tariff determination.

The RfP provided the use of proven technology in the proposed projects and the approval of DPRs was subject to fulfillment of terms and conditions of the RfP and LoA. The RfP further provided that only commercially established and operational technology was proposed to be promoted in the projects to be set up under the said RfP to minimize technology risk and achieve timely commissioning of the projects. Before the financial closure, the successful developers were required to submit a certificate from the equipment supplier situated anywhere in the world that the technology supplied by the manufacturer/technology provider was in successful operation for atleast three years.

However, the certificate issued by ISGEC Heavy Engineering Ltd. (IHEL) and submitted by the petitioner states that the traveling grate boiler supplied to Universal Biomass Energy Private Limited, Muktsar is operating successfully with more than 50% rice straw and IHEL has developed the technology for using 100% rice straw for which trial runs have been completed. As such, the

technology proposed to be used in the two power projects is yet to be proven for 100% rice straw based biomass power projects.

Notwithstanding and acting de hors the requirements/ conditions imposed under the RfP, PEDDA proceeded to approve the DPRs without certification of proven technology for 100% rice straw based biomass power projects.

- iv) While demonstrating no such proven technology, the uncertainty surrounding the success of a new technology and going against the mandate of the RfP, the petitioner is seeking to burden PSPCL and consequently its consumers with additional capital cost incurred by it towards technology research and development which cannot be allowed by the Commission.
- v) Clause 1.7 of the RfP provides that PEDDA will facilitate linkages and management of agricultural residue for optimization of the functioning of biomass power generation projects and as such, has taken upon itself all responsibility vis-à-vis the project developers as regards the collection, storage and transportation of rice straw. Therefore, it is unfair that the cost of collection, storage and transportation of rice straw is added in the tariff payable by PSPCL and the tariff is a pass through on its consumers. The power procurement cost would become prohibitive and unviable.

In such an eventuality, PSPCL would prefer to fulfill its RPO by purchasing of Renewable Energy Certificates (RECs) from the market which would be far cheaper than the tariff proposed for 100% rice straw based biomass power projects of the petitioner.

- vi) The procurement price of rice straw in Punjab is between ₹ 2000 to ₹ 3000 per MT which is far below the normative fuel cost approved by CERC and the fuel cost proposed by the petitioner.
- vii) Although the petitioner has relied upon the Tariff Order dated 29.04.2016 of CERC, it assails the norms specified by CERC while claiming the tariff to suit its convenience which cannot be allowed. Only the normative capital cost of ₹ 6.108 crore per MW determined by CERC can be approved for the proposed power projects of the petitioner.
- viii) The petitioner has stated that it would store the collected rice straw in modern storage facilities and has undertaken technological up-gradation of the boiler and has claimed the costs in the petition. Therefore, the petitioner cannot contend that plants would not be able to operate on normative PLF on account of quality deterioration of the stored rice straw.
- ix) The tariff claimed by the petitioner as ₹ 9.04 per kWh for its proposed 100% rice straw based biomass power projects is not admissible and not liable to be approved by the Commission. As such, the petition is not maintainable and prayed to be dismissed.

6. During hearing on 04.08.2016, the petitioner, on his request, was allowed to file rejoinder by 16.08.2016. The next date of hearing was fixed as 06.09.2016.

7. The petitioner filed the rejoinder to the reply filed by the PSPCL on 22.08.2016. The submissions in the rejoinder are summarized hereunder:

- i) Clause 1.10 of the RfP (Submission of proposals and Selection of Bidders) stipulates that the project proposals of only those firms meeting the eligibility criteria specified shall be taken up for detailed evaluation.
- ii) According to clause 2.3 of the RfP, only details of technology to be employed in the project for use of rice straw were to be given. Fuel linkage i.e. sourcing, collection and transportation to storage site/ project yard and storage capacity for full year operations of the project were the responsibility of the project developer.
- iii) Clause 2.4 (B) of the RfP states that newly incorporated companies were not required to have any experience in the biomass power generation whereas the existing companies were to have experience in installing, commissioning and/or successful operation of atleast one biomass project of atleast 6 MW capacity.
- iv) As per clause 3.0 of the RfP, the proposed technology is to be indicated at the time of submission of bid. Similarly, as per clause 2.6, biomass technology overview and technology selection etc. is to be indicated in the DPR. This clause does not require the developer to submit proof of proven technology or certificate regarding operation of the rice straw project for last three years.
- v) Clause 1.8 states that the project developer is free to choose any proven rice straw based biomass power generation technology, viz. Rankine Cycle technology or any other similar technology. Proven technology means the technology which is already being used and is in successful operation. Clause 2.18 of the RfP provides that the successful project

developer is to submit the financial closure within 180 days from the date of signing the PPA alongwith the following:

- a) Details of final technology selection;
- b) Order copy/agreement copy with technology provider/supplier for supply of equipment for said technology;
- c) A certificate from the supplier situated anywhere in the world that the technology supplied by the manufacturer/technology provider is in successful operation for atleast 3 years.

The requisite documents are required to be submitted within 180 days from the date of execution of the PPA.

- vi) Various technologies available in the world suitable for rice straw based power projects were evaluated and "Rankine Cycle Technology" was opted which is time tested and suitable for indian biomass projects and has successful commercial operations across the globe, which further meets the criteria mentioned in the RfP to qualify as proven technology. The petitioner identified IHEL, an indian company, having more than 70 years of presence in India with annual turn over of ₹ 3000 crore and having wide experience in the field of providing Rankine Cycle Technology for use of biomass power projects using biomass/rice straw as fuel. Simultaneously, DP Clean-Tech founded in 2004, a leading boiler manufacturer with headquarters in China and regional offices in Denmark, Poland, Thailand and India was also short-listed. This company has supplied the Rankine Cycle Technology for 100% rice straw based power plants with successful operation of renewable power plants. A certificate dated 16.08.2016 is enclosed stating successful operation of

biomass based power plants using rice straw as fuel for the last many years. List of 3 such 100% rice straw fuel based plants using high pressure & temperature boiler design, supply, construction and commissioning is annexed.

vii)The allegation of PSPCL that the petitioner is not qualified under RfP since it has annexed the certificate of the boiler manufacturer, who does not have the requisite technology is based on misconstruction of definition of proven technology and the provision of the RfP. The petitioner would be investing substantial funds to set up the renewable power projects, failure to choose proven technology would be most detrimental to the petitioner. While making the allegation of non-viable power purchase option, being costly power, PSPCL has completely ignored and brushed aside the social and environment costs which outweigh the financial costs.

viii)The intent and endeavor of the petitioner is two fold, firstly to provide an efficient rice straw based power project at most competitive prices and secondly, to participate in controlling the pollution caused by burning of the rice straw by farmers in the fields. In the National Green Tribunal (NGT) Order dated 10.12.2015, it is stated that the two States, Punjab and Haryana alone contribute 48% of total emissions and are subject to open field burning emitting trace gases. The total annual welfare loss in terms of health damages due to air pollution caused by burning of rice straw in rural Punjab amounts to 76 million rupees. Similarly, in the matter of Capt. Sarabjit Singh Versus State of Punjab and others, the Hon'ble Punjab & Haryana High Court has emphasized for

use of rice straw in other fields like paper and cardboard industry, mushroom cultivation etc.

- ix) The burning of rice straw is the major contributor to green house gases and degradation in soil quality besides health hazard to millions of people residing in NCR. The Act, National Electricity Policy and Tariff Policy all cast a duty upon the States, Appropriate Commissions and Licensees to promote generation of power from renewable energy sources.
- x) The RfP does not provide for fuel linkage by PEDDA. It is the sole responsibility of the petitioner with regard to a firm fuel linkage in the form of rice straw sourcing, collection, transportation and storage throughout the year for continuous operation of the plant.
- xi) PSPCL is mandatorily obliged under Section 86(1)(e) of the Act to purchase a minimum prescribed percentage of energy generated by non conventional energy sources in the State and promotion of cogeneration of electricity from the renewable sources of energy. PSPCL is neither purchasing the RECs as per its RPO obligations nor permitting any of the private players to set up power projects and as such, can be saddled with the penalties for failure to meet the RPO of non solar renewable energy. The inventory of RECs in the market is going to reduce with the recent changes in REC Regulations by CERC making captive consumption ineligible for RECs and proposed hefty increase in RPO by MNRE/MOP. The floor price of non solar RECs is likely to increase during the review in the year 2017.

- xii)The Commission has not determined the generic tariff for rice straw based biomass plants though CERC has determined the same. The Commission directed developers to file petition for determination of tariff for 100% rice straw based biomass power projects. The petitioner is successfully operating biomass based power projects and is genuinely endeavouring to assist the State of Punjab in tackling rice straw burning menace.
- xiii)The allegation of seeking high tariff are denied. The exclusive rice straw based power projects based on Rankine Cycle Technology with traveling grate boiler have some additional features which involve additional cost. The estimation of the cost of electricity is based on the parameters provided by the Commission and CERC. The petitioner has approached the Commission for determination of tariff for its rice straw based projects in line with the terms and conditions of RfP issued by PEDDA which is further in line with the Order dated 24.07.2015 in petition no. 43 of 2015 (Suo-Motu) of the Commission.
- xiv)Section 61(d) of the Act relied upon by PSPCL provides for safeguarding consumer interest and at the same time recovery of cost of electricity in a reasonable manner. Section 61(h)&(i) mandate for promotion of cogeneration and generation of electricity from renewable sources of energy and to be guided with the National Electricity Policy and Tariff Policy.
- xv)With regard to the averments of PSPCL that the cost of fuel prevalent in the State of Punjab is between ₹ 2000/- to ₹ 3000/- per MT, it is stated that PSPCL has neither any

experience in handling of rice straw nor is operating any such plant. PSPCL has not factored in the huge costs of logistics involved through men, machinery and storage spaces for huge quantum of rice straw required for the plant for the full year operation in a short period of 30 to 40 days as well as wastage and deterioration in the Calorific Value (CV) of rice straw and other factors. The average cost of fuel at the boiler end is higher than the procurement cost paid to the farmers.

xvi) The averments of PSPCL regarding operating the plant on normative PLF are not based on facts to support its contentions. The PLF of existing renewable energy plants supplying power to PSPCL does not support the arguments advanced by PSPCL.

8. PEDA made additional submissions dated 19.08.2016 to the reply filed by PSPCL regarding compliance of RfP and proven technology for 100% rice straw based biomass power projects, which are summarized as below:

- i) Clause 2.3 of the RfP provided that only details of the technology to be employed in the project for use of rice straw were to be given by the developer. Technologies like biomass gasification and pyrolysis etc. were specifically excluded being not proven technologies to minimize the technology risk.
- ii) Clause 2.4 of the RfP provided that the companies incorporated in India were required to meet the financial eligibility criteria of net worth. Newly incorporated companies were not required to have any experience in the biomass

power generation. The existing companies were required to have experience in installing, commissioning and/or successful operation of atleast one biomass based power project of minimum 6 MW capacity. The RfP in qualification criteria neither provided any schedule of experience nor of biomass project with rice straw as fuel.

- iii) Clause 3 of RfP provided that the developers were to indicate the proposed technology at the time of submission of proposals. The experience of commissioning and running of a project of 6 MW was a pre-condition for existing companies. The broad requirements to be included in the DPRs were provided in clause 2.6 and the DPRs were to indicate biomass technology over-view and technology selection etc. without submission of proven technology or certificate regarding operation of rice straw project for atleast three years.
- iv) As per clause 1.8 of the RfP, the documents related to final technology selection (Rankine Cycle), agreement with technology provider and certificate regarding a plant based selected technology being in operation for last three years were to be submitted within 180 days of signing the PPA or along with the documents of financial closure. Further, the relevant extracts including clause 2.18 of RfP and CERC RE Regulations, 2012 are reproduced hereunder:

Request for Proposal

“2.18 Financial Closure of Project Financing Arrangements:-

The Project Developer shall report tie up of Financing Arrangements for the projects within 180 days from the date of signing Power Purchase Agreement. At this stage,

the Project Developer would furnish the following documents:

(i) The project developer will submit the final technology selection viz. Rankine Cycle Technology/ specific any other similar technology etc.

(ii) Order copy/ agreement copy, with Technology Provider / supplier for supply of equipments for said technology.

(iii) A certificate from the project / client situated anywhere in world that the technology supplied by the Manufacturer/ Technology Provider is in successful operation anywhere in the world.....”

CERC RE Regulations 2012

“2. Definitions

x) ‘Solar PV power’ means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic technology;

y) ‘Solar Thermal power’ means the Solar Thermal power project that uses sunlight for direct conversion into electricity through Concentrated Solar Power technology based on either line focus or point focus principle;

4. Eligibility Criteria

c) Biomass power project based on Rankine cycle technology – Biomass power projects using new plant and machinery based on Rankine cycle technology and using biomass fuel sources, provided use of fossil fuel is restricted only up to 15% of total fuel consumption on annual basis.

7. Project specific tariff

a) v. Biomass project other than that based on Rankine Cycle technology application with water cooled condenser;

12. Capital Cost

The norms for the Capital cost as specified in the subsequent technology specific chapters shall be inclusive of all capital work including plant and machinery,

civil work, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to inter-connection point.

Chapter 5: Technology specific parameters for Biomass Power Projects based on Rankine Cycle Technology.

33. Technology Aspect

The norms for tariff determination specified hereunder are for biomass power projects based on Rankine cycle technology application using water cooled condenser.”

- v) PEDA invited bids on the basis of discount on generic tariff from the developers to set up biomass based power projects in the State twice prior to the present RfP, however, not a single developer participated in the bid.
- vi) No developer will incur agreement/technology fee with the technology provider at the time of submission of proposal when there is no valid and signed IA, bankable PPA and the rate of sale of power for the useful life of the project is not determined.
- vii) The petitioner on its own gave a certificate dated 24.05.2016 from IHEL stating that the traveling grate boiler supplied by them to Universal Biomass Energy Pvt. Ltd., Muktsar is operating successfully with more than 50% rice straw. The firm developed the methodology for using 100% paddy straw for which trial runs have also been completed. Setting up 100% rice straw based biomass power projects is challenging and prone to higher technology and investment risks.
- viii) Additionally, the petitioner vide letter dated 16.08.2016, submitted a certificate issued by DP Clean-Tech for biomass

based power projects using 100% rice straw as fuel which are in operation for more than three years.

- ix) The submission of PSPCL that PEDDA is responsible for fuel linkages, collection and management of agriculture residue as per clause 1.7 of RfP, is not correct.

9. The parties argued the case at length on 06.09.2016. The Commission reserved the Order. PSPCL was further directed to supply the following information to the Commission by 20.09.2016:

- i) RPO compliance by PSPCL;
- ii) CERC RE Regulations, 2012 along with up to date amendments, if any;
- iii) Copy of Order of Hon'ble APTEL in OP 3 of 2012;
- iv) Notification of Chhattisgarh State Electricity Regulatory Commission regarding the constitution of State Advisory Committee;
- v) Assessment of fuel cost by a committee set up in Punjab for the purpose.

10. PEDDA made additional submissions dated 12.09.2016 regarding non-solar RPO compliance by PSPCL and indicated a shortfall of 1498.56 MU for FY 2015-16 and 254.67 MU for first quarter of FY 2016-17.

11. In compliance to the Commission's Order dated 08.09.2016, PSPCL vide memo dated 20.09.2016 supplied the desired information. With regard to RPO compliance, PSPCL submitted that shortfall of non-solar RPO compliance for FY 2015-16 is 1498.56 MU. Further, PSPCL purchased 297 MU of non-solar RE power from April to June 2016. With regard to assessment of fuel cost by a committee set up in Punjab, PSPCL submitted that at present no committee has been set up in Punjab for the purpose.

The biomass fuel cost per MT for FY 2015-16 was sought from Punjab Biomass Power Limited who intimated that the average fuel cost as submitted in petition no.58 of 2014 for FY 2014-15 was ₹ 3150 per MT.

12. The petitioner vide letter dated 04.10.2016 submitted that CERC vide Order dated 29.04.2016 has determined the levellised generic tariff for FY 2016-17 for the rice straw based biomass power plants as ₹ 8.17 per kWh and prayed that the Commission may consider applying the aforesaid findings of CERC till the final determination of tariff in the petition.

Again, the petitioner vide its letter dated 25.10.2016 submitted that the aforementioned tariff of ₹ 8.17 per kWh as determined by CERC for 100% rice straw based biomass power projects is acceptable to the petitioner and requested that the same be approved/allowed (in the instant petition).

Commission's Observations, Findings and Decision

13. The Commission has carefully gone through the petition, replies, rejoinder, additional submissions by the parties and considered the arguments put forth by the parties. The petitioner has prayed to the Commission to:

- a) determine tariff for two 100% rice straw based biomass power projects allotted to the petitioner as ₹ 9.04 per kWh with ₹ 3.70 per kWh as levellised fixed cost and variable cost for the first year of operation as ₹ 5.34 per kWh based on the price base for FY 2015-16;
- b) allow applicability of tariff on the same principles and parameters to be updated in the actual year of commissioning of the projects as per RE Tariff Regulations of CERC as adopted by the Commission;

c) approve constitution of Committee for determination of the cost of rice straw on annual basis for determination of variable cost on realistic basis.

i) The Commission notes that SAEL was awarded two 15 MW 100% rice straw based biomass power projects on 19.02.2016 by PEDDA to be set up on build, own and operate basis at village Jaitu, District Faridkot and village Ferozeshah, District Ferozepur. The DPRs for the same were approved by PEDDA on 06.06.2016.

The petitioner submitted that CERC vide its Order dated 29.04.2016 determined the tariff for 100% rice straw based power projects as ₹ 8.17 per kWh comprising levelled fixed cost of ₹ 3.28 per kWh and variable cost as ₹ 4.88 per kWh. The net tariff, if benefit of accelerated depreciation (₹ 0.20 per kWh) is availed by the developer, works out to ₹ 7.97 per kWh. The petitioner further submitted that the Commission in its Order dated 24.07.2015 in Petition No.43 of 2015 (Suo-Motu) while determining the generic tariff for various technologies including biomass based power projects held that developers, intending to set up 100% rice straw based biomass power projects with proven technology duly approved by PEDDA, may file a petition for tariff determination. The petitioner submitted that tariff for his projects works out to ₹ 9.04 per kWh (fixed cost: ₹ 3.70; variable cost for first year of operation: ₹ 5.34). The petitioner further submitted that the estimated capital cost considered for such projects is ₹ 6.84 crore per MW as against ₹ 6.108 crore considered by CERC due to specially designed travelling grate boiler including research and design cost. The rice straw has to be collected from the fields in a short period of 15 to 20 days. For collection, storage and transportation of the same, machinery/ equipment is required at additional cost.

The petitioner further submitted that price of rice straw considered by it is ₹ 3655 per MT as against ₹ 3342.60 per MT fixed by CERC for FY 2016-17. The committee constituted by CERC in its report dated 16.07.2013 suggested an independent survey by a committee for fixing the fuel price on yearly basis.

ii) PEDDA in its reply requested that the tariff for the petitioner's projects be determined based on CERC norms and no variation should be allowed as the same were specified by CERC after detailed consultations and due process. However, the yearly increase in biomass price should not be based on WPI of HSD and coal as the same is increasing every year based on demand and operating cost. As such, the biomass fuel price so fixed by CERC as ₹ 3342.60 per MT for FY 2016-17 should not be considered and instead, the fuel price fixed by CERC as ₹ 3500.42 per MT for FY 2015-16 should be taken into account for determining the tariff for the petitioner's projects.

iii) PSPCL in its reply submitted that the tariff of ₹ 9.04 per kWh worked out by SAEL for its projects is abnormally high and not a viable power purchase option in the interest of consumers of the State. PSPCL would prefer to fulfill its RPO compliance by purchasing RECs which would be comparatively a cheaper option. PSPCL objected to the certificate issued by IHEL stating that the certificate only claims successful running with 50% rice straw as fuel and only trial runs for 100% use have been completed which is not sufficient to be considered as proven technology for 100% rice straw based biomass power projects in operation for 3 years as per requirement of the RfP. Thus, the additional capital cost so incurred can not be passed on to PSPCL and consequently to consumers. PEDDA has approved the DPRs without taking into

consideration the requirements of RfP. PSPCL contended that as per RfP, PEDDA is to facilitate fuel linkages and management of agricultural residue and as such taken upon the responsibility with regard to the collection, storage and transportation of rice straw for the petitioner's projects. Therefore, it is wrong to include costs for the same in the tariff. PSPCL indicated the procurement price of rice straw in the State between ₹ 2000 to ₹ 3000 per MT stating that the same is less than the normative fuel cost fixed by CERC as well as that proposed by the petitioner.

PSPCL submitted that the petitioner is seeking the tariff to be fixed as per CERC norms but claiming higher capital cost than ₹ 6.108 crore per MW determined by CERC which should be approved by the Commission. PSPCL contended that as the petitioner would be using modern storage facilities and undertaken technological upgradation of the boiler etc., the petitioner's contention that such projects can not operate at the normative PLF of 80% due to deterioration in quality of the stored rice straw, can not be allowed.

PSPCL further submitted that as the tariff of ₹ 9.04 per kWh worked out by the petitioner is not admissible, the petition is not maintainable and be dismissed.

iv) In the rejoinder to the reply of PSPCL, SAEL referring to various clauses of RfP submitted that only details of the technology to be employed in the projects were to be indicated at the time of submission of the bids and in the DPR. The technology finally selected for 100% rice straw based biomass power projects alongwith copy of order/agreement with the technology supplier for supply of equipment and the certificate from the supplier (situated anywhere in the world) that the offered technology is in successful

operation for the last atleast 3 years as proof of proven technology were required to be submitted with the financial closure documents within 180 days from the date of signing the PPA. SAEL further submitted that fuel linkage i.e. sourcing, collection and transportation of rice straw to the storage site/project yard and storage capacity for full year's operation was the responsibility of the project developer and not PEDDA as contended by PSPCL. SAEL submitted that Rankine Cycle technology, which is time tested, used world over and suitable for Indian conditions, was selected. SAEL submitted a certificate claiming to be from a company successfully supplying equipment/operating 100% rice straw based biomass power projects with a list of 3 such plants. SAEL contended that PSPCL while alleging the power to be generated from petitioner's projects as costly, has ignored the social and environmental costs which outweigh the financial costs. SAEL referred to the relevant extracts of Hon'ble NGT Judgment dated 10.12.2015 wherein Hon'ble NGT observed that the total annual welfare loss in terms of health damages due to air pollution caused by burning of rice straw in rural Punjab amounts to ₹ 76 million. Hon'ble NGT also observed that burning of straw emits trace gases like CO₂, CH₄, CO, N₂O, NO_x, SO₂ and large amount of particulates which cause adverse impacts on human health. Referring to the National Electricity Policy and Tariff Policy provisions for promotion of power generation from renewable energy sources, SAEL submitted that burning of rice straw in the fields also results in soil degradation besides the health hazards. Further, referring to the shortfall in non-solar RPO compliance by PSPCL, SAEL alleged that PSPCL is neither purchasing RECs nor encouraging non-solar renewable energy projects to be set up. It

further submitted that the floor price of non-solar RECs is likely to increase in the review by CERC in 2017. Supporting its case for seeking higher tariff, SAEL submitted that such projects involve additional capital cost. Also, fuel handling costs are higher as rice straw for the full year is to be collected in a short span which is susceptible to wastage and deterioration in calorific value over time.

v) In its additional submissions dated 19.08.2016, PEDDA supporting the case of the petitioner submitted that twice earlier its bidding process was not fruitful due to no response. In the submissions dated 12.09.2016, PEDDA indicated the shortfall in the non-solar RPO compliance by PSPCL for FY 2015-16 as 1498.56 MU and 254.67 MU for first quarter of FY 2016-17. In response to Commission's Order dated 08.09.2016, PSPCL vide its submission dated 20.09.2016 submitted similar information as above in respect of RPO compliance. With regard to committee set up in Punjab for assessment of biomass fuel cost, PSPCL informed that at present no committee has been set up for the purpose and indicated the biomass price, as checked up from one of the existing projects, as ₹ 3150 per MT for FY 2014-15.

vi) The petitioner vide letter dated 04.10.2016 requested the Commission to allow tariff of ₹ 8.17 per kWh determined by CERC for FY 2016-17 for rice straw based biomass power projects till tariff is determined by the Commission.

However, vide its letter dated 25.10.2016, SAEL consented to accept the aforementioned tariff for its projects and requested the Commission to allow/approve the same in the instant petition.

vii) The petitioner was awarded to set up two 100% rice straw based biomass power projects in Punjab by PEDDA on

build, own and operate basis. In the Letter of Award dated 19.02.2016, PEDDA made it conditional that the projects are to be set up after approval of DPRs by PEDDA further stating that SAEL shall file a petition in PSERC for determination of tariff within 15 days of the DPR approval. Further, IAs shall be signed by the petitioner with PEDDA within 30 days from the date of issue of Tariff Order by the Commission and thereafter PPAs shall be signed with PSPCL within 45 days. PEDDA approved the DPRs vide letter dated 06.06.2016 stating that SAEL shall be required to satisfy the Commission on the aspect of proven technology, if so required.

In Order dated 23.04.2015 in petition no. 60 of 2014 filed by JITF Urban Waste Management (Bathinda) Limited for tariff determination with respect to its upcoming waste to energy project where PEDDA was a respondent, the Commission held as hereunder:

“After hearing the parties on 02.12.2014, the Commission had observed that the petitioner was required to sign Implementation Agreement (IA) with PEDDA, being a Nodal Agency of the State Government for NRSE and thereafter sign a Power Purchase Agreement (PPA) with PSPCL so that the Commission may go ahead for determination of tariff for the Project in terms of Section 62(1) of the Electricity Act, 2003. During next hearing on 20.01.2015, the petitioner and PEDDA submitted that there was some progress in the direction of signing of IA but some differences interse still existed. The petitioner submitted vide letter dated 02.03.2015 that the matter was rigorously pursued with PEDDA to sign IA and the petitioner was hopeful to sign the same within next four weeks. PEDDA also submitted during hearing on 03.03.2015 that the matter was moved

to the Government and IA shall be signed shortly. However, the petitioner has prayed vide letter dated 20.04.2015 for further time of four weeks to sign IA and PPA. The matter was heard on 22.04.2015, wherein PEDDA submitted that approval of the Government is awaited for signing IA.

In view of above position and a number of adjournments of the case without any effective hearing, the Commission directs the petitioner, PEDDA and PSPCL to file the copy of IA and PPA as soon as the same are signed by the parties. The petition shall remain sine-die in the meanwhile. The date of next hearing shall be conveyed to the parties after the IA and PPA are filed by them in due course of time.”

The Commission notes that in disregard of the above Order of the Commission which is based on the legal position applicable *in rem*, PEDDA took a different view while awarding the projects to the petitioner in respect of signing the IA and PPA after determination of tariff by the Commission rather than prior to it. Again, while approving the DPRs, PEDDA made it conditional that the petitioner will have to satisfy the Commission on the aspect of proven technology, if so required, whereas the Commission in its generic orders made it incumbent upon PEDDA, the nodal agency responsible for setting up renewable energy projects in the State, to approve the technology in respect of exclusive/100% use of rice straw by the prospective developers before a petition is filed in the Commission for determination of tariff. Even the RfP provisions in the instant case do not comply with the underlying spirit of the Commission's Orders. PEDDA is

advised to avoid such actions in future which could impinge upon the Court Orders.

PSPCL submitted that the tariff for 100% rice straw based biomass power projects claimed as ₹ 9.04 per kWh by SAEL is not a viable power purchase option, being abnormally high. PSPCL contended that though the same would be a pass through in the annual revenue requirement of PSPCL, it can not be allowed at the cost of electricity consumers in the State considering that the mandate under section 61(d) of the Act emphasizes to protect the interests of the consumers. PSPCL further submitted that it would prefer to fulfill its RPO by purchasing RECs which would be cheaper in comparison to purchase of power from such projects.

The Commission notes that the petitioner in its submissions has referred to the judgment dated 10.12.2015 of Hon'ble NGT wherein the alarming impact of burning of rice straw in the open fields in Punjab and Haryana has been brought out and the annual welfare loss in terms of health damages due to pollution in rural Punjab estimated as ₹ 76 million. As per Punjab Agricultural University estimates, approximately 20 million tonnes of rice straw is generated annually in Punjab. SAEL submitted that in case the same is put to fruitful purpose for generation of power, it would serve the social cause well and mitigate the sufferings of the consumers of Punjab. In a separate petition filed by PSPCL for carrying forward RPO shortfall for FY 2015-16 to FY 2016-17, it has been brought out that the shortfall in non-solar RPO compliance for FY 2015-16 is 1498.56 MU and 254.67 MU for first quarter of FY 2016-17 as against the requirement of

1809.17 MU and 552 MU respectively i.e. a shortfall of 83% in non-solar RPO compliance for FY 2015-16 and 46% for the first quarter of FY 2016-17. To meet this shortfall for FY 2015-16 and first quarter of FY 2016-17, an amount of ₹ 263 crore would be required in terms of purchase of RECs even at the floor price of ₹ 1500 per REC as preferred by PSPCL. RPO compliance by way of purchasing RECs may serve the purpose in short term, which may not remain the viable and the preferred option in the eventuality of the RECs not being available at the floor price. In the opinion of the Commission, in the long run, purchasing power from renewable energy projects set up in the State should be the preferred option which would be beneficial to (i) PSPCL in respect of RPO compliance (ii) the people and the State in terms of employment generation and (iii) the environment due to an efficient and fruitful utilization of biomass/rice straw.

In view of the above and considering the submissions made by SAEL and PEDDA, the Commission finds that there is a case for allowing the petitioner to set up the two 100% rice straw based biomass power projects in Punjab. As regards the tariff for such projects, the Commission notes that in the petition, SAEL submitted that the tariff for the projects be allowed as per CERC norms except capital cost, PLF and fuel price. It sought higher capital cost of ₹ 6.84 crore per MW against ₹ 6.108 crore, PLF as 75% against normative 80% and fuel price as ₹ 3655 per MT as against ₹ 3342.60 per MT and worked out tariff as ₹ 9.04 per kWh as against ₹ 8.17 per kWh determined by CERC. PEDDA while supporting the petition submitted that the tariff be allowed only as per CERC

norms/parameters specified in the CERC RE Regulations, 2012 as amended except the biomass fuel price determined by CERC as ₹ 3342.60 per MT for FY 2016-17. PEDDA submitted that the fuel price should be taken as ₹ 3500.42 per MT fixed for FY 2015-16 and should not be worked out on the basis of the WPI of HSD and coal etc. The Commission finds this submission of PEDDA in violation of Regulation 45 of the CERC RE Regulations, 2012 adopted by the Commission specifying the fuel price indexation mechanism for determining the biomass price on yearly basis. Having accepted the same for 4 years of the control period of the said Regulations from FY 2012-13 to FY 2015-16, the same can not be disregarded for the last year of the control period i.e. FY 2016-17.

PSPCL strongly opposed the tariff worked out by SAEL as ₹ 9.04 per kWh based on the above parameters/norms, which are different than CERC norms, and submitted that such higher tariff can not be allowed at the cost of electricity consumers further stating that the Act emphasizes to protect the interest of the consumers. PSPCL submitted that normative capital cost of ₹ 6.108 crore per MW determined by CERC may be approved for the proposed projects. PSPCL further submitted that the price of rice straw in Punjab is between ₹ 2000 to ₹ 3000 per MT, which is far below the normative fuel cost approved by CERC. PSPCL further submitted that the contention of the petitioner that the plants would not be able to operate on normative PLF (80%) on account of quality deterioration of the stored rice straw is not agreeable as it claims to use technologically up-graded boiler and modern storage facilities.

The petitioner has sought higher capital cost of ₹ 6.84 crore per MW as against ₹ 6.108 crore per MW considered by CERC stating that it will be using specially designed travelling grate boiler where height and design parameters have been improved. Both PEDA and PSPCL have opposed the same. The Commission notes that the capital cost considered by CERC for exclusive rice straw based biomass power projects is ₹ 610.80 lakh per MW as against ₹ 559.03 lakh per MW for such projects using biomass other than rice straw as fuel for FY 2016-17 on the base of ₹ 590 lakh per MW and ₹ 540 lakh per MW respectively for FY 2013-14 i.e. an additional amount of ₹ 51.77 lakh per MW has been allowed for rice straw based projects for FY 2016-17. The Commission is of the considered opinion that this additional amount of ₹ 51.77 lakh per MW is sufficient enough to take care of the special requirement, if any, for equipment/machinery etc. for 100% rice straw based projects. The contention of the petitioner that the tariff calculations have been made considering PLF of 75% as against 80% has also been opposed by both PEDA and PSPCL. The Commission notes that CERC RE Regulations, 2012 adopted by the Commission specify a PLF of 60% during the first 6 months of operation (stabilization period), 70% during the remaining 6 months of the first year of the operation and 80% from 2nd year onwards. The same would need to be applied for the petitioner's projects also without discrimination to other projects. As regards the fuel (rice straw) price of ₹ 3655 per MT sought by SAEL as against ₹ 3342.60 per MT fixed by CERC, PSPCL has opposed the same stating that it is much on the higher side. On the other hand,

PEDA has submitted that the fuel price of ₹ 3500.42 per MT determined by CERC for the previous year should be allowed disregarding the annual variation worked out on the basis of indexation mechanism specified in the Regulations. The Commission is of the view that rice straw is available for free as the same is being burnt by the farmers in the open fields. However, the same needs to be collected, bailed and transported to the storage/project site. Also, almost 11 months' requirement would need to be stored. Normally the fuel handling/transportation costs could be estimated as 10-15% of the fuel cost. However, in the case of rice straw, this component is perceived to be higher where additional equipment/transportation/storage could be required. The Commission opines that allowing the same price for rice straw as that allowed for biomass other than rice straw considered by CERC is justifiable on above account considering that the price of rice straw is insignificant. Accordingly, the fuel price of ₹ 3342.60 per MT appears to be fair and just.

The Commission finds that there is no case/justification for allowing the parameters/norms in respect of capital cost, PLF and fuel cost other than those specified by CERC. Moreover, SAEL has consented unconditionally to accept the tariff determined by CERC for 100% rice straw based biomass power projects with water cooled condenser and travelling grate boiler as ₹ 8.17 per kWh [levellised fixed cost: ₹ 3.28; variable cost for the first year of operation: ₹ 4.88; net applicable tariff: ₹ 7.97 after accounting for accelerated depreciation benefit (₹ 0.20 per kWh), if availed] and requested

the Commission to allow the same for its two 15 MW 100% rice straw based biomass power projects.

The Commission in Petition No.55 of 2016 (Suo-Motu) in the matter of determination of generic levelled generation tariff for renewable energy power projects for FY 2016-17 in the due process, considered the suggestions and objections of various stakeholders. PEDA and Biomass Power Producers Association requested for adoption of the First Amendment dated 18.03.2014 to CERC RE Regulations, 2012 as a whole which had earlier been adopted by the Commission partly, including norms/parameters specified by CERC for 100% rice straw based biomass power projects. In consideration of the same and after applying its mind, the Commission in its Order dated 23.11.2016 in petition no. 55 of 2016 (Suo-Motu) adopted the amendments in Regulation 34 'Capital Cost', Regulation 37 'Auxiliary Consumption' and Regulation 39 'Operation and Maintenance Expenses' provided in the said First Amendment and determined the generic tariff for biomass based power projects with water/air cooled condensers and travelling grate/AFBC boilers including such projects using rice straw as fuel exclusively. The tariff for biomass based power projects using exclusively (100%) rice straw as fuel with water cooled condenser and travelling grate boiler determined in the ibid Order dated 23.11.2016, is as hereunder:

Levelling Fixed Cost	Variable Cost (for first year of operation)	Applicable Tariff Rate	Benefit of Accelerated Depreciation, if availed	Net Applicable Tariff Rate upon adjusting for Accelerated Depreciation benefit (3-4)
(₹/kWh)	(₹/kWh)	(₹/kWh)	(₹/kWh)	(₹/kWh)
1	2	3	4	5
3.28	4.88	8.16	0.20	7.96

The above tariff is the same as determined by CERC. Accordingly, the Commission allows the aforementioned tariff for the said two projects, SAEL having already consented to accept the same unconditionally. The aforesaid Order of the Commission dated 23.11.2016 will apply *Mutatis Mutandis* to the petitioner's projects as well. In case at any stage during the term of the PPA, it is established that 100% rice straw as fuel is not being used for any of the said projects of the petitioner, the tariff applicable for the defaulting period since the last physical checking of fuel usage by the concerned authority, shall be that of similar biomass based power project using biomass fuel other than rice straw determined by the Commission, which is ₹ 8.03 per kWh [levellised fixed cost: ₹ 3.15; variable cost for the first year of operation: ₹ 4.88; net applicable tariff: ₹ 7.85 after accounting for accelerated depreciation benefit (₹ 0.18 per kWh), if availed].

In terms of the RfP, the certificate of proven technology certifying that the machinery & equipment to be installed for the said two 100% rice straw based biomass power projects by SAEL is fully capable for exclusive use of rice straw as fuel, is to be issued at the time of submitting the documents

for financial closure, PEDDA shall take care of the same and issue the relevant certificate to PSPCL at the appropriate time on the basis of documents/demonstration given by the petitioner after fully satisfying itself. A clause in the PPA shall be incorporated to this effect at the time of signing the same.

As regards the prayer of the petitioner for constituting a committee for determination of price/cost of rice straw annually on the basis of amendment in Regulation 44 carried out in the First Amendment dated 18.03.2014, the Commission has dealt the same in its generic Tariff Order dated 23.11.2016 and reiterated the views already expressed in its Order dated 05.09.2014 in petition no. 42 of 2014 (Suo-Motu) that the methodology for determining the fuel price annually by applying the fuel price indexation mechanism specified in Regulation 45 of CERC RE Regulations, 2012 adopted by the Commission, is a preferable option and the same is fair and just. The same shall continue to apply.

The petition is disposed of in terms of above.

Sd/-
(S.S. Sarna)
Member

Sd/-
(D.S. Bains)
Chairman

Chandigarh
Dated: 06.12.2016