BEFORE

THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION

LUCKNOW

Date of Order : 27.07.2011

IN THE MATTER OF: Determination of Operating parameters under UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009 for 660 MW, 300/250 MW and 45 MW and coal based Thermal Power Plants generating electricity in the State of U.P.

The following were present:

1. Sri R. K. Johar, CE (PPA), UPPCL
2. Sri S. P. Pandey, EE (PPA), UPPCL
3. Sri N.N. Murty Raju, Vice President, Lanco Anpara Power Ltd.
4. Sri S.N.M. Tripathi, Sr. Ad. (Tech), BHL
5. Sri Sumeet Notani, Rosa Power Supply Co. Ltd.
6. Mohd. Parvez, Creative Thermolite Power Pvt. Ltd.

ORDER

(Public Hearing dt. 20.05.2011)

1. UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009 came into force with effect from 01.04.2009 and, unless reviewed earlier or extended by the Commission, shall remain in force for five years i.e. up to 31.03.2014. These Regulations are applicable to cases of generation and/ or supply of electricity by a generating company within the State of UP. To enhance the availability of electricity in the State, the Government of Uttar Pradesh (GoUP) has mandated under the Energy Policy, 2009 that power would also be procured for the State through MoU Route. The Policy also authorizes co-gen plants to setup additional power generation capacity, not exceeding 100 MW, based on conventional fuel such as coal or gas to generate power. Subsequently MoUs for procurement of power

from 660 MW, 300/250 MW and 45 MW coal based thermal generating plants were signed by the GoUP.

2. At the time when UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009 was framed by the Commission, there were no coal based thermal generating plants of these capacities in the State (except 250 MW). Therefore, operating parameters for 660 MW and 45 MW coal based thermal generating plants had not been determined under the Regulations. With the introduction of these capacities under the GoUP policy, it became necessary to determine the operating parameters for these plants. Consequently, in its order dated 18.11.2010 for approval of model Power Purchase Agreements (PPA) in accordance with MoU signed with GoUP under UP Government Energy Policy 2009, the Commission decided to fix the norms of operation for 45 MW and 660 MW separately by an order and to make necessary amendments in the Regulations accordingly.

3. The relevant information for 660 MW capacity thermal generating plant was collected from Central Electricity Authority (CEA), NTPC and UPPCL. For 45 MW, the Commission could not get any information even though a request in this respect was sent to CEA on 30.09.2010. However, M/s Bajaj Energy Private Limited, who have signed MoUs for 2x45 MW plants at five locations, has submitted the design parameters of 45 MW capacity plants on affidavit taken from M/S Siemens and M/S ThyssenKrupp Industries India vide letter dated 21.2.2011. Based on the above documents, existing Regulations and directions of the Commission, a discussion paper was prepared. In the discussion paper new 300/250 MW capacity plants were included for determination of limited issue of Gross Station Heat Rate (GSHR) using imported coal. For 660 MW capacity thermal generating plants GSHR was to be decided and for 45 MW capacity plants GSHR, Auxiliary Energy Consumption and O & M expenditure were to be decided.

The discussion paper was placed on the website of the Commission (www.uperc.org) on 24.02.2011 and copies were sent to CEA, CERC, other Regulatory Commissions and Stakeholders for perusal and comments within 15 days from above date.

4. In the discussion paper following was proposed:

(i) GSHR for 660 MW coal based thermal generating unit shall be as follows:

	Using Indian Coal		**Using Imported Coal**	
Pressure Rating (kg/cm^2)	247	247	247	247
Super Heat Temp.(SHT) /Re Heat Temp.(RHT) (^oC)	537/565	565/593	537/565	565/593
Gross Station Heat Rate (GSHR)	**2350**	**2290**	**2250**	**2190**

(ii) The GSHR for coal based thermal generating unit of 300/250 MW capacity using Imported Coal shall be 2500 kcal/kwh during stabilization period and 2400 kcal/kwh for subsequent period.

(iii) For 45 MW coal based Thermal Power Plants, the operating parameters shall be as follows:

Operating Parameter	Normative value
Normative Auxiliary Consumption	9.0 %
Gross Station Heat Rate	2900 kcal/kwh with Indian Coal and 2800 kcal/kwh with Imported Coal
O&M Expenditure	@ 2.5 % of the Capital Cost per MW escalated by 5.72 % in succeeding years

5. In response, eight comments were received by the Commission. The summary of the comments is as follows:

Sl. no.	From	Comments	Reason Given
1	Creative Thermolite Power Pvt. Ltd.	GSHR on imported coal for 300 MW unit shall remain as 2500 Kcal/kwh	As only certain percentage of imported coal can be blended with Indian Coal.
2.	Welspun Energy Limited	1. GSHR for 660 MW unit should be 2380 Kcal/kwh as provided by CERC 2. GSHR on imported coal should also be same	As even in imported Indonasian coal moisture content is as high as 37% to 42% and volatile matter as 36% to 42%.
3.	Tripura Electricity Regulatory Commission	Auxiliary Energy Consumption should be 9% with cooling tower and 8.5% without cooling tower	As the ambient temperature in UP area remain very high during summers
4.	Torrent Power	1. The incentive should be linked with Plant Availability Factor instead of Plant Load Factor 2. GSHR for 660 MW unit should be 2380 Kcal/kwh as provided	As provided by CERC

		by CERC 3. Norms for motor driven feed pumps should also be specified 4. Auxiliary consumption in case of motor driven feed pumps should also be specified	
5	Lanco Anpara Power Limited	1. GSHR for 660 MW, 247 kg/cm sq, 565/593°C should be 2356 kcal/kwh 2. Auxiliary consumption should be 6.5% 3. Increase in O&M charges escalation	1. The reasons given include – higher auxiliary consumption provided by CERC, non committed coal supply and lower generation due to constraints. 2. As provided by CERC 3. Due to market conditions
6	Himavat Power Private Limited	1. GSHR for 660 MW, 247 kg/cm sq, 565/593°C should be 2356 kcal/kwh 2. Auxiliary consumption should be 6.5% 3. Increase in O&M charges escalation	1. The reasons given include – higher auxiliary consumption provided by CERC, non committed coal supply and lower generation due to constraints. 2. As provided by CERC 3. Due to market conditions
7	Bajaj Hindustan Limited	1. GSHR for 660 MW, 247 kg/cm sq, 565/593°C should be 2356 kcal/kwh	1. The reasons given include – higher auxiliary consumption provided by CERC, non committed coal

		2. Auxiliary consumption should be 6.5% 3. Increase in O&M charges escalation	supply and lower generation due to constraints. 2. As provided by CERC 3. Due to market conditions
8	Meghalaya State Electricity Regulatory Commission	No Comments	As Meghalaya has no coal based thermal generating station

6. During the hearing, Sri SNM Tripathi, Sr. Advisor. (Tech), BHL submitted that in the discussion paper the relevant data for 660 MW coal based thermal generating plant has been taken by the Commission mainly from the concluded bidding process for Prayagraj / Sangam power project, CEA and CERC. As far as the GSHR quoted for Prayagraj / Sangam power project is concerned, it may not be taken as a standard figure since the bidders might have adjusted its adverse implication elsewhere in the bid. Also the GSHR may not be generalized on the basis of CEA recommendation as it was given at the time when the bidding process under Case -2 was in progress for Prayagraj / Sangam power project. Sri Tripathi further pointed out that while considering CERC figure on GSHR, the Commission has not taken the auxiliary consumption of 6.5% as given by the CERC for 660 MW coal based thermal generating station. The Commission under the provisions of UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009 has allowed only 6% auxiliary consumption. He further stated that while deciding the GSHR, the Commission must also take cognizance of coal quality and coal availability.

7. Sri N.N. Murty Raju, Vice President, Lanco Anpara Power Ltd. stated that the design parameters are determined with specific quality of coal. In practice that quality of coal may not be available for use therefore, the Commission must allow certain relaxation in the GSHR. He also questioned the practicability of data collected from CEA and UPPCL which has been utilized in completed bidding process of Prayagraj / Sangam power project. Sri Raju further submitted that with these considerations the Commission may allow GSHR as 2356 Kcal /Kwh instead of 2290 Kcal /Kwh as provided in the discussion paper for 247 kg/cm^2, 565/593 ^0C, 660 MW super critical thermal generating plant.

8. Sri S.P. Pandey, EE, UPPCL submitted that the normative parameters may not be allowed beyond the norms given by CERC. Regarding use of imported coal, Sri Pandey pointed out that CEA has recently stipulated the design changes in all future coal fired projects to enable higher imported coal blending. To address increasing domestic coal shortage, power utilities have to ensure boiler designs to allow blending of at least 30% imported coal instead of current 10% to 15%.

9. Sri Sumeet Notani of Rosa Power prayed that while considering separate GSHR on imported coal for 250/300 MW coal based generating plant, the existing generating plants may be exempted as they have been conceived and designed for Indian coal. These plants are not able to achieve any improved performance even if using blended coal whenever there is any shortage in supply of coal. He requested that the parameters as provided in the Regulations may be kept same for existing power stations.

10. Mohd Pervez, Creative Thermolite reiterated their written submission that the Commission may not consider any separate GSHR on imported coal for 250/300 MW coal based thermal generating plants.

11. Regarding normative parameters of 45 MW coal based thermal generating units, Sri SNM Tripathi, Sr. Advisor (Tech), BHL stated that the Hon'ble Commission has taken a view in the discussion paper that such small capacity plants on own land using the ground water have been envisaged under the GoUP Energy Policy, 2009 as they would incur less O&M expenditure in comparison to independent plant. The Commission has taken this view also in light of the assumption that there would be common expenditure on administration and auxiliaries as these plants are being developed by the co-generators having sugar mills in the same premises. Sri Tripathi averred that although these plants are being promoted near the existing sugar mills but they are having independent management, functioning and operations. Therefore, the Commission's outlook for allowing lesser O&M expenditure does not seem reasonable. He requested that these plants may get O&M expenditure in line with the other plants as provided in UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009. He further requested that they may be allowed higher auxiliary consumption of 11% instead of 9% as provided in the discussion paper since these plants are based on CFBC technology which require higher auxiliary consumption as guaranteed by their supplier and also because the use of ground water would require additional auxiliary consumption for lifting of water.

12. Sri S.P. Pandey of UPPCL submitted that water lifting for use of ground water has a lesser complicated system than a system required to bring the water from a river or canal. Therefore, the Commission may not allow higher auxiliary consumption on this ground.

13. The Commission, after hearing the representatives of the parties, decided that further data on GSHR of 660 MW coal based thermal generating plant from CEA and NTPC would be sought. The CEA vide

letter no. CEA/TETD-TT/2011/N-1/568 dated 13th June, 2011 has referred CERC (Terms and Conditions of Tariff) Regulations 2009 and CEA (Technical standards for construction of electric plants and electric lines) Regulations, 2010. NTPC vide letter dated 20.6.11 has informed about the design parameters of their Seepat and Barh 660 MW thermal power projects.

14. Based on above submissions and deliberations, the Commission has reached to a conclusion that the GSHR provided by CERC for 660 MW thermal generating plant is appropriate and adequate. The same has been restated by CEA also. The impact of difference in normative auxiliary consumption (with induced draft cooling tower) shall be allowed in GSHR to compensate the difference of 6.5% as provided by CERC and 6% as provided in UPERC Regulations, 2009. Therefore, the GSHR approved by the Commission for 660 MW coal based thermal generating plant under the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009 shall be as follows:

	Indian Coal		**Imported Coal**	
P Rating (kg/cm^2)	247	247	247	247
SHT/RHT (^oC)	537/565	565/593	537/565	565/593
Max. Design Heat Rate	2235	2176	2135	2079
Correction factor	1.065	1.065	1.065	1.065
GSHR as allowed by CERC with 6.5 % Aux. Consumption	2380	2317	2274	2214
Net Station Heat Rate (NSHR) as allowed by	**2545**	**2478**	**2432**	**2368**

CERC				
GSHR as allowed by UPERC with 6.0 % Aux. Consumption	2392	2329	2286	2226

Note:

1. The above GSHR shall be applicable when using turbine driven Boiler Feed Pump (BFP). In respect of units where BFPs are electrically operated, the GSHR shall be 40 kcal/kwh lower.
2. The GSHR shall be applicable as per actual subject to ceiling as above.

The Commission also holds the considered opinion that imported coal having different constituents in comparison to Indian coal requires separate treatment which the CERC has also considered. Further, CEA through its directions, has stressed upon use of improved type of boilers to ensure blending upto at least 30% of imported coal with the domestic coal. The new generators should follow the directives of CEA. With this view, the Commission firmly believes that the use of imported coal in blending be treated separately. Therefore, the Commission allows GSHR for 250 MW and 300 MW coal based thermal generating plants using imported coal as 2500 kcal/kwh during stabilization period and 2400 kcal/kwh for subsequent period as against 2600/2500 kcal/kwh using Indian coal.

In a situation when blended coal having an imported coal component is being used then the GSHR shall be calculated on the basis of actual ratio of blending of coal. However, for the existing plants which are designed

exclusively for Indian coal, the GSHR shall remain as provided on Indian coal under the Regulations.

15. For small capacity coal based 45 MW power generating plants, GSHR, Auxiliary Consumption and O&M expenditure have to be decided by the Commission.

(i) Gross Station Heat Rate: The GSHR proposed in the discussion paper, 2900 kcal/kwh with Indian coal and 2800 kcal/kwh with imported coal, has not been contested by any party, therefore, the Commission approves the same.

(ii) Auxiliary Consumption: The auxiliary consumption was proposed as 9% in the discussion paper which has been contested on the ground that the boilers have CFBC technology and require additional auxiliary consumption. The additional consumption due to use of ground water has been refuted by the UPPCL stating that use of ground water has a lesser complicated system than a system required to bring the water from a river or canal. Considering both the views and also the fact that these plants are based on CFBC technology, the Commission finds that higher normative auxiliary consumption is technically justified. The supplier of plant has also given performance guarantee of 11% normative auxiliary consumption. Therefore, the Commission decides to allow 11% normative auxiliary consumption for coal based CFBC technology 45 MW generating plants.

(iii) O&M expenditure: In the discussion paper O&M expenditure has been proposed as 2.5 % of the Capital Cost per MW escalated by 5.72 % in succeeding years as provided in the order dated 9.9.09 for the coal based thermal power plants. The same has been contested on the ground that although these plants are being

promoted near the existing sugar mills, they are having independent management, functioning and operations. Therefore, they may be allowed O&M expenditure in line with the provisions of UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009. No further data could be collected from any source. Even the CEA could not advice in this regard. The submission made during the hearing for these plants are considered logical. Hence, the Commission decides to allow O&M expenditure for these plants as provided in the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009. These plants will get O&M expenditure as provided for existing Obra thermal power stations in the Regulations for upto 2013-14.

16. The parameters determined are subject to review by the Commission on its own motion after one year of operation of the plant, if required. The necessary amendments in the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009 shall be made and notified in the Gazette.

17. Other terms and conditions shall be as provided in the UPERC (Terms and Conditions of Generation Tariff) Regulations, 2009.

18. The matter is disposed of.

(Meenakshi Singh)	(Shree Ram)	(Rajesh Awasthi)
Member	Member	Chairman

Place : Lucknow
Dated: 27.07.11