

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 146/GT/2015

Coram:

Shri Gireesh B. Pradhan, Chairperson

Shri A.K.Singhal, Member

Shri A.S. Bakshi, Member

Date of Hearing: 07.07.2015

Date of Order: 06.10.2015

IN THE MATTER OF

Grant of interim tariff for Circulating Fluidized Bed Combustion (CFBC) Technology based NLC Thermal Power Station II (Expansion) Unit –II (250 MW) for the period from the date of commercial operation (COD) of Unit-II i.e. 22.4.2015 and from the anticipated COD of Unit-I (30.6.2015) to 31.3.2017

AND

IN THE MATTER OF

Approval of tariff of Circulating Fluidized Bed Combustion (CFBC) Technology based Thermal Power Station-II (Expansion) (2 x 250 MW) for the period from the date of commercial operation (COD) of Unit-II i.e. 22.4.2015 and from the anticipated COD of Unit-I (30.6.2015) to 31.3.2019

AND

IN THE MATTER OF

Neyveli Lignite Corporation Limited
Neyveli House,
135, EVR Periyar Road,
Kilpauk, Chennai - 600010

...Petitioner

Vs

1. Tamilnadu Generation and Distribution Corporation Ltd
144, Anna Salai,
Chennai – 600002

2. Power Company of Karnataka Ltd
KPTCL Complex, Kaveri Bhawan
Bangalore – 560009

3. Bangalore Electricity Supply Company Ltd
Krishna Rajendra Circle
Bangalore – 560001



4. Mangalore Electricity Supply Company Ltd
Paradigm Plaza A.B Shetty circle
Mangalore – 560009

5. Chamundeshwari Electricity Supply Company Mysore
Corporate Office No. 927, L.J Avenue
New Kantharaj Urs Road
Saraswathipuram
Mysore – 570009

6. Gulbarga Electricity Supply Company Ltd
Main Road, Gulbarga
Gulbarga, Karnataka – 585102

7. Hubli Electricity Supply Company Ltd
PB.Road, Navanagar
Hubli – 580025

8. Kerala State Electricity Board
Vaidyuthi Bavanam, Pattom
Thiruvananthpuram – 695004

9. Puducherry Electricity Department
137, NSC Bose Salai
Puducherry – 605001

....Respondents

Parties present:

Ms. Poorva Saigal, Advocate, NLC
Shri Shubham Arya, Advocate, NLC
Shri Kartik Prasad, Advocate, NLC
Shri R. Mohan, NLC
Shri K. Nambirajan, NLC
Shri S. Vallinayagam, Advocate, TANGEDCO

ORDER

This petition has been filed by the petitioner, NLC for approval of tariff of Circulating Fluidized Bed Combustion (CFBC) Technology based Thermal Power Station-II (Expansion) (2 x 250 MW) ('the generating station/project') for the period from the date of commercial operation (COD) of Unit-II i.e. 22.4.2015 and from the anticipated COD of Unit-I (30.6.2015) to 31.3.2019 based on the provisions of the Central Electricity Regulatory Commission (Terms & Conditions of Tariff) Regulations, 2014 ('the 2014 Tariff Regulations').



2. The installed capacity of the project is 500 MW with CFBC lignite boilers feeding to turbines. The petitioner has entered into Power Purchase Agreements (PPA) with the respondent beneficiaries and the Ministry of Power, Govt of India has allocated the power generated from this project amongst the respondent beneficiaries on 9.3.2004.

3. The project was sanctioned on 18.10.2004 by the Ministry of Coal, Govt of India at a capital cost of ₹2030.78 crore at January, 2004 Price Level, including IDC of ₹181.86 crore and Foreign Exchange component of ₹541 crore. As per Govt. of India guidelines, the Revised Cost Estimate (RCE-I) for the project was approved by the Govt. of India for ₹2453.57 crore (including IDC of ₹169.15 crore) on 10.7.2008. Thereafter, the project cost was revised taking into account the time and cost overrun and RCE-II for ₹3027.59 crore (including IDC) was approved by the Board of the Petitioner company on 9.4.2012.

4. The petitioner in the petition has submitted that RCE-III considering the increase in project cost is being prepared and will be submitted to the Commission after approval. It has also submitted that the tariff claimed in the petition is based on the RCE-III and has prayed that the Commission may consider the project cost as per RCE-III.

5. As per Investment approval for the project, the COD of Unit-I and Unit-II was scheduled in 53rd and 57th month respectively from the date of sanction. Accordingly, the scheduled COD of Unit-I was February, 2009 and Unit-II was June, 2009. The petitioner, in the petition has submitted that the anticipated COD of Unit-I is 30.6.2015 and that Unit-II has achieved COD on 22.4.2015 after successful trial operation of 72 hrs as per the provisions of the 2014 Tariff Regulations. However, the petitioner by letter dated 6.7.2015 has informed that Unit-I of the generating station has achieved COD on 5.7.2015.

6. The petitioner has filed this petition in terms of Regulation 7(1) of the 2014 Tariff Regulations and has made publication of the notice of application for determination of tariff



in accordance with Regulation 3(6) of the Central Electricity Regulatory Commission (Procedure for making of application for determination of tariff, publication of the application and other related matters) Regulations, 2004. Copies of the petition have also been served on the respondents. Reply to the petition has been filed by the respondents, TANGEDCO and KSEB.

7. The matter was heard on 2.7.2015 and 7.7.2015 and the learned counsel for the petitioner submitted that since supply of power is being made from the generating station to the respondents, the Commission may consider the grant of interim tariff for the purpose of billing, pending determination of final tariff of the generating station for 2014-19.

8. The petitioner has claimed capital cost on the basis of the RCE-III (which was pending for approval at the time of filing the petition), the anticipated COD of Unit-I (30.6.2015) and actual COD of Unit-II (22.4.2015). The petitioner has intimated that Unit-I has achieved COD on 5.7.2015. Therefore the petitioner is supplying power from both units to the respondent beneficiaries from the date of commercial operation. In order to enable the petitioner to meet its financial expenditure on generation of power and debt service obligations, the Commission is of the view that an interim tariff from the date of commercial operation of both units should be granted till tariff is determined in accordance with the 2014 Tariff Regulations after considering the suggestions/objections of the respondent beneficiaries.

Commissioning schedule, Time overrun and Cost Overrun

9. The actual COD of Unit-II is 22.4.2015. The scheduled COD of the units as per Investment Approval dated 18.10.2004 of the Govt. of India and the actual COD of the units as submitted by the petitioner is as under:



Unit No	Original schedule as per Ministry of Coal, GOI dated 18.10.2004	Actual COD	Time overrun (months)
I	February, 2009	5.7.2015	77
II	June, 2009	22.4.2015	71

10. It is observed that there is actual time overrun of 77 months for Unit-I and 71 months in the COD of Unit-II from the scheduled COD.

11. The petitioner in the petition has submitted detailed reasons for the delay in the commissioning of the said units and cost overrun involved in the project. The respondents, TANGEDCO and KSEB have objected to the said submissions and have prayed that the claim of the petitioner for delay in COD of the units may be negated. We are of the considered view that the question of time and cost overrun involved in the completion of the project and its impact on capital cost will be considered on merits at the time of determination of final tariff of the generating station after hearing the concerned parties.

Additional ROE

12. The time line for completion of different units of a green field projects (Coal/lignite) for Unit size 250 MW CFBC Technology, from the date of investment approval is 36 months for the first unit and subsequent units at an interval of 4 months each, as specified under the 2014 Tariff Regulations. In the present case, there is time over run of 77 months for Unit-I and 71 months for Unit-II from the scheduled date of commercial operation as per investment approval, till the actual date of commercial operation. Since declaration of COD of the units are beyond the time line specified under the 2014 Tariff Regulations, both the units of the generating station are not entitled to additional return of 0.5% on equity allowed for timely completion of the units/generating station.

Capital Cost

Approved Capital Cost

13. The original sanctioned cost of the project as approved by Govt. of India was



₹2030.78 crore at January, 2004 price level, including IDC of ₹181.86 crore and Foreign Exchange component of ₹541 crore equivalent of US \$ 119.084 Million at 1 US \$ = ₹45.43. The hard cost of Project was ₹1848.92 crore, excluding IDC (i.e. about ₹3.70 crore/MW). The RCE-I was approved by Govt. of India on 10.7.2008 for ₹2453.27 crore, including IDC of ₹69.15 crore at June, 2007 price level and Foreign exchange component ₹310.93 Cr equivalent of US \$ 76.697 Million at 1 US \$ = ₹40.54. Thereafter, RCE-II was approved for ₹3027.59 crore, including IDC by the Board of the petitioner company on 9.4.2012. The petitioner vide affidavit dated 4.7.2015 has submitted the RCE-III for ₹3583.77 crore (anticipated cost) approved by the Board of the petitioner company on 23.6.2015 and the Auditor certified Form-5B for Unit-II and Unit-I/generating station.

14. The petitioner, in the petition has submitted that tariff has been claimed based on the RCE-III approved capital cost. However, the petitioner vide affidavit dated 4.7.2015 has furnished the actual capital expenditure of ₹155811 lakh as on COD of Unit-II (22.4.2015) and ₹322677 lakh as on anticipated COD of Unit-I/station (30.6.2015) including IDC of ₹39512 lakh and ₹79025 lakh respectively in Form-5B duly certified by auditor. Accordingly, the hard cost as on COD of generating station works out to ₹243652 lakh (i.e ₹4.87 crore/MW). Thus, there is substantial increase in hard cost also. Considering the fact that the project involves significant time and cost overrun, we grant interim tariff from the anticipated COD the said units, based on 85% of the actual capital expenditure as on COD of Unit-II (22.4.2015) and anticipated COD of Unit-I (30.6.2015), pending approval of final tariff. Accordingly, the capital cost considered for the purpose of interim tariff is as under:

	Unit-II (as on the actual COD i.e 22.4.2015)	Unit-I & II (as on the anticipated COD of Unit-I i.e 30.6.2015)
Capital cost excluding IDC	155811	322677
IDC & FC	12520	35700
Capital cost including IDC & FC	143291	286977

(₹ in lakh)



Capital cost considered (85% of audited capital cost)	121797.35	243930.45
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15. The petitioner has not claimed any additional capital expenditure and has not furnished details in Form-9A. The claim for additional capital expenditure for the units/generating station, if any, will however be considered at the time of determination of final tariff of the generating station.

16. The debt-equity ratio has been considered as 70:30 in terms of Regulation 19 of the 2014 Tariff Regulations. Depreciation has been computed considering the gross block and the weighted average rate of depreciation as claimed by the petitioner. Interest on loan has been computed considering the weighted average rate of interest claimed by the petitioner till 31.3.2017. However, the petitioner is directed to furnish the weighted average rate of interest on actual basis for each year of the tariff period. Return on Equity has been calculated by grossing up the base rate with the effective tax rate for 2014-15 as claimed by the petitioner. However, the petitioner is directed to furnish detailed calculation of the effective tax rate, duly certified by auditor, at the time of determination of final tariff. O&M expenses have been considered in accordance with the 2014 Tariff Regulations.

Additional Expenditure incurred towards Central Industrial Security Force

17. The petitioner in the petition has submitted that CISF is a premier multi skilled security agency in the country mandated to provide security to industrial zones like thermal power stations of NLC and the deployment of the same would be completely at the cost of the petitioner. The petitioner has also submitted that it has to provide certain infrastructure facilities such as residential accomodation to the force, vehicles etc., to the CISF Personnel and the capital/revenue expenditure incurred for providing the above facilities to CISF is not included in the project cost and the O&M Expenses claimed. Accordingly, the petitioner has prayed that it may be permitted to recover the same from the beneficiaries. The respondent, TANGEDCO has submitted that the claim of the



petitioner is beyond the scope of the regulations. The respondent, KSEB has submitted that the expenses on this count shall be borne from the normative O&M expenses allowed to the generating station. The matter has been examined. We are of the considered view that the additional expenditure claimed by the petitioner shall be considered on merit only after hearing the concerned parties at the time of final determination of tariff of the generating station. Hence, the same has not been considered for the purpose of interim tariff.

18. Accordingly, after carrying out due prudence check, the interim tariff (pro rata) allowed for the period from the anticipated COD of Units I & II till 31.3.2017 as under:

	Actual COD of Unit-II (22.4.2015 to 4.7.2015)	Anticipated COD of I (5.7.2015 to 31.3.2016)	2016-17 (₹ in lakh)
Return on Equity	1774.85	12796.51	17346.38
Interest on Loan	1711.78	12001.86	15044.35
Depreciation	1295.20	9338.29	12658.56
Interest on Working Capital	426.12	3061.36	4165.10
O&M Expenses	1301.23	9368.85	13,500.00
Total	6509.18	46566.87	62714.40

Operational norms

19. The operational norms considered by the petitioner in the petition for determination of tariff are as under:

Normative Annual Plant Availability Factor (for 3 years from COD)	%	75
Normative Annual Plant Availability Factor (for 2018-19)	%	75
Auxiliary Energy Consumption	%	10.00
Gross Station Heat Rate (without correction factor)	kCal/kWh	2327.215
Gross Station Heat Rate (with 1.1 correction factor)	kCal/kWh	2560
Specific Fuel Oil Consumption	ml/kWh	1.00
Cost of Lignite for working capital	Months	1.5
Cost of limestone for working capital	Months	2.00
Cost of Main Secondary Fuel Oil for working capital	Months	2.00
Limestone consumption	Kg/kWh	0.046

20. The operational norms considered by the petitioner in terms of the 2014 Tariff Regulations are in order and has been considered for the purpose of interim tariff except



for the claim for Gross Station Heat Rate (with 1.1 correction factor), and the cost of lime stone for working capital which are discussed hereunder.

Gross Station Heat Rate (with correction factor of 1.1)

21. The petitioner has considered the ceiling design heat rate of 2267 Kcal/kwh. As per Regulation 36(b)(i) of the 2014 Tariff Regulations, in respect of generating units where BFP are electrically operated, the maximum design unit heat rate shall be 40 kCal/kWh lower than the maximum design unit heat rate specified with turbine driven BFP. Accordingly, the maximum design heat rate considered by the petitioner is 2227 kCal/kWh (2267- 40). Thus, the applicable Station Heat Rate (SHR) in respect of generating units which have achieved COD after 1.4.2014 would be 2327.215 kCal/kWh (1.045 x 2227). The petitioner has considered the Station Heat Rate as 2560 kCal/kWh assuming the correction factor of 1.1 (for Lignite with 50% moisture), but has not furnished any documentary evidence in support of the moisture content of lignite. It is noticed that in respect of other generating stations of the petitioner, the Commission had allowed the correction factor of 1.1 based on 50% moisture content in lignite. Corresponding to the boiler efficiency of 78.62%, the GSHR works out to 2553.95 kCal/kWh, which is lower than the ceiling norm prescribed under the 2014 Tariff Regulations. Accordingly, the GSHR of 2553.95 kCal/kWh has been considered for the purpose of interim tariff, subject to the verification of moisture content in lignite at the time of determination of final tariff of the generating station. The petitioner is directed to furnish the details of design coal for the boiler for consideration of the Commission at the time of determination of final tariff of the generating station.

Cost of Lignite and Limestone in Working Capital

22. The petitioner has considered cost of lignite for 1.5 months and cost of limestone for 2 months towards pit-head generating station. However, as per Regulation 28(1)(a)(i) and



(ii), of the 2014 Tariff Regulations, the cost of lignite corresponding to the normative annual plant availability is 45 days (30+15). Accordingly, the cost of lignite and limestone has been considered for 45 days for the purpose of interim tariff.

Auxiliary Power Consumption

23. The petitioner had claimed Auxiliary Power Consumption of 10.00% in terms of the 2014 Tariff Regulations and the same has been considered for interim tariff. However, the submissions of the petitioner to consider the Auxiliary Power Consumption of 11.5% in exercise of the 'Power to relax' shall be considered on merits at the time of final determination of tariff after hearing the concerned parties.

Water Charges

24. In terms of Regulation 29(2) of the 2014 Tariff Regulations, the petitioner has claimed actual water charges and has prayed that the same may be permitted to be recovered from the beneficiaries. Since the petitioner has not supported its claim with documentary evidence, the water charges have not been allowed in this order. The petitioner is directed to place on record the documents in support the water charges including the details of the actual billed water consumption which shall be considered at the time of determination of final tariff after hearing the parties.

25. Based on the above discussions, the operational norms for 500 MW units considered for determination of interim tariff is as under:

Normative Annual Plant Availability Factor (for 3 years from COD)	%	75
Auxiliary Energy Consumption	%	10.00
Gross Station Heat Rate (without correction factor)	kCal/kWh	2327.215
Gross Station Heat Rate (with 1.1 correction factor)	kCal/kWh	2553.95
Specific Fuel Oil Consumption	ml/kWh	1.00
Cost of Lignite for working capital	Days	45
Cost of limestone for working capital	Days	45
Cost of Main Secondary Fuel Oil for working capital	Months	2.00
Limestone consumption	Kg/kWh	0.046



Expenses on Secondary Fuel Oil Consumption

26. The petitioner has used LDO as well as HFO during preceding three months from the date of COD of the units. However, the cost of secondary fuel oil is worked out and allowed after considering only HFO for the purpose of interim tariff as under:

(₹ in lakh)	
2015-16	2016-17
183.16	182.66

Fuel Component and Energy Charges in Working capital

27. The petitioner has claimed fuel component in working capital based on price and GCV of Lignite & oil for preceding three months and landed price of lime stone based on procurement price of lime stone inclusive of royalty, taxes & duties and transportation charges as under:

(₹ in lakh)		
	2015-16	2016-17
Cost of Lignite for 45 days	6502.60	6502.60

28. In accordance with the provisions of the 2014 Tariff Regulations, the cost for fuel component in working capital based on the price and GCV of Lignite, Limestone & Oil for the preceding three months is worked out and allowed for interim tariff as under:

(₹ in lakh)		
	2015-16	2016-17
Cost of Lignite for 45 days	6502.60	6502.60
Cost of Limestone for 45 days	430.99	430.99
Cost of Secondary fuel oil for 2 months	182.15	181.65

Energy Charge Rate (ECR)

29. The petitioner has claimed an Energy Charge Rate (ECR) of 1.947 ₹/kWh based on the weighted average price, GCV of Lignite & Oil procured and burnt for the preceding three months and the landed price of lime stone as per the 2014 Tariff Regulations. Based on the operational norms specified under the 2014 Tariff Regulations, the ECR has been worked out and allowed for interim tariff as under:



	Unit	2014-17
Capacity	MW	500
Gross Station Heat Rate	kCal/kWh	2553.95
Aux. Energy Consumption	%	10
Weighted average GCV of oil	kCal /lit	10000
Weighted average GCV of lignite	kCal/kg	2923.17
Weighted average price of oil	₹/KL	33178.09
Landed price of limestone	₹/MT	2313.43
Weighted average price of lignite	₹/MT	1844.92
Rate of energy charge ex-bus	Paise/kWh	1.9022

30. The Energy Charge Rate (ECR) allowed above has been considered for computation of the Energy Charge in working capital. On account of the monthly variation in the actual GCVs since Lignite transfer price (Primary Fuel) is determined year-wise, the Energy Charge Rate (ECR) on month to month basis, shall be calculated as per formula specified under Regulation 30(6) (a) of the 2014 Tariff Regulations.

31. The petitioner is directed to revise the petition taking into consideration the actual COD of the units of the generating station. The interim fixed charges granted above are subject to adjustment after determination of final tariff of the generating station from the actual COD of the units till 31.3.2019.

-Sd/-
(A.S.Bakshi)
Member

-Sd/-
(A.K.Singhal)
Member

-Sd/-
(Gireesh B. Pradhan)
Chairperson

