

Before the
MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
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Case No. 73 of 2011

In the matter of
Petition of The Tata Power Company Ltd. for Approval of Additional/Revised Norms in
MERC MYT Regulations, 2011

Shri V. P. Raja, Chairman

ORDER

Date: July 1, 2011.

M/s The Tata Power Company Ltd.(hereinafter called as TPC), submitted a Petition under affidavit on May 17, 2011 requesting for the Commission's approval for additional/revised norms in the Maharashtra Electricity Regulatory Commission (Multi Year Tariff) Regulations, 2011 (hereinafter referred as MERC MYT Regulations, 2011) notified by the Commission.

2. The Petitioner has prayed as under:

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- i. Approve the norms for heat rate, auxiliary consumption and design energy as sought by Tata Power in the above submissions*
- ii. Condone any inadvertent omissions/errors/shortcomings and permit Tata Power – G to add/ change/ modify / alter this filing and make further submissions as may be required at a future date*
- iii. Any other relief that the Hon'ble Commission may deem fit."*

3. In its Petition, the Petitioner has stated that the Commission had notified the MERC MYT Regulations, 2011 for the Control Period from FY 2011-12 to FY 2015-16 during end January 2011. As a part of the participative process initiated by the Commission for finalisation of the draft Regulations, the Petitioner had submitted its comments on various operational, financial and commercial issues.

4. The Petitioner further stated that subsequent to the notification of the above MERC MYT Regulations, 2011, it had observed that certain issues had not been addressed in the new MYT Regulations. The Petitioner submitted that any ambiguity on these issues could have a significant impact on the Petitioner's operational efficiency and profitability as also on the tariff charged to its consumers. The Petitioner, therefore, requested the Commission to kindly consider the issues elaborated in its Petition and specify new/revised norms thereby eliminating any uncertainty in finalising the operational philosophy that needed to be followed in the second Control Period.

5. The Petitioner submitted that the Commission has powers under Regulation 99 (Power to Amend) and Regulation 100 (Power to remove difficulties) of the MERC MYT Regulations, 2011 to address the issues raised by the Petitioner in its Petition. The Petitioner requested the Commission to admit the Petition as the issues raised are pertaining to request for amendment of the MERC MYT Regulations, 2011 or defining of new norms so as to provide relief and certainty to the Petitioner in terms of business viability.

6. The Commission, vide notice dated May 27, 2011, fixed the hearing in the matter on Tuesday, June 14, 2011 at the Commission's office at 13th floor, Centre No.1, World Trade Centre, Cuffe Parade, Mumbai 400 005, in the presence of the Consumer Representatives, authorised by the Commission under Section 94(3) of the Electricity Act, 2003 (EA 2003). The Petitioner was directed to serve a copy of its above mentioned Petition, along with its accompaniments to the authorised Consumer Representatives.

7. In the hearing held on June 14, 2011, Shri Ashok Sethi, Shri V. H. Wagle, and Shri. Prashant Joshi appeared on behalf of the Petitioner. The Petitioner elaborated the issues as follows:

a) Heat Rate Norm - Unit 6

8. The Petitioner submitted that Trombay Unit 6 was commissioned in 1990 and has been capable of firing oil and gas. The Petitioner added that in order to prevent tariff shocks to the consumers due to spiralling oil prices, TPC-G resorted to firing RLNG along with oil during FY 2008-09, which resulted in significant reduction in the cost of generation. However, the use of RLNG had an adverse impact on the heat rate of Unit 6. The Petitioner

further submitted that it had brought this issue to the notice of the Commission vide a Petition dated February 1, 2010 and had also made further submission on the issue vide letter dated June 25, 2010.

9. TPC submitted that the Commission, in response to the said Petition, appointed CPRI to study the impact of gas firing on the boiler efficiency of Unit 6, and based on the study conducted by CPRI, the Commission specified a heat rate of 2514 kcal/kWh for a fuel mix of oil and gas in the ratio of 50:50 at full load conditions.

10. The Petitioner submitted that the prices of oil and RLNG had increased in the previous year, which resulted in increased cost of generation even with the fuel mix of oil and gas, significantly impacting the dispatch position of Unit 6 in the Merit Order Dispatch. This has resulted in Unit 6 being operated at technical minimum of 150 MW with a PLF of 30-40%. In addition to the fuel mix, the lower Plant Load Factor of the Unit has further adversely impacted the heat rate, which is now in excess of 2750 kcal/kWh.

11. The Petitioner submitted that the present gas contract entered into by TPC with 'Take or Pay' clause is valid till December 2012. Lower generation results in increase in gas component in the fuel mix. Therefore, there is a significant increase in heat rate because of lower PLF coupled with the impact of gas firing and has resulted in TPC-G incurring substantial losses. The Petitioner submitted that this is unfair to TPC-G, as TPC-G has changed its fuel mix and resorted to buying cheaper power, thereby backing down Unit 6 in the interests of consumers. Hence, TPC requested that the Commission may consider revising the Heat Rate norm for Unit 6.

12. The Petitioner submitted that in order to assess the impact of variation in loading conditions as well as the fuel mix on the heat rate, it had appointed CPRI (Bangalore) to conduct a performance audit of Unit 6 with 100% gas firing at various loads. The Petitioner submitted that as per the test observations, there is a significant increase in the heat rate with decreasing PLF and increasing content of gas firing. Hence, it is necessary to derive a methodology for predicting heat rate with variations in fuel mix and loading conditions. The Petitioner also proposed a methodology for projecting the heat rate for the second Control Period.

13. The Petitioner prayed that the Commission may consider the proposed methodology and approve the Heat Rate norm of 2754 kcal/kWh for Unit 6 for the above operating conditions or alternatively approve the actual heat rate achieved during each year of the MYT Control Period.

b) Heat Rate Norm – Unit 7

14. The Petitioner submitted that in the MERC MYT Regulations, 2011, the Heat Rate norms have been specified for Combined Cycle operation of Trombay Unit 7. The Petitioner submitted that Unit 7 is sometimes forced to operate on Open Cycle mode due to operational exigencies on the steam turbine side or on account of lower availability of gas from GAIL. The Petitioner, therefore, requested that a separate heat rate norm may be specified for Open Cycle mode of Operation for Unit 7. The Petitioner added that CERC Tariff Regulations, 2009 have also adopted similar approach of providing Heat Rate separately for Combined Cycle mode and Open Cycle mode.

c) Auxiliary Consumption Norm – Unit 4

15. The Petitioner submitted that the 150 MW Unit 4 has been kept as a stand-by Unit and the Commission had considered the same in its Tariff Order dated September 8, 2010 while approving the ARR for FY 2010-11 for TPC-G. The Petitioner submitted that auxiliary consumption norm has been specified for Units 5, 7 and 8, however, the same has not been specified for Unit 4 and Unit 6.

16. The Petitioner submitted that Unit 4 is operational only during the planned outages of other thermal Units and hence, does not have annual generation comparable with other Units. Further, in order to maintain the Unit in service-worthy condition throughout the year, certain auxiliaries have to be kept in service, which results in some auxiliary consumption even though the Unit is not under service. The Petitioner submitted that a norm for auxiliary consumption as a percentage of generation, based on normal running operation, will not be appropriate for a standby Unit.

17. The Petitioner, in its Petition, submitted monthly data of auxiliary consumption for FY 2008-09, FY 2009-10 and FY 2010-11. On the basis of the data submitted for FY 2010-11, the Petitioner computed the average auxiliary consumption during standby condition as 0.60 MU per month (Average of Auxiliary Consumption during April 2010 and September 2010 to March 2011).

18. Accordingly, the Petitioner prayed that the Commission may consider a norm of 0.60 MU per month as auxiliary consumption for those months during which the Unit has been entirely operated as Standby. Alternatively, the Commission may allow the actual auxiliary consumption for Unit 4 for the period when the Unit is operated in a state of ‘Standby’.

d) Unit 6 Auxiliary Consumption: Proposed Norm

19. The Petitioner submitted that the MERC MYT Regulations, 2011 specify an auxiliary consumption norm of 6% for 500 MW coal fired Units (with Steam driven Boiler feed pumps), while there is no norm prescribed for Trombay Unit 6, which is operated on Oil and Gas mix. Further, since the cost of generation from the Unit is very high, it ranks lowest in the MOD, which has resulted in lower PLF of the Unit.

20. The Petitioner further submitted that FY 2010-11 has witnessed a drastic drop in prices of traded power which has resulted in significant purchase of cheap short-term power purchase by Mumbai distribution utilities. The Petitioner submitted the month-wise generation and auxiliary consumption data for FY 2010-11. Further, the Petitioner stated that when operated at lower PLF, there is a significant increase in auxiliary consumption as compared to its previous approved norm of 3.50%.

21. The Petitioner submitted that there is no efficiency degradation in operation of the Unit and the deviation from the previously approved norm of 3.50% is solely on account of low PLF due to its position in the MOD. Further, it stated that since the current trend of low prices for short-term traded power is expected to continue in forthcoming years also, Unit 6 would continue to run at lower PLF.

22. The Petitioner submitted that as per its projection for the current 5-year MYT period, the operating PLF for Unit 6 would be around 40% for the next two years and 30% for the remaining three years. Therefore, the previous norm of 3.50% (as provided in previous Tariff Orders) is grossly inadequate for Unit 6 with low PLF operation.

23. The Petitioner submitted that it had engaged CPRI to carry out performance audit and during the said audit it was observed that the auxiliary consumption at 40% PLF was between 4.70% and 5.50% while the same for 30% PLF was observed to be beyond 6.50%. In view of this, the Petitioner stated that low PLF operation is an uncontrollable factor and hence, the Commission may consider relaxation of the auxiliary consumption norm due to low PLF. Hence, the Petitioner prayed that the Commission may consider a more realistic norm of 6.00% (prevailing norm for 500 MW coal based Units).

24. The Petitioner submitted that due to implementation of ABT, the net generation will be measured at the HT side of the GT and hence, will be lower to the extent of GT losses. This will result in TPC-G being credited with a lower net generation due to change in methodology of measurement. Hence, the Petitioner prayed to the Commission to approve 0.50% over and above the 6.00% auxiliary consumption sought above, towards GT losses or

alternatively the Commission may allow the actual auxiliary consumption for the respective years while maintaining the norm of 3.50% as provided in the previous Control Period.

e) Unit 8 Auxiliary Consumption: Proposed Norm

25. The Petitioner submitted that in the MERC MYT Regulations, 2011, the Commission has specified an auxiliary consumption norm of 8.50% for 200 MW series coal based Thermal Generating Units excluding FGD consumption. The Petitioner submitted that Unit 8 being a coastal coal based plant, it was mandated to install a FGD as part of compliance with the conditions laid down in the environmental clearance. The Commission had considered the same in the previous Tariff Order dated September 8, 2010 and had allowed a norm of 9.50%.

26. The Petitioner has therefore prayed to the Commission to kindly retain the earlier norm of 9.50% (inclusive of FGD consumption) for 250 MW Unit 8 at Trombay.

f) Auxiliary Consumption for Hydro Generating Stations

27. The Petitioner submitted that though the Commission has revised the earlier auxiliary consumption norm from 0.50% to 1.00% (for machines with excitation systems), it may still not be adequate for TPC-G's hydro stations. Further, implementation of ABT will adversely impact the Petitioner as the measurement methodology of net generation as per ABT metering will result in significantly lower generation being credited to TPC-G. The Petitioner has submitted the reasons in detail, as follows:

- Hydro Units are small sized Units (24-25 MW) except for the 150 MW Bhira Pumped Storage Unit (BPSU), leading to large number of generation transformers unlike other hydro stations, which have larger sized Units. The generating transformers need to be kept back charged when generators are not in service, which results in losses much higher than the approved norm of 0.50%.
- Further, Units are frequently operated in condenser mode for system requirements especially during night time and during the monsoon months when the relative humidity is close to 100 % to avoid moisture ingress into the winding.
- In addition, Tata Power's hydro stations have a large geographical spread with a complex water system, which requires a significant head works distribution system. The large geographical spread of operational locations requires distribution transformers for providing power supply for operating the equipment at the various locations. The transformer losses of these transformers are not included in the auxiliary consumption of the hydro stations. In addition, TPC would also be adversely impacted by way of lower credit of hydro generation subsequent to implementation of ABT metering. The Petitioner also submitted that auxiliary consumption on account of colony consumption including head works is 0.746%.

28. The Petitioner also submitted the various components of total auxiliary consumption in its Hydro Stations as shown in the table below:

Sources	Auxiliary Consumption (%)
Auxiliary Consumption including Static Excitation (A)	0.996%
Condenser Mode Operation (B)	0.518%
Total Station Auxiliary Consumption (A+B)	1.514%
GT Losses (D)	1.191%
Total losses against normative 1.5% (A+B+D)	2.705%
Colony Consumption including head works	0.746%
Total	3.452%

29. In consideration of the above, the Petitioner prayed to the Commission to allow higher norm for auxiliary consumption, which would factor in the above operational requirements. Alternatively, the Commission may allow the actual auxiliary consumption, which includes the impact of the factors mentioned above.

g) Norms for Design Energy for Hydro Power Plants

30. The Petitioner submitted that the Commission has notified the methodology for recovery of fixed charges of hydro generating stations in the MERC MYT Regulations, 2011. As per the methodology provided in the MERC MYT Regulations, 2011, Annual Fixed Costs to the extent of 50% shall be recovered based on availability of the hydro station while the balance is allowed to be recovered through the Energy charges, which in turn are dependent upon the Energy Charge Rate (ECR) and the sales during a particular year.

31. The Petitioner further submitted that the Energy Charge Rate (ECR) is determined on the basis of 50% of Annual Fixed Charges and the Design Energy for the hydro stations. Further, as per the MERC MYT Regulations, 2011, in order to determine the energy charge rate, it is imperative to determine the design energy for the respective hydro stations.

32. The Petitioner submitted data pertaining to its hydro generating stations for the past 40 years. As per the data, the Petitioner has computed the maximum quantum of energy that can be generated in a 90% dependable year as 1151 MU and considering 95% of availability

of plant, the energy generated would be 1093 MU. Accordingly the Petitioner requested the Commission to approve 1093 MU as the design energy norm for Tata Power's hydro stations.

33. Having heard the Petitioner and after considering the material placed on record, the Commission is of the view as under:

34. Regulation 37.2 of the MYT Regulations, 2011 provides that the Commission shall be guided by the terms and conditions contained in this Part in determining the tariff for supply of electricity by a Generating Company to a Distribution Licensee. Provided that the Commission may deviate from the norms contained in this Part or specify alternative norms for particular cases, where it so deems appropriate, having regard to the circumstances of the case. Therefore, regarding the Petitioner's request for approving/revising the norms for heat rate, auxiliary consumption and design energy as sought by TPC-G in its Petition, the Commission observes that the Commission may invoke the above powers, if required. It was not possible to specify norms in the Regulations to satisfy all operational modes. The standard operational norms have been specified in the MERC MYT Regulations, 2011.

35. As regards, the proposal to approve the Heat Rate norm of 2754 kcal/kWh for Unit 6 or alternatively approve the actual heat rate achieved during each year of the MYT Control Period, Regulation 44.2 specifies the Gross Station Heat Rate for Thermal Generating Units of The Tata Power Company Ltd.-Generation Business (TPC-G). The norms are qualified by the following -

** In case variation in Oil and Gas mix is more than +/- 5%, the Heat Rate for Unit 6 shall be approved considering the actual Oil and Gas Mix.*

Therefore, it is not necessary to derive a methodology for predicting heat rate with variations in fuel mix and loading conditions. Therefore, in case variation in Oil and Gas mix is more than +/- 5%, the Heat Rate for Unit 6 shall be approved considering the actual Oil and Gas Mix.

Under Regulation 11.3, there would be a Mid-term Performance Review which shall be a comparison of the actual performance of the Generating Company with the approved forecast of Aggregate Revenue Requirement and expected revenue from tariff and charges.

Upon completion of the Mid-term Performance Review, the Commission shall pass an order recording-

(a) the approved aggregate gain or loss to the Generating Company on account of controllable factors and the amount of such gains or such losses that may be shared in accordance with Regulation 14.

(b) the approved modifications to the forecast of the Generating Company for the remainder of the Control Period.

36. To take care of such diverse operational conditions, the Utilities are required to submit their Business Plan and MYT Petition, elaborating the modes of operation of plants within the ambit of the basic norms specified as above. The performance norms for stations having special features and special operational conditions, would be considered in the Orders on the Business Plan and MYT Petition after giving due consideration to the submissions of the Utilities and approved operational conditions of the said plants, in accordance with the MERC MYT Regulations, 2011. Any further deviations from the specified norms due to changes in operational conditions would be addressed during mid-term performance review after applying prudence check in conformity with the MERC MYT Regulations, 2011.

Accordingly, with the above, the Commission disposes of TPC's Petition in Case No. 73 of 2011.

Sd/-
(V. P. Raja)
Chairman