CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 319/GT/2014

Coram:
Shri Gireesh B. Pradhan, Chairperson
Shri A.K. Singhal, Member
Shri A.S. Bakshi, Member
Dr. M.K. Iyer, Member

Date of Order: **22.3.2017**

In the matter of

Approval of tariff of Feroze Gandhi Unchahar TPS, Stage- I (420 MW) for the period from 1.4.2014 to 31.3.2019

And

In the matter of

NTPC Ltd
NTPC Bhawan,
Core-7, SCOPE Complex,
7, Institutional Area, Lodhi Road,
New Delhi-110003 **.....Petitioner**

Vs

1. Uttar Pradesh Power Corporation Ltd.
Shakti Bhawan, 14, Ashok Marg
Lucknow- 226001

2. Jaipur Vidyut Vitran Nigam Limited,
Vidyut Bhawan, Janpath,
Jaipur- 302005

3. Ajmer Vidyut Vitran Nigam Limited,
Old Power House, HathiBhata,
Jaipur Road, Ajmer

4. Jodhpur Vidyut Vitran Nigam Limited,
New Power House, Industrial Area,
Jodhpur

5. Tata Power Delhi Distribution Limited,
Grid sub-station, Hudson Road,
Kingsway Camp, Delhi-110009

6. BSES Rajdhani Power Limited,
BSES Bhawan, Nehru Place,
New Delhi -110019.

7. BSES Yamuna Power Limited,
Shakti Kiran Building,
Karkardooma, Delhi-110092

8. Haryana Power Purchase Centre,
Shakti Bhawan, Sector -VI,
Panchkula, Haryana-134109

9. Punjab State Power Corporation Limited,
The Mall, Patiala-147001

10. Himachal Pradesh State Electricity Board Limited,
Kumar Housing Complex Building-II,
Vidyut Bhawan, Shimla-171004

11. Power Development Department,
Govt of J & K, Civil Secretariat,
Srinagar

12. Electricity Department, Chandigarh,
Union Territory of Chandigarh,
Addl. Office Building, Sector 9 D,
Chandigarh

13. Uttarakhand Power Corporation Limited,
Urja Bhavan, Kanwali Road,
Dehradun-248001 …..**Respondents**

Parties present:

Shri Ajay Dua, NTPC
Shri Bhupinder Kumar, NTPC
Shri Rajeev Choudhary, NTPC
Shri Sameer Aggarwal, NTPC
Shri Nishant Gupta, NTPC
Shri T. Vinodh Kumar, NTPC
Shri E. P. Rao, NTPC
Shri Rajanikant, NTPC
Shri R. B. Sharma, Advocate, BRPL
Ms. Megha Bajpeyi, BRPL
Shri Sameer Singh, BYPL
Shri Nishant Grover, BYPL
Shri Abhishek Shrivastava, BYPL
Shri Manish Garg, UPPCL

ORDER

This petition has been filed by the petitioner, NTPC for approval of tariff of Feroze Gandhi Unchahar Thermal Power Station, Stage- I (420 MW) (hereinafter referred to as "the generating station) for the period from 1.4.2014 to 31.3.2019 in accordance with the provisions of the

Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as “the 2014 Tariff Regulations”).

2. The generating station with a capacity of 420 MW comprises of two units of 210 MW each. The dates of commercial operation of the different units of the generating station are as under:

Unit-I	21.11.1988
Unit-II	22.3.1989

3. The generating station was taken over by the petitioner from the erstwhile UPSEB on 13.2.1992. The Commission vide order dated 29.5.2012 in Petition No. 221/2009 had determined the tariff of the generating station for the period from 1.4.2009 to 31.3.2014. Aggrieved by the said order, the petitioner had filed Review Petition No. 20/2012 which was disposed of by the Commission by order dated 14.11.2012. The petitioner had thereafter filed Appeal No. 53/2013 before the Appellate Tribunal for Electricity (Tribunal) and the same is under consideration. While so, the petitioner had filed Petition No. 284/GT/2013 and Petition No. 320/GT/2014 for revision of tariff of generating station in terms of Regulation 6(1) of the 2009 Tariff Regulations for the period from 2009-14 after truing-up exercise based on actual additional capital expenditure incurred for the period 2009-14. Accordingly, the closing capital cost and the annual fixed charges for the petitioner for the period 2009-14 determined by Commission vide order dated 25.5.2016 in Petition No. 320/GT/2014 is as under:

Annual Fixed Charges

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	414.99	438.46	476.99	527.83	535.99
Interest on Loan	68.56	41.92	53.48	65.23	62.47
Return on Equity	11283.12	11133.01	11025.35	11034.41	11270.48
Interest on Working Capital	2749.33	2770.72	2801.18	2824.66	2858.77
O&M Expenses	7644.00	8080.80	8542.80	9034.20	9550.80
Cost of secondary fuel oil	646.44	646.44	648.21	646.44	646.44
Compensation Allowance	273.00	273.00	273.00	273.00	273.00
Total	**23079.44**	**23384.35**	**23821.01**	**24405.77**	**25197.96**

Capital Cost

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Capital cost	97412.91	96894.28	96841.42	97473.42	97104.65
Additional Capital Expenditure Allowed	(518.63)	(52.87)	632.01	(368.77)	(260.95)
Closing Capital cost	**96894.28**	**96841.42**	**97473.42**	**97104.65**	**96843.70**
Average Capital cost	**97153.60**	**96867.85**	**97157.42**	**97289.04**	**96974.18**

4. The petitioner has sought approval of tariff of the generating station for the period 2014-19 in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the capital cost and the annual fixed charges claimed by the petitioner are as under:

Annual Fixed Charges:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	545.17	31.57	54.17	239.32	424.46
Interest on Loan	4.69	19.04	45.36	288.28	503.83
Return on Equity	9914.38	9945.75	9971.91	10186.28	10400.66
Interest on Working Capital	4626.53	4665.62	4699.26	4758.89	4820.80
O&M Expenses	10143.11	10779.79	11458.89	12180.44	12948.67
Special allowance	3150.00	3350.03	3562.75	3788.99	4029.59
Total	**28383.89**	**28791.79**	**29792.35**	**31442.20**	**33127.99**

Capital Cost:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	99065.56	99235.56	100091.56	100091.56	107104.56
Add: Additional capital expenditure	170.00	856.00	0.00	7013.00	0.00
Closing Capital Cost	99235.56	100091.56	100091.56	107104.56	107104.56
Average Capital Cost	99150.56	99663.56	100091.56	103598.06	107104.56

5. In compliance with the directions of the Commission, the petitioner has filed additional information and has served the copies of the same on the respondents. The respondents, UPPCL, BRPL and BYPL have filed their replies and the petitioner has filed its rejoinder to the said replies. We now proceed to examine the claim of the petitioner, on prudence check, based on the submissions of the parties and the documents available on record, as stated in the subsequent paragraphs.

Capital Cost as on 1.4.2014

6. Regulation 9(3) of the 2014 Tariff Regulations provides for capital cost of an existing project as under:

"The Capital cost of an existing project shall include the following:

(a) the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;

(b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with Regulation 14; and

(c) expenditure on account of renovation and modernisation as admitted by this Commission in accordance with Regulation 15."

7. The petitioner has claimed opening capital cost of ₹99065.56 lakh as on 31.3.2014 after adjustment of an amount of ₹839.98 lakh in the closing capital cost of ₹98225.58 lakh as on 1.4.2009 as approved by order dated 29.5.2012 in Petition No. 221/2009. The closing capital Cost of ₹99065.56 lakh as on 31.3.2014 claimed by the petitioner is prior to truing up of tariff based on actual additional capital expenditure for the period 2009-14. However, the Commission vide order dated 25.5.2016 in Petition No. 320/GT/2014 has approved the capital cost of ₹96843.70 lakh based on the actual capitalization for the period 2009-14. Accordingly, in terms of the above regulation, the opening capital cost of ₹96843.70 lakh as on 1.4.2014 has been considered for determination of tariff for the period 2014-19.

Additional Capital Expenditure

8. Clause 3 of Regulation 14 of 2014 Tariff Regulations provides as under:

"14.Additional Capitalization and De-capitalization: (3) The capital expenditure, in respect of existing generating station or the transmission system including communication system, incurred or projected to be incurred on the following counts after the cut-off date, may be admitted by the Commission, subject to prudence check:

(i) Liabilities to meet award of arbitration or for compliance of the order or 49 decree of a court of law;

(ii) Change in law or compliance of any existing law;

(iii) Any expenses to be incurred on account of need for higher security and safety of the plant as advised or directed by appropriate Government Agencies of statutory authorities responsible for national security/internal security;

(iv) Deferred works relating to ash pond or ash handling system in the original scope of work;

(v) Any liability for works executed prior to the cut-off date, after prudence check of the details of such un-discharged liability, total estimated cost of package, reasons for such withholding of payment and release of such payments etc.;

(vi) Any liability for works admitted by the Commission after the cut-off date to the extent of discharge of such liabilities by actual payments;

(vii) Any additional capital expenditure which has become necessary for efficient operation of generating station other than coal/lignite based stations or transmission system as the case may be. The claim shall be substantiated with the technical justification duly supported by the documentary evidence like test results carried out by an independent agency in case of deterioration of assets, report of an independent agency in case of damage caused by natural calamities, obsolescence of 50 technology, up-gradation of capacity for the technical reason such as increase in fault level;

(viii) In case of hydro generating stations, any expenditure which has become necessary on account of damage caused by natural calamities (but not due to flooding of power house attributable to the negligence of generating company) and due to geological reasons after adjusting the proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation;

(ix) In case of transmission system, any additional expenditure on items such as relays, control and instrumentation, computer system, power line carrier communication, DC batteries, replacement due to obsolesce of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulators with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system;

(x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialization of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014:

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernization (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation."

9. Regulation 15 of the 2014 Tariff Regulations provides as under:

15. Renovation and Modernisation: (1) The generating company or the transmission licensee, as the case may be, for meeting the expenditure on renovation and modernization (R&M) for the purpose of extension of life beyond the originally recognised useful life for the purpose of tariff of the generating station or a unit thereof or the transmission system or an *element thereof, shall make an application before the Commission for approval of the proposal with a Detailed Project Report giving complete scope, justification, cost-benefit analysis, estimated life extension from a reference date, financial package, phasing of expenditure, schedule of completion, reference price level, estimated completion cost including foreign exchange component, if any, and any other information considered to be relevant by the generating company or the transmission licensee.*

(2) Where the generating company or the transmission licensee, as the case may be, makes an application for approval of its proposal for renovation and modernisation, the approval shall be granted after due consideration of reasonableness of the cost estimates, financing plan, schedule of completion, interest during construction, use of efficient technology, cost-benefit analysis, and such other factors as may be considered relevant by the Commission

(3) In case of gas/ liquid fuel based open/ combined cycle thermal generating station, any expenditure which has become necessary for renovation of gas turbines/steam turbine after 25 years of operation from its COD and an expenditure necessary due to obsolesce or non-availability of spares for efficient operation of the stations shall be allowed :
Provided that any expenditure included in the R&M on consumables and cost of components and spares which is generally covered in the O&M expenses during the major overhaul of gas turbine shall be suitably deducted after due prudence from the R&M expenditure to be allowed.

4) Any expenditure incurred or projected to be incurred and admitted by the Commission after prudence check based on the estimates of renovation and modernization expenditure and life extension, and after deducting the accumulated depreciation already recovered from the original project cost, shall form the basis for determination of tariff.

10. Regulation 16 of the 2014 Tariff Regulations provides as under:

16. Special Allowance for Coal-based/Lignite fired Thermal Generating station: (1) In case of coal-based/lignite fired thermal generating station, the generating company, instead of availing R&M may opt to avail a „special allowance" in accordance with the norms specified in this regulation, as compensation for meeting the requirement of expenses including renovation and modernisation beyond the useful life of the generating station or a unit thereof, and in such an event, revision of the capital cost shall not be allowed and the applicable operational norms shall not be relaxed but the special allowance shall be included in the annual fixed cost: Provided that such option shall not be available for a generating station or unit for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational and performance norms;

(2) The Special Allowance shall be @ ₹7.5 lakh/MW/year for the year 2014-15 and thereafter escalated @ 6.35% every year during the tariff period 2014-15 to 2018-19, unit-wise from the next financial year from the respective date of the completion of useful life with reference to the date of commercial operation of the respective unit of generating station:
Provided that in respect of a unit in commercial operation for more than 25 years as on 1.4.2014, this allowance shall be admissible from the year 2014-15:

Provided further that the special allowance for the generating stations, which, in its discretion, has already availed of a „special allowance" in accordance with the norms specified in clause (4) of regulations 10 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff Determination) Regulations, 2009, shall be allowed Special Allowance by escalating the special allowance allowed for the year 2013-14 @ 6.35% every year during the tariff period 2014-15 to 2018-19.

(3) In the event of granting special allowance by the Commission, the expenditure incurred or utilized from special allowance shall be maintained separately by the generating station and details of same shall be made available to the Commission as and when directed to furnish details of such expenditure.

11. The projected additional capital expenditure claimed by the petitioner for the period 2014-19 is as under:

(₹in lakh)

Sl. No.	Head of Works / Equipments	Regulation under which claimed	Projected additional capital expenditure				
			2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
1	Fire Fighting System for Stacker Reclaimer I&II; CHP & main plant	14(3) (ii)	-	698.00	-	-	-
2	Online Monitoring of CO2 in Flue gas at stack.	14(3) (ii)	-	158.00	-	-	-
3	Inert Gas System for CCR & CER	14(3) (ii)	170.00	-	-	-	-
4	Modification of ESP for reduced emission	14(3) (ii)	-	-	-	7013.00	-
	Total		170.00	856.00	-	7013.00	-

12. The claim of the petitioner for additional capital expenditure has been examined in the subsequent paragraphs.

Inert gas system for CCR & CER

13. The petitioner has claimed projected additional capital expenditure of ₹170.00 lakh in 2014-15 towards Inert gas system for CCR and CER. In justification of the same, the petitioner has submitted that halon fire protection system has been provided for permanent fire fighting system and it contains substances that are ozone depleting in nature. It has further submitted that based on the Environment (Protection) Act, 1986, the Central Government has enacted Ozone Depleting Substances (Regulation and Control) Rules, 2000, whereby no person or enterprise shall engage in any activity that uses ozone depleting substances unless registered with the authority and the generating companies are allowed to continue with the existing fire fighting system for a period of 10 years (Upto 1.1.2010) after which the production and servicing

of the same should be stopped. In addition, it has pointed out the Montreal Protocol on the substances that deplete ozone layer which clearly states that the plants using ozone depleting substances must discard such system and use the one which do not deplete ozone layer. In this background and in line with the Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electrical Plants and Electric Lines) Regulation, 2010, the petitioner has proposed to replace halon gas fire protection system with alternate inert gas. Accordingly, the petitioner has prayed for the capitalization of the said expenditure under Regulation 14 (3)(ii) of the 2014 Tariff Regulations.

14. The respondents, UPPCL, BRPL and BYPL vide their affidavits have submitted that the Commission in order dated 7.8.2012 in Petition No. 225/2009 (tariff of Singrauli STPS for 2009-14) had disallowed such expenditures on the ground that Special allowance was granted to the petitioner. The relevant portion of the said order is extracted as under:

> "*28. It is observed that 4 (four) units of 200 MW of Stage-I of this generating station has completed useful life of 25 years prior to 1.4.2009 and Unit-V (200 MW) of Stage-I has completed useful life of 25 years as on 31.5.2009. Units VI and VII of the generating station shall complete its useful life of 25 years on 31.6.2012 and 31.4.2013 respectively. In short, the generating station shall complete its useful life of 25 years during the period 2009-14. Accordingly, the petitioner has opted for Special Allowance under the provisions of Regulation 10(4) of the 2009 Tariff Regulation for R&M and life extension of the Units, except for Unit VII which shall become eligible during 2014-15 i.e in the next tariff period. Since the units and the generating station as a whole would complete useful life of 25 years during the tariff period, there would be no remaining deferred work for Ash Pond or Ash Handling system within the original scope of work. Accordingly, the expenditure incurred / projected to be incurred for the works related to Ash Pond and Ash handling system is required to be met from the Special allowance admissible to the generating station towards R&M and life extension of the units/generating station. Hence, the total expenditure claimed during the period 2009-13 towards for Ash Pond & Ash handling system has not been allowed under the head.*"

15. Accordingly, the respondents have prayed that since the petitioner has been granted Special allowance from 2014-15 in respect of all the units of the generating station, the expenditure claimed by the petitioner may be rejected.

16. We have examined the matter. It is observed that the generating station has completed useful life of 25 years in 2013-14 and is therefore entitled for R & M for life extension. However,

it is noticed that the petitioner has opted for Special allowance under Regulation 16 of the 2014 Tariff Regulations instead of R & M of the generating station and an amount of ₹17881.35 lakh has been allowed for the period 2014-19. Accordingly, we direct the petitioner to meet the said expenditure on this count from the Special Allowance allowed to the generating station. Accordingly, the claim of the petitioner for additional capital expenditure under this head is not allowed.

On-line Monitoring System

17. The petitioner has claimed projected additional capital expenditure of ₹158.00 lakh in 2015-16 for Online monitoring of CO_2 in flue gas at stack. In justification of the same, the petitioner has submitted that in accordance with the revised environmental norms, CO2 is required to be monitored at stack on continuous basis and therefore the system needs to be installed. It has also submitted that it had furnished the copy of office memorandum dated 6.4.2011 of the Ministry of Environment & Forests (MoEF), GOI. Accordingly, it has prayed that the claim towards on-line monitoring system may be allowed.

18. The matter has been examined. On perusal of the said Memorandum dated 6.4.2011 of MoEF, GOI , no reference has been made for compliance with the statutory requirement for installation of On-line CO2 monitoring system. Even otherwise, as stated above, the generating station has been allowed an amount of ₹17881.35 lakh as Special Allowance during the period 2014-19. Accordingly, we direct the petitioner to meet the said expenditure out of the Special allowance allowed during the period 2014-15. Hence, the claim of the petitioner for additional capital expenditure is not allowed.

Fire Fighting system for stacker Reclaimer I and II, CHP and Main Plant

19. The petitioner has claimed projected additional capital expenditure of ₹698.00 lakh in 2015-16 towards fire fighting system for stacker reclaimer I and II, CHP and Main plant. In

justification of the same, the petitioner has submitted that assessment of availability, reliability and design adequacy of fire detection and protection system of all coal based thermal stations of the petitioner has been carried out in accordance with Regulation 12(5) of CEA (Technical standards for construction of electrical plants and electric lines) Regulations, 2010. It has further submitted that the augmentation of fire detection and protection system for stacker reclaimer & coal conveyors area of CHP has been identified and taken. It has also submitted that the same is required to prevent any catastrophic damage in case of fire breaks out in CHP as existence of coal in CHP area makes it vulnerable to fire hazard and mobile fire protection equipments not sufficient to control the spread of fire. Accordingly, it has prayed that the expenditure may be allowed.

20. The respondents, UPPCL, BRPL and BYPL have submitted that since Special Allowance has been granted to all the units of the generating station, the expenditure of ₹698.00 lakh claimed under this head may be met out from the same.

21. We have examined the matter. As stated, the generating station has completed useful life of 25 years in 2013-14 and is therefore entitled for R & M under Regulation 15 of the 2014 Tariff Regulations for life extension. However, the petitioner has opted for Special allowance instead of R & M of the generating station and amount of ₹17881.35 lakh has been allowed for the same for the period 2014-19. Accordingly, the petitioner shall meet the said expenditure out of Special Allowance granted to the generating station. In this background, the claim of the petitioner for additional capital expenditure under this head is not allowed.

Modification of ESP

22. The petitioner has claimed projected additional capital expenditure of ₹7013.00 lakh in 2017-18 towards modification of ESP of Stage-I under Regulation 14 (3)(ii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that modification of ESP is necessary to reduce the emission level in accordance with the limits specified by U.P Pollution

Control Board, including installation of additional field is proposed as it had been assessed that duel fuel gas condition would not give the desired result.

23. The respondents, UPPCL, BRPL and BYPL have submitted that claim for Renovation of ESP in Petition No. 225/2009 (tariff of Singrauli for 2009-14) was disallowed by the Commission in order dated 7.8.2012 on the ground that Special allowance was allowed to the units of generating stations who were about to / or completed useful life of 25 years during the period 2009-14. The relevant portion of the said order is extracted as under:

> *"32. We have considered the submission of the parties and the documents available on record. In Petition No.189/2009, the petitioner had claimed expenditure on CEA approved R&M schemes to overcome the problems due to obsolescence, non availability of spares etc as the equipments installed had outlived their useful life. It was also submitted by the petitioner that the R&M schemes were approved by CEA during the year 2000 and the work was carried out in phased manner in order to avoid the shutdown of the units of the generating station. Accordingly, on prudence check, the Commission by its order dated 21.1.2011 had allowed the expenditure for R&M on CEA approved schemes including works other than CEA approved R&M schemes. Since capital expenditure allowed in our order dated 21.1.2011 in Petition No.189/2009 was not towards life extension of this generating station, Special allowance in lieu of R&M for life extension as contained in Regulation 10 of the 2009 Tariff Regulations is admissible for this generating station. Since Special allowance is admissible for the units of the generating station which have completed/to be completed its useful life of 25 years during the tariff period, we are of the view that the actual / projected capital expenditure incurred / to be incurred for R&M for life extension of Stage-I Units of the generating station, can be met from the Special allowance allowed for Stage-I units. Similarly, the expenditure on R&M for Unit-VI of Stage-II can also be met from the Special allowance allowed for the year 2013-14. Since, Unit-VII of Stage-II shall complete its useful life of 25 years during 2013-14 only, the capital expenditure for R&M of Unit-VII cannot be allowed as in terms of the provisions of the 2009 Tariff Regulations, the expenditure on R&M for life extension can be allowed from the next financial year (2014-15) from the date of completion of useful life of 25 years. We order accordingly. In view of this, the total capital expenditure of `17070.72 lakh (`3769.90 lakh + `13300.82 lakh) claimed towards R&M and life extension and CEA approved R&M schemes has not been allowed."*

24. We have examined the matter. The expenditure claimed by the petitioner, in our view, is in the nature of R & M expenditure. As stated, the petitioner has opted for Special allowance in terms of Regulation 16 of the 2014 Tariff Regulations for meeting the requirement of expenses including R &M beyond the useful life of the generating station during 2014-19 and the same has been allowed. Accordingly, the petitioner shall meet the said expenses from Special allowance allowed to the generating station. In this background, the claim of the petitioner for capitalization of the projected additional capital expenditure of ₹7013.00 lakh is not allowed.

25. Based on the above, no projected additional capital expenditure has been allowed for the period 2014-19.

26. Accordingly, the capital cost of the generating station for the period 2014-19 is allowed as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening capital cost	96843.70	96843.70	96843.70	96843.70	96843.70
Admitted Projected additional capital expenditure	0.00	0.00	0.00	0.00	0.00
Closing capital cost	**96843.70**	**96843.70**	**96843.70**	**96843.70**	**96843.70**

Debt–Equity Ratio

27. Regulation 19 of the 2014 Tariff Regulations provides as under:

(1) For a project declared under commercial operation on or after 1.4.2014, the debt-equity ratio would be considered as 70:30 as on COD. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan:

Provided that:
(i) where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:
(ii) the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
(iii) any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt-equtiy ratio.

Explanation - The *premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.*

(2) The generating Company or the transmission licensee shall submit the resolution f the Board of the company or approval from Cabinet Committee on Economic Affairs (CCEA) regarding infusion of fund from internal resources in support of the utilisation made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.

(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2014 shall be considered.

(4) In case of generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, but where debt:equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2014, the Commission shall approve the debt:equityration based on actual

information provided by the generating company or the transmission licensee as the case may be.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2014 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.

28. Accordingly, the gross normative loan and equity amounting to ₹48884.54 lakh and ₹47959.18 lakh, respectively as on 31.3.2014 as considered in order dated 25.5.2016 in Petition No. 320/GT/2014 has been considered as gross normative loan and equity as on 1.4.2014. Further, the admitted additional capital expenditure has been allocated in the debt equity ratio of 70:30.

Return on Equity

29. Regulation 24 of the 2014 Tariff Regulations provides as under:

"24. Return on Equity: (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 19.

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that:

i) in case of projects commissioned on or after 1st April, 2014, an additional return of 0.50 % shall be allowed, if such projects are completed within the timeline specified in Appendix-I:

ii) the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever:

iii) additionalRoE of 0.50% may be allowed if any element of the transmission project is completed within the specified timeline and it is certified by the Regional Power Committee/National Power Committee that commissioning of the particular element will benefit the system operation in the regional/national grid:

iv) the rate of return of a new project shall be reduced by 1% for such period as may be decided by the Commission, if the generating station or transmission system is found to be declared under commercial operation without commissioning of any of the Restricted Governor Mode Operation (RGMO)/ Free Governor Mode Operation (FGMO), data telemetry, communication system up to load dispatch centre or protection system:

v) as and when any of the above requirements are found lacking in a generating station based on the report submitted by the respective RLDC, RoE shall be reduced by 1% for the period for which the deficiency continues:

vi) additionalRoE shall not be admissible for transmission line having length of less than 50 kilometers.

30. Regulation 25 of the 2014 Tariff Regulations provides as under:

"Tax on Return on Equity (1) The base rate of return on equity as allowed by the Commission under Regulation 24 shall be grossed up with the effective tax rate of the respective financial year. For this purpose, the effective tax rate shall be considered on the basis of actual tax paid in the respect of the financial year in line with the provisions of the relevant Finance Acts by the concerned generating company or the transmission licensee, as the case may be. The actual tax income on other income stream (i.e., income of non-generation or non-transmission business, as the case may be) shall not be considered for the calculation of "effective tax rate".

(2) Rate of return on equity shall be rounded off to three decimal places and shall be computed as per the formula given below:

Rate of pre-tax return on equity = Base rate / (1-t)
Where "t" is the effective tax rate in accordance with Clause (1) of this regulation and shall be calculated at the beginning of every financial year based on the estimated profit and tax to be paid estimated in line with the provisions of the relevant Finance Act applicable for that financial year to the company on pro-rata basis by excluding the income of non-generation or non-transmission business, as the case may be, and the corresponding tax thereon. In case of generating company or transmission licensee paying Minimum Alternate Tax (MAT), "t" shall be considered as MAT rate including surcharge and cess.

31. The petitioner has claimed Return on Equity considering the base rate of 15.5% and effective tax rate of 23.939%. However, it is observed that in terms of the directions of the Commission in Petition No. 290/GT/2014 (tariff of Singrauli TPS for 2014-19) and based on the actual profit and tax paid for the year 2014-15, it has worked out the effective tax rate as 22.584%. Though the above regulation specify the computation of effective tax rate on the basis of tax paid, we deem it proper to allow the grossing up on MAT rate, considering the fact that the petition is disposed of in 2016- 17. Accordingly, the effective tax rate (MAT) of 20.961% has been considered for the year 2014-15 and 21.342% for the year 2015-16 onwards up to the year 2018-19 for the purpose of grossing up of base rate of 15.500%.Based on the above, the rate of ROE works out to 19.610% for 2014-15 and 19.705% for 2015-16 onwards. This is, subject to truing- up in terms of Regulation 8 of the 2014 Tariff Regulations . Accordingly, return on equity has been worked out as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19

Opening Normative Equity	47959.18	47959.18	47959.18	47959.18	47959.18
Addition due to Additional capital expenditure	0.00	0.00	0.00	0.00	0.00
Closing Equity	47959.18	47959.18	47959.18	47959.18	47959.18
Average Equity	47959.18	47959.18	47959.18	47959.18	47959.18
Rate of Return on Equity	15.500%	15.500%	15.500%	15.500%	15.500%
Effective tax rate	20.961%	21.342%	21.342%	21.342%	21.342%
Return on Equity (Pre-tax)	19.610%	19.705%	19.705%	19.705%	19.705%
Return on Equity (Pre-tax) – (annualized)	**9404.79**	**9450.36**	**9450.36**	**9450.36**	**9450.36**

Interest on Loan

32. Regulation 26 of the 2014 Tariff Regulations provides as under:

"26. Interest on loan capital: *(1)The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*

(2) The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.

(3) The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalization of such asset.

(4) Notwithstanding any moratorium period availed by the generating company orthe transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:

Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:

Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.

(6) The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.

(7) The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.

(8) The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.

(9) In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999,as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:

Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan."

33. Interest on loan has been worked out as under**:**

(a) The gross normative loan of ₹48884.54 lakh as on 1.4.2014 has been considered after adjustment in respect of unserviceable asset deducted as on 1.4.2014.

(b) Cumulative repayment of loan of ₹47738.67 lakh as on 31.3.2014 as considered in order dated 25.5.2016 in Petition No. 320/GT/2014 has been considered as on 1.4.2014.

(c) Addition to normative loan on account of the admitted additional capital expenditure has been considered.

(d) Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2014-19. Further proportionate adjustment has been made to the repayments corresponding to discharges and reversals of liabilities considered during the respective years on account of cumulative repayment adjusted as on 1.4.2014.

(e) In line with the provisions of the regulation stated above weighted average rate of interest has been calculated applying the actual loan portfolio existing as on 1.4.2014 along with subsequent additions during the period 2014-19, if any, for the instant station. In case of loans carrying floating rate of interest the rate of interest as provided by the petitioner has been considered for the purpose of tariff.

34. The necessary calculation for interest on loan is as under:

(₹in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Gross opening loan	48884.54	48884.54	48884.54	48884.54	48884.54
Cumulative repayment of loan upto previous year / period	47738.67	48298.63	48858.60	48884.54	48884.54
Net Loan Opening	1145.87	585.91	25.94	0.00	0.00

Addition due to Additional capital expenditure	0.00	0.00	0.00	0.00	0.00
Repayment of loan during the year	559.97	559.97	25.94	0.00	0.00
Less: Repayment adjustment on account of de-caps	0.00	0.00	0.00	0.00	0.00
Add: Repayment adjustment on discharges corresponding to un-discharged liabilities deducted as on 1.4.2014	0.00	0.00	0.00	0.00	0.00
Net Repayment	559.97	559.97	25.94	0.00	0.00
Net Loan Closing	585.91	25.94	0.00	0.00	0.00
Average Loan	865.89	305.92	12.97	0.00	0.00
Weighted Average Rate of Interest on Loan	5.7757%	6.6858%	8.3714%	10.1209%	10.1353%
Interest on Loan	**50.01**	**20.45**	**1.09**	**0.00**	**0.00**

Depreciation

35. Regulation 27of the 2014 Tariff Regulations provides as under:

"27. Depreciation: (1) Depreciation shall be computed from the date of commercial operation of a generating station or unit thereof or a transmission system including communication system or element thereof. In case of the tariff of all the units of a generating station or all elements of a transmission system including communication system for which a single tariff needs to be determined, the depreciation shall be computed from the effective date of commercial operation of the generating station or the transmission system taking into consideration the depreciation of individual units or elements thereof.

Provided that effective date of commercial operation shall be worked out by considering the actual date of commercial operation and installed capacity of all the units of the generating station or capital cost of all elements of the transmission system, for which single tariff needs to be determined.

(2) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. In case of multiple units of a generating station or multiple elements of transmission system, weighted average life for the generating station of the transmission system shall be applied. Depreciation shall be chargeable from the first year of commercial operation. In case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

(3) The salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the asset:

Provided that in case of hydro generating station, the salvage value shall be as provided in the agreement signed by the developers with the State Government for development of the Plant:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciated value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff:

Provided also that any depreciation disallowed on account of lower availability of the generating station or generating unit or transmission system as the case may be, shall not be allowed to be recovered at a later stage during the useful life and the extended life.

(4) Land other than the land held under lease and the land for reservoir in case of hydro generating station shall not be a depreciable asset and its cost shall be excluded from the capital cost while computing depreciable value of the asset.

(5) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-II to these regulations for the assets of the generating station and transmission system:

Provided that the remaining depreciable value as on 31st March of the year closing after a period of 12 years from the effective date of commercial operation of the station shall be spread over the balance useful life of the assets.

(6) In case of the existing projects, the balance depreciable value as on1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets.

(7) The generating company or the transmission license, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project(five years before the useful life) along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.

(8) In case of de-capitalization of assets in respect of generating station or unit thereof or transmission system or element thereof, the cumulative depreciation shall be adjusted by taking into account the depreciation recovered in tariff by the de-capitalized asset during its useful services."

36. The cumulative depreciation as on 31.3.2014 vide order dated 25.5.2016 in Petition No. 320/GT/2014 works out to ₹84077.32 lakh. The depreciation has been calculated applying spreading over of the balance depreciable value. The balance useful life as on 1.4.2014, as per order dated 25.5.2016 works out to 4.93 years, and the same has been considered for calculation of depreciation. The petitioner is however directed to furnish information regarding un-recovered depreciation at the time of truing-up of tariff of the generating station. Accordingly, depreciation has been computed as under:

(₹ In lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Average Capital Cost	96843.70	96843.70	96843.70	96843.70	96843.70
Depreciable value (ex. land)@ 90%	86837.96	86837.96	86837.96	86837.96	86837.96

Balance useful life of the assets	4.93	3.93	2.93	1.93	1.00
Balance depreciable value	2760.63	2200.67	1640.70	1080.73	520.77
Depreciation (annualized)	**559.97**	**559.97**	**559.97**	**559.97**	**520.77**
Cumulative depreciation at the end	84637.29	85197.26	85757.22	86317.19	86837.96
Less: Cumulative Depreciation adjustment on a/c of un-discharged liabilities	0.00	0.00	0.00	0.00	0.00
Less: Cumulative Depreciation reduction due to decapitalization	0.00	0.00	0.00	0.00	0.00
Cumulative depreciation (at the end of the period)	**84637.29**	**85197.26**	**85757.22**	**86317.19**	**86837.96**

O&M Expenses

37. The petitioner has claimed O&M expenses as under:

(₹ In lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Normative O&M Expenses under Regulation 29(1) (*₹.lakh/MW/year)*	23.90	25.40	27.00	28.70	30.51
O&M Expenses under Regulation 29(1)	10038.00	10668.00	11340.00	12054.00	12814.20
O&M Expenses under Regulation 29(2)					
Water Charges	105.11	111.79	118.89	126.44	134.47
Total O&M Expenses claimed	**10143.11**	**10779.79**	**11458.89**	**12180.44**	**12948.67**

38. Regulation 29 (1) (a) of the 2014 Tariff Regulations provides the year-wise O&M expense norms for the generating station of the petitioner as under:

(₹ in lakh/MW)

2014-15	2015-16	2016-17	2017-18	2018-19
23.90	25.40	27.00	28.70	30.51

39. Accordingly, the year-wise O&M expenses in terms of the above said norms are allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
10038.00	10668.00	11340.00	12054.00	12814.20

Water Charges

40. Regulation 29(2) of the 2014Tariff Regulations provide as under:

"29.(2) The Water Charges and capital spares for thermal generating stations shall be allowed separately:

Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:

Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization"

41. In terms of the above regulations, water charges are to be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check of the details furnished by the petitioner.

42. The petitioner vide affidavit dated 14.8.2014 in Form-3A of the petition has claimed the following water charges:

2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
105.11	111.79	118.89	126.44	134.47

43. The details in respect of type of cooling water system, total water charges as applicable for 2013-14 has been furnished as under:

Description	**Remarks**
Type of Plant	Coal
Type of cooling water system	Closed Cycle
Consumption of water	17.519Cu-feet/Annum
Rate of water charges	₹600000/Cu-feet
Total water charges in 2013-14	₹105.114 lakh

44. In order to examine the trend of the actual water consumption and rate of water charges, the petitioner was directed vide ROP of the hearing dated 24.5.2016 to furnish the details of the actual water consumption along with the rate of water charges for the last five years (i.e 2009-10 to 2013-14) along with the relevant notification in support of the same. In response the distribution of consumptive water among stages is being done on the basis of stage capacity i.e. 2:2:1 for Stage- I, Stage-II and Stage-III respectively.

45. Actual water consumption for last 5 years for the period from 1.4.2009 to 31.3.2014 and the corresponding charges payable are as per the table given below:

	Total water consumption (cusec)	Pro-rata water consumption (cusec)	Royalty charges payable for		Water consumption charges payable*		Total canal maintenance * Misc. charges for station (₹ in lakh)	Pra-rata Maintenance charges (₹ in lakh)
			Rate (Rs.lakh /cusec)	Amount (Rs. lakh)	Rate Rs./1000 Cuft.)	Amount (Rs. lakh)		
1	2	3 = (2)*(2/5)	4	(5) =(4)*(3)	6	7=(6)*(3) *31536/ 10000	8	9= (8)(0.4)
2009-10	49.22	19.688	1.5	29.53	3.12	19.37	38.62	15.45
2010-11	49.82	19.928	1.5	29.89	3.12	19.61	85.81	34.32
2011-12	49.92	19.968	1.5 / 6	95.08	3.12 /12.48	62.37	108.45	43.38
2012-13	50.53	20.212	6.0	121.27	12.48	79.55	55.89	22.36
2013-14	50.84	20.336	6.0	122.02	12.48	80.04	53.81	21.52

*Water consumption charges for the period 2009-14 has not been paid by the petitioner as the same has not been yet billed by U.P Irrigation Department and the same shall be paid when they are billed

Projection for Water Charge Rate for 2014-19

46. As per provisions of Regulation 29(2) of the 2014 Tariff Regulations, Water charges are to be allowed separately. It is observed from the above table that water charges in 2013-14 works out to ₹223.58 lakh (122.02+80.04+21.52). However, the petitioner has furnished actual water charges amounting to ₹105.11 lakh in 2013-14. It has further submitted that the payment of water charges is based on actual consumption and not on the basis of allocation. It has also submitted that U.P. Irrigation Department has increased the water charges fourfold from ₹3.12 per 1000 cu ft to ₹12.48 per 1000 cu ft as well as Royalty charges from ₹1.50 lakh/cusec/yr to ₹6.00 lakh/cusec/yr w.e.f. 15.7.2011. However, the water charges for the period 2009-14 has not been paid by the petitioner as the same has not yet been billed by U.P. Irrigation Department, and shall be paid as and when billed. The petitioner in the revised claim vide affidavit dated 23.6.2016 has claimed water charges for the year 2013-14 as based on the

revised rate of ₹223.58 lakh including Royalty, etc. Since the water charges rate has been revised by U.P. Irrigation Department, it would be prudent to project water charges for the period 2014-19 based on revised rate instead of capacity water charges claimed of ₹105.00 lakh for the year 2013-14 based on old rates.

47. In this backdrop and in order to reduce the liability of the beneficiaries for paying enhanced charges on actual basis, the actual water charges of ₹223.58 lakh furnished vide affidavit dated 23.6.2016 as against water charges amounting to ₹105.11 lakh claimed during 2013-14 in this petition vide affidavit dated 14.8.2014 is allowed as projected water charges for the period 2014-19 without any escalation, subject to truing –up, as under

(₹ in lakh)

2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
223.58	223.58	223.58	223.58	223.58

Capital spares

48. The petitioner has not claimed capital spares on projection basis during the period 2014-19. Accordingly, the same has not been considered in this order. The claim of the petitioner, if any, shall be considered on merits, at the time of truing-up of tariff, after prudence check.

49. The total O&M expenses including water charges as claimed by the petitioner and as allowed for the purpose of tariff is as under:

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
O&M Expenses claimed under Regulation 29(1)	10038.00	10668.00	11340.00	12054.00	12814.20
O&M Expenses allowed under Regulation 29(1)	**10038.00**	**10668.00**	**11340.00**	**12054.00**	**12814.20**
Water Charges claimed	105.11	111.79	118.89	126.44	134.47
Water Charges allowed	**223.58**	**223.58**	**223.58**	**223.58**	**223.58**
Total O&M Expenses claimed	**10143.11**	**10779.79**	**11458.89**	**12180.44**	**12948.67**

Total O&M Expenses allowed	**10261.58**	**10891.58**	**11563.58**	**12277.58**	**13037.78**

Operational Norms

50. The operational norms considered by the petitioner in respect of the generating station are as under:

Target Availability (%)	83.00
Heat Rate (kcal/kwh)	2450.00
Auxiliary Energy Consumption (%)	9.00
Specific Oil Consumption (ml/ kwh)	0.50

51. The operational norms claimed by the petitioner are discussed as under.

Target Availability

52. Regulation 36 of the 2014Tariff Regulations provides as under:

(a) All Thermal generating stations, except those covered under clauses (b) (c) (d) & (e) - 85%.

Provided that in view of the shortage of coal and uncertainty of assured coal supply on sustained basis experienced by the generating stations, the NAPAF for recovery of fixed charges shall be 83% till the same is reviewed.

The above provision shall be reviewed based on actual feedback after 3 years from 01.04.2014.

53. The petitioner has considered the Target Availability of 83% for the period 2014-19. The Commission, due to shortage of domestic coal supply has relaxed the Target Availability norm to 83% for first 3 years from 1.4.2014 and the same shall be reviewed after 3 years. Accordingly, in terms of the Regulation 36(A) of the 2014 Tariff Regulations, the Target Availability of 83% is considered for the period 2014-17 and 85% for the period 2017-19.

Heat Rate (kcal/kwh)

54. Regulation 36(C)(a) of the 2014 Tariff Regulations provides the Gross Station Heat Rate of 2450 kCal/kWh for 200 /210/250 MW sets for existing coal based thermal generating stations whose CODs were before 1.4.2009. As stated, the COD of the generating station is 22.3.1989.

Accordingly, the Normative Heat rate of 2450 kCal/kWh considered by the petitioner is in order and hence allowed.

Auxiliary Power Consumption

55. Regulation 36(E)(a) of the 2014 Tariff Regulations provides for Auxiliary Energy Consumption of 8.5% for 200 MW series for coal based Generating stations with Natural Draft cooling tower or without cooling tower, provided that the generating stations with induced draft cooling shall be further increased by 0.5%. The generating station comprises of five units of 200 MW and two Units of 500 MW each. Accordingly, Auxiliary Energy Consumption of 9.0% (8.5 + 0.5) considered by the petitioner is as per norms and hence allowed.

Specific Oil Consumption

56. Regulation 36(D)(a) of the 2014 Tariff Regulations provides for Secondary fuel oil consumption of 0.50 ml/kWh for coal-based generating station. Hence, the secondary fuel oil consumption considered by the petitioner is as per norms and is allowed.

Special Allowance

57. Regulation 16 of the 2014 Tariff Regulations provides for Special Allowance for Coal-based/Lignite fired Thermal Generating stations as under:

> *" (1) In case of coal-based/lignite fired thermal generating station, the generating company, instead of availing R&M may opt to avail a 'special allowance' in accordance with the norms specified in this regulation, as compensation for meeting the requirement of expenses including renovation and modernization beyond the useful life of the generating station or a unit thereof, and in such an event, revision of the capital cost shall not be allowed and the applicable operational norms shall not be relaxed but the special allowance shall be included in the annual fixed cost:*
>
> *Provided that such option shall not be available for a generating station or unit for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational and performance norms.*

(2) The special Allowance shall be @₹7.5 lakh/MW/year for the year 2014-15 and thereafter escalated @ 6.35 % every year during the tariff period 2014-15 to 2018-19, unit-wise from the next financial year from the respective date of completion of useful life with reference to the date of commercial operation of the respective unit of generating station:

Provided that in respect of a unit in commercial operation for more than 25 years as on 1.4.2014, this allowance shall be admissible from the year 2014-15:

Provided further that the special allowance for the generating stations, which, in its discretion, has already availed of a 'special allowance' in accordance with the norms specified in clause (4) of regulations 10 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff Determination) Regulations, 2009, shall be allowed Special Allowance by escalating the special allowance allowed for the year 2013-14 @6.35% every year during the tariff period 2014-15 to 2018-19.

(3) In the event of granting special allowance by the Commission, the expenditure incurred or utilized from special allowance shall be maintained separately by the generating station and details of same shall be made available to the Commission as and when directed to furnish details of such expenditure.

58. The petitioner has opted and claimed total Special Allowance of ₹17881.35 lakh for meeting the requirement of expenses including R&M beyond the useful life of the generating station or unit thereof as under:

(₹in lakh)

Unit No.	Capacity (MW)	Date of COD	Year of completion of useful life of 25 yrs.	2014-15	2015-16	2016-17	2017-18	2018-19
I	210	21.11.1988	2013-14	1575.00	1675.01	1781.38	1894.49	2014.79
II	210	22.3.1989	2013-14	1575.00	1675.01	1781.38	1894.49	2014.79
Total (Year wise) for the generating station				3150.00	3350.03	3562.75	3788.99	4029.59

59. Accordingly, the claim of the petitioner for ₹17881.35 lakh as Special Allowance for units/generating station which have completed useful life of 25 years in 2013-14 is in order and is allowed under Regulation 16(1) of the 2014 Tariff Regulations. The petitioner is however directed to maintain the details of expenditure incurred or utilized from special allowance separately and the same shall be furnished to the Commission as and when the petitioner is directed to do so.

Interest on Working Capital

60. Sub-section (a) of clause (1) of Regulation 28 of the 2014 Tariff Regulations provides as under:

> *"28. Interest on Working Capital:*
>
> *(1) The working capital shall cover*
>
> *(a) Coal based/lignite fired thermal generating stations*
>
> *i) Cost of coal towards stock for 15 days for pit-head generating stations and 30 days for non-pit-head generating station for generation corresponding to the normative annual plant availability factor or the maximum coal stock storage capacity whichever is lower.*
> *ii) Cost of coal for 30 days for generating corresponding to the normative annual plant availability factor.*
> *iii) Cost of secondary fuel oil for two month for generating corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil.*
> *iv) Maintenance spares @ 20% of operation and maintenance expenses specified in regulation 29.*
> *v) Receivables equivalent to two months of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor; and*
> *vi) Operation and maintenance expenses for one month."*

Fuel Component in working capital

61. The petitioner has claimed cost for fuel component in working capital based on 'as fired' GCV of coal procured and burnt for the preceding three months of January,2014, February,2014 and March, 2014 and the Secondary fuel oil for the preceding three months of January,2014, February,2014 and March, 2014 as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Coal for stock-30 Days	6726.78	6745.21	6726.78	6726.78	6726.78
Cost of Coal for Generation-30 Days	6726.78	6748.21	6726.78	6726.78	6726.78
Cost of Secondary fuel oil 2 months	141.97	142.36	141.97	141.97	141.97

62. Further, the petitioner has claimed an Energy Charge Rate (ECR) of 293.545 Paise/kWh based on the weighted average price & GCV of coal (as fired basis) & Oil procured and burnt for the preceding three months i.e . January, 2014, February,2014 and March, 2014. However, as per the 2014 Tariff Regulations, fuel components and ECR is to be worked out and are to be allowed based on the price and GCV of primary fuel on 'as received' basis for the preceding three months i.e. January, February and March, 2014 respectively. Since, the GCV of coal on

‘as received’ basis is not available with the petitioner, the Commission vide ROP of the hearing on 24.5.2016 directed the petitioner.

(a) To furnish details of ‘as billed’ GCV of coal prior to washing of coal for the months of January, 2014 February, 2014 and March, 2014.

(b) In case GCV of coal on ‘as billed’ by the coal company is not available, invoice of coal company for the above months shall be submitted.

63. In response, the petitioner vide affidavit dated 23.6.2016 has submitted that “as Billed” GCV of washed coal has not been indicated by the coal company in the invoices and is not available.

64. The Commission in various tariff orders, pertaining to determination of tariff, viz. Simhadri Stage-I (order dated 27.6.2016 in Petition No. 270/GT/2014), Vindhyachal STPS Stage-II (order dated 6.2.2017 in Petition No. 327/GT/2014), Mauda Stage-I (order dated 11.2.2017 in Petition No. 328/GT/2014), Ramagundam Stage-I & II (order dated 24.1.2017 in Petition No. 292/GT/2014), Kahalgaon stage-II (order dated 21.1.2017 in Petition No. 283/GT/2014), Rihand STPS Stage-III (order dated 6.2.2017 in Petition No. 372/GT/2014) etc., for the period 2014-19 had allowed fuel components and 2 months of Energy Charges in working capital considering the GCV of coal on ‘as billed’ basis and had allowed the adjustment formulae for total moisture as under:

$$\frac{GCV \text{ X } (1-TM)}{(1 - IM)}$$

Where: GCV=Gross Calorific value of coal
TM=Total moisture
IM= Inherent moisture

65. In the absence of GCV of coal on ‘as billed’ as well as on ‘as received’ basis for the preceding 3 months i.e. January, 2014, February, 2014 and March, 2014, the computation of fuel component and 2 months Energy charges in working capital has not been considered for the period 2014-19.

66. In view of this, Interest on Working capital (IWC) is allowed without any fuel components and 2 months Energy Charges in Working Capital. It is up to the petitioner to get GCV 'as billed' from the coal supplier and work out the IWC components.

Maintenance Spares

67. The petitioner has claimed maintenance spares in the working capital as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2028.62	2155.96	2291.78	2436.09	2589.73

68. Regulation 28(1)(a)(iv) of the 2014 Tariff Regulations provide for maintenance spares @ 20% of the Operation & Maintenance expenses as specified in Regulation 29. In terms of Regulation 29(2) of the 2014 Tariff Regulations and in line with Commission's order dated 6.10.2015 in Petition No. 186/GT/2014, the maintenance spares @ 20% of O & M expenses allowed is as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2052.32	2178.32	2312.72	2455.52	2607.56

Receivables

69. Receivables equivalent to two months of capacity charge and energy charges has been worked out and allowed as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Variable Charges -2 months	0.00	0.00	0.00	0.00	0.00
Fixed Charges - 2 months	4061.19	4209.54	4361.47	4526.26	4695.17
Total	**4061.19**	**4209.54**	**4361.47**	**4526.26**	**4695.17**

O & M Expenses (1 month)

70. O&M expenses for 1 month claimed by the petitioner for the purpose of working capital in Form-13 B is as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
845.26	898.32	954.91	1015.04	1079.06

71. Regulation 28 (a) (vi) of the 2014 Tariff Regulations provides for O & M expenses for one month for coal based generating station. Accordingly, O&M expenses for 1 month is allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
855.13	907.43	963.63	1023.13	1086.48

Rate of interest on working capital

72. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides as under:

"Interest on working Capital: (3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later."

73. In terms of the above regulations, SBI PLR of 13.50% has been considered for the purpose of calculating interest on working capital. Accordingly, Interest on working capital has been computed as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Fuel Cost	0.00	0.00	0.00	0.00	0.00
Liquid Fuel	0.00	0.00	0.00	0.00	0.00
Maintenance Spares	2052.32	2178.32	2312.72	2455.52	2607.56
O & M expenses - 1 months	855.13	907.63	963.63	1023.13	1086.48
Receivables - 2 months	4061.19	4209.54	4361.47	4526.26	4695.17
Total Working Capital	**6968.43**	**7245.49**	**7637.82**	**8004.90**	**8389.21**
Rate of interest	13.5000%	13.5000%	13.5000%	13.5000%	13.5000%
Interest on Working Capital	**940.77**	**984.89**	**1031.11**	**1080.66**	**1132.54**

74. Accordingly, annual fixed charges approved for the generating station for the period from 1.4.2014 to 31.3.2019 is summarized as under**:**

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	559.97	559.97	559.97	559.97	520.77

Interest on Loan	50.01	20.45	1.09	0.00	0.00
Return on Equity	9404.79	9450.36	9450.36	9450.36	9450.36
Interest on Working Capital	940.77	984.89	1031.11	1080.66	1132.54
O&M Expenses	10261.58	10891.58	11563.58	12277.58	13037.78
Special Allowance	3150.00	3350.03	3562.75	3788.99	4029.59
Total	**24367.11**	**25257.27**	**26168.84**	**27157.55**	**28171.03**

Note: All figures are on annualised basis. All figures under each head have been rounded. The figure in total column in each year is also rounded. As such, the sum of individual items may not be equal to the arithmetic total of the column.

Month to Month Energy Charges

75. The petitioner shall determine month to month Energy Charges Rate (ECR) in Rupees per kWh to three decimal places on ex-power plant in accordance with the following formulae:

(a) For coal based and lignite fired stations
ECR = {(GHR – SFC x CVSF) x LPPF / CVPF+SFC x LPSFi + LC x LPL} x 100 / (100 – AUX)
Where,
AUX = Normative auxiliary energy consumption in percentage.
CVPF = Gross calorific value of primary fuel as received, in kCal per kg, per litre or per standard cubic metre, as applicable.
CVSF = Calorific value of secondary fuel, in kCal per ml.
ECR = Energy charge rate, in Rupees per kWh sent out.
GHR = Gross station heat rate, in kCal per kWh.
LC = Normative limestone consumption in kg per kWh.
LPL = Weighted average landed price of limestone in Rupees per kg.
LPPF = Weighted average landed price of primary fuel, in Rupees per kg"

76. The petitioner shall compute and claim the Energy Charges on month to month basis from the beneficiaries based on the formulae given under Regulation 30(6)(a) of the 2014 Tariff Regulations read with Commission's order dated 25.1.2016 in Petition No. 283/GT/2014.

77. The Commission in its order dated 19.2.2016 in Petition No. 33/MP/2014 (TPDDL v NTPC & anr) had directed as under:

"*The respondents shall introduce help desk to attend to the queries and concerns of the beneficiaries with regard to the energy charges. The contentious issues regarding the energy charges should be sorted out with the beneficiaries at the senior management le vel, preferably at the level of Executive Directors."*

Accordingly, in line with the above decision, help desk shall be introduced by the petitioner and contentious issues if any, which arise in respect of energy charges for this generating station shall be sorted out with the beneficiaries at the Senior Management level.

Application Fee and Publication Expenses

78. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited the filing fees of ₹1848000/- each for the year 2014-15, 2015-16 and 2016-17 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations, we direct that the petitioner shall be entitled to recover *pro rata,* the filing fees and the expenses of incurred on publication of notices directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period2017-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

79. The annual fixed charges approved for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

80. Petition No. 319/GT/2014 is disposed of in terms of the above.

Sd/-	Sd/-	Sd/-	Sd/-
(Dr. M.K.Iyer)	**(A. S. Bakshi)**	**(A. K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Member**	**Chairperson**