

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 270/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: 27.06.2016

IN THE MATTER OF

Approval of tariff of Simhadri Super Thermal Power Station Stage-I (1000MW) 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. Andhra Pradesh Eastern Power Distribution Company Ltd
Corporate Office P&T Colony, Seethammadhara,
Visakhapatnam-530013-(AP)

2. Andhra Pradesh Southern Power Distribution Company Ltd,
Corporate Office, Back side Srinivasa Kalyana Mandapam
Tiruchhanur Road, Kesavayana Gunta,
Tirupati-517503-(AP)

3. Telangana State Southern Power Distribution Company Ltd
Mint Compound, Corporate Office,
Hyderabad-500 063

4. Telangana State Northern Power Distribution Company Ltd
H.No 2-5-31/2, Vidyut Bhawan
Nakkalagutta, Hanamkonda, Warangal-506001

...Respondents

Parties present:

Shri M.G. Ramachandran, Advocate, NTPC
Ms. Poorva Saigal, Advocate, NTPC
Shri Shubham Arya, Advocate, NTPC
Shri Ajay Dua, NTPC
Shri Abhay Anand, NTPC
Shri Shankar Saran, NTPC
Shri A.K. Bishoi, NTPC
Shri A. Basu Roy, NTPC



Shri S.R. Sarangi, NTPC
 Shri A. K. Halder, NTPC
 Shri Bhupinder Kumar, NTPC
 Shri K.K. Shah, NTPC
 Shri Vivek Kumar, NTPC
 Shri T. Vinod, NTPC
 Shri B.S. Rajput, NTPC
 Shri Rohit Chhabra, NTPC
 Shri Navneet Goel, NTPC
 Shri Nishant Goel, NTPC
 Shri Somes Bandopadhyay, NTPC

ORDER

The present petition has been filed by the petitioner, NTPC for approval of tariff of Simhadri Super Thermal Power Station, Stage-I (2 x 500 MW) (hereinafter referred to as “the generating station”) for the period 20014-19 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 1000 MW comprises of two units of 500 MW each. Unit-I of the generating station was declared under commercial operation on 1.9.2002 and Unit-II on 1.3.2003.

3. The Commission vide order dated 2.11.2015 in Petition No. 304/GT/2014 had revised the tariff of the generating station for the period 2009-14 after final true-up of the additional capital expenditure in terms of Regulation 6 (1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 considering the capital cost of ₹353306.58 lakh as on 31.3.2014 on cash basis and after deduction of un-discharged liabilities of ₹5628.35 lakh as on 1.4.2009. The annual fixed charges approved by the said order dated 2.11.2015 was as under:

	<i>(₹ in lakh)</i>				
	2009-10	2010-11	2011-12	2012-13	2013-14
Return on Equity	24382.28	24081.89	23899.96	24054.85	24781.13
Interest on Loan	6402.89	5851.67	5331.73	4828.28	4323.84
Depreciation	17390.14	17348.31	17435.25	17600.24	17691.74
Interest on Working Capital	6587.82	6610.84	6655.77	6685.36	6744.54
O&M Expenses	13000.00	13740.00	14530.00	15360.00	16240.00
Cost of secondary fuel oil	1841.11	1841.11	1846.16	1841.11	1841.11
Compensation Allowance	0.00	0.00	0.00	0.00	150.00
Total	69604.23	69473.82	69698.87	70369.83	71772.36



4. The petitioner in this petition filed vide affidavit dated on 13.8.2014 has sought the approval of tariff in accordance with the provisions of the 2014 Tariff Regulations. Accordingly, the capital cost and the annual fixed charges claimed by the petitioner for the period 2014-19 in this petition are as under:

Capital Cost

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	353851.62	359488.62	363108.62	364514.62	365638.62
Add: Additional Capital Expenditure	5637.00	3620.00	1406.00	1124.00	2783.00
Closing Capital Cost	359488.62	363108.62	364514.62	365638.62	368421.62
Average Capital Cost	356670.12	361298.62	363811.62	365076.62	367030.12

Annual Fixed Charges

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	17945.14	11025.80	11219.77	11326.57	11508.57
Interest on Loan	3847.94	3493.12	3197.47	2869.76	2552.79
Return on Equity	21805.19	22088.16	22241.79	22319.13	22438.56
Interest on Working Capital	10671.29	10598.89	10645.12	10715.01	10792.35
O&M Expenses	16526.32	17569.74	18675.28	19853.09	21103.29
Compensation Allowance	200.00	200.00	200.00	200.00	500.00
Total	70995.89	64975.70	66179.43	67283.56	68895.56

5. The petitioner has filed additional information in compliance with the directions of the Commission. None of the respondents have filed reply in the matter. We now proceed to examine the claim of the petitioner, on prudence check, based on the submissions and the documents available on records as stated in the subsequent paragraphs.

Capital Cost as on 1.4.2009

6. Clause 3 of Regulation 9 of the 2014 Tariff Regulations provides as under:

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

- the capital cost admitted by the Commission prior to 1.4.2014 duly tured up by excluding liability, if any, as on 1.4.2014;*
- additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with Regulation 14; and*
- expenditure on account of renovation and modernisation as admitted by this Commission in accordance with Regulation 15.”*

7. The annual fixed charges claimed in the petition is based on opening capital cost of ₹353851.62 lakh as on 1.4.2014, as against ₹353306.58 lakh as on 31.3.2014 as admitted by the



Commission vide order dated 2.11.2015 in Petition No. 304/GT/2014. Further, the petitioner vide affidavit dated 13.8.2014 has furnished the value of capital cost and liabilities as on 1.4.2014 as per books of accounts in Form-9E. The details of liabilities and capital cost have been reconciled with the information available with the records of the Commission as under:

	(₹ in lakh)	
	As per Form-9E	As per records of Commission
Capital cost as on 1.4.2014 as per books	396269.56	396269.56
Liabilities included in the above	5857.08	5857.08

8. It is evident from the above that there is no variation in the capital cost and liabilities position as on 1.4.2014 as per the books and details available with the Commission. Further, out of the total liabilities amounting to ₹5857.08 lakh corresponds to approved capital cost of ₹353306.58 lakh (on cash basis) as on 31.3.2014. Accordingly, the opening capital cost to be considered as on 1.4.2014, after removal of un-discharged liabilities works out to ₹353306.58 lakh (on cash basis).

Actual/ Projected Additional Capital Expenditure during 2014-19

9. Regulation 14 (3) of the 2014 Tariff Regulations, provides as under:

“14.(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 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 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 the 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 obsolescence 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 insulator 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; and

(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 Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation.”

10. The break-up of the projected additional capital expenditure claimed during 2014-19 is detailed as under:

Sl. No.	Regulations under which claimed	(₹ in lakh)					
		2014-15	2015-16	2016-17	2017-18	2018-19	
1	Raising Ash dyke	14(3)(iv)	2383.00	2300.00	1406.00	1124.00	2783.00
2	Permanent Dust suppression system for Lagoons 1 & 2	14(3)(ii)	400.00	536.00	0.00	0.00	0.00
3	Dry Ash evacuation system	14(3)(ii)	2854.00	504.00	0.00	0.00	0.00
4	Augmentation of Fire Fighting system	14(3)(ii) & 14(3)(iii)	0.00	280.00	0.00	0.00	0.00
			5637.00	3620.00	1406.00	1124.00	2783.00

11. The projected additional capital expenditure claimed by the petitioner has been discussed in the succeeding paragraphs.

Raising of Ash Dyke

12. The petitioner has claimed ₹2383.00 lakh in 2014-15, ₹2300.00 lakhs in 2015-16, ₹1406.00 lakhs in 2016-17, ₹1124.00 lakh in 2017-18 and ₹2783.00 lakh in 2018-19 towards works of ash dyke



raising consisting of two Lagoons i.e.lagoon-1and lagoon-2. We have examined the matter. It is observed from the submissions of the petitioner that expenditure projected is for planned works related to ash pond/ ash handling system which is of continuous nature during the operational life of generating station and the works claimed are as per the approved scheme under original scope of work. As the expenditure is covered under original scope of works and based on environmental considerations the said expenditure is allowed under Regulation 14(3)(iv) of the 2014 Tariff Regulations for the period 2014-19. However, the petitioner is directed to submit at the time of truing up of tariff, the detail break-up of the activities along with the cost incurred for each work under the Raising of Ash Dyke works, the estimated expenditure envisaged for Ash Handling system/ Ash Dyke Raising in the original scope of work, the actual expenditure incurred as on COD of the generating station and from COD to 2018-19.

Permanent Dust suppression system for Lagoons 1 &2

13. The petitioner has claimed ₹400.00 lakh in 2014-15 and ₹536.00 lakh in 2015-16 towards Permanent Dust suppression system for Lagoons 1&2 as per the Regulation 14(3)(ii) of the 2014 Tariff Regulations (i.e. change in law or compliance of any existing law). We have considered the submissions. It is observed that this system is being installed as per the norms & guidelines specified by Andhra Pradesh Pollution Control Board vide letter dated 3.10.2013. Hence, the expenditure on permanent dust suppression system for Lagoon 1 & 2 is allowed under Regulations 14(3)(ii) of the 2014 Tariff Regulations. However, the petitioner is directed to submit at the time of truing up of tariff the details of works undertaken along with cost break-up for permanent dust suppression system and the actual data of dust emission compared to norms after installation of dust suppression system.

Dry Ash evacuation system:

14. The petitioner has claimed ₹2854.00 lakh in 2014-15 and ₹504.00 lakh in 2015-16, for providing pedestals Dry Ash Evacuation System under Regulation 14(3)(ii) of the 2014 Tariff Regulations (i.e. change in law or compliance of any existing law). The petitioner in its justification has submitted that the Commission has allowed ₹3530 lakh vide order dated 27.8.2012 in Petition No. 257/2009 towards this work and Augmentation of the dry Ash evacuation system is as per the



MOEF directions dated 3.11.2009. The petitioner has further submitted that the Work package was awarded on M/S Tecpro in 2010 for erection & commissioning of the DAES work. Due to severe financial crisis position of the agency, resources deployment depleted & work progress turned out to be less than the anticipated. However, continual effort and follow up actions are on to complete the balance works.

15. It is further noticed that the petitioner in Petition No. 304/GT/2014 had submitted that the expenditure of ₹3100 lakh towards DAES was under capital work in progress and the same shall be capitalized during the year 2014-15. Accordingly, the Commission in its order dated 2.11.2015 in Petition No 304/GT/2014 observed that the submission of the petitioner shall be examined in terms of the provisions of the 2014 Tariff Regulations. In view of the above fact, the expenditure on Dry Ash Evacuation System amounting to ₹2854.00 lakh in 2014-15 and ₹504.00 lakh in 2015-16 is allowed under Regulation 14(3)(ii) of 2014 Tariff Regulations.

Augmentation of Fire Fighting system

16. The petitioner has claimed ₹280.00 lakh in 2015-16 towards augmentation of Fire Fighting system under Regulation 14(3)(ii) and 14(3)(iii) of the 2014 Tariff Regulations. The petitioner in its justification has submitted that the expenditure is to comply with existing regulations of CEA (Technical Standard for construction of Electric Plant & Electric lines) Regulations, 2010 notification issued on 20.8.2010 and CEA (safety requirement of construction, O&M of Electric plants & Electric lines) Regulations, 2011 notification dated 24.11.2011. The petitioner further submitted that this is also recommended by Dy. Commandant of CISF (Ministry of Home Affairs) vide letter dated 15.7.2014.

17. We have examined the submission of the petitioner. It is observed that the petitioner has not established that the augmentation of a firefighting system is due to any change in law. A proper well equipped fire fighting system was the requirement in any thermal power station even prior to the CEA safety standards which came in the year 2010. Therefore CEA Regulations, 2010 cannot be said to be a Change-in-law. Further, the plant was operating with the existing fire fighting system since its COD. In addition, the petitioner has not furnished any supportive document or



notification which suggests that the letter from Deputy Commandant CISF is due to advice or direction from the Appropriate Government/ agency. Hence, the claim under Regulation 14(3)(iii) towards security and safety of plant cannot be entertained under this regulation. Accordingly, expenditure of ₹280.00 lakh in the year 2015-16 for augmentation of a firefighting system is not allowed. However, the petitioner has been allowed compensation allowance for meeting such type of capital expenditure and the same should be met from the said allowance.

18. Based on the above discussions, the projected additional capital expenditure allowed during the period 2014-19 is summarised as under:

(₹ in lakh)						
Package Name	Regulations under which claimed	2014-15	2015-16	2016-17	2017-18	2018-19
Raising Ash dyke	14(3)(iv)	2383.00	2300.00	1406.00	1124.00	2783.00
Permanent Dust suppression system for Lagoons 1 & 2	14(3)(ii)	400.00	536.00	0.00	0.00	0.00
Dry Ash evacuation system	14(3)(ii)	2854.00	504.00	0.00	0.00	0.00
Augmentation of Fire Fighting system	14(3)(ii)& 14(3)(iii)	0.00	0.00	0.00	0.00	0.00
		5637.00	3340.00	1406.00	1124.00	2783.00

19. Accordingly, the capital cost for the period 2014-19 in respect of the generating station is worked out and allowed as under:

(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening capital cost	353306.58	358943.58	362283.58	363689.58	364813.58
Projected additional capital expenditure admitted	5637.00	3340.00	1406.00	1124.00	2783.00
Closing capital cost	358943.58	362283.58	363689.58	364813.58	367596.58

Debt–Equity Ratio

20. 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-equity 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 of 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:equity ratio 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.

21. Accordingly, the gross normative loan and equity amounting to ₹247314.61 lakh and ₹105991.98 lakh, respectively as on 31.3.2014 as considered in order dated 2.11.2015, has been considered as gross normative loan and equity as on 1.4.2014. Hence, the normative debt equity ratio of 70:30 has been considered in the case of additional capital expenditure. This is subject to truing-up in terms of the 2014 Tariff Regulations.

Return on Equity

22. 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). additional RoE 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) additional RoE shall not be admissible for transmission line having length of less than 50 kilometers.

23. 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:

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

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.

24. The petitioner has claimed return on equity considering base rate of 15.5% and effective tax rate of 23.939%. However, the petitioner in its submissions dated 23.9.2015 in Petition No. 290/GT/2014 (Singrauli STPS) has submitted that the effective tax rate of 22.584% based on the actual profit and tax paid for the year 2014-15. During the hearing of NTPC petitions, beneficiaries had raised an issue on the computation of effective tax rate. This issue being not confined to a single petition and being generic in nature as the issue is applicable to all NTPC petitions uniformly need deliberation. On this issue against specific query through ROP, the petitioner vide its affidavit



dated 8.1.2016 in Petition no. 280/GT/2014 (Farakka STPS, Stage-III) has filed Auditor's Certificate regarding deposit of advance tax on generation business for the year 2014-15 as well as Income Tax return for the financial year 2014-15 (Assessment Year 2015-16). We have examined the documents submitted and observed that the regulation prescribe computation of effective tax rate on the basis of tax paid, still we deem it proper to allow grossing up on MAT rate considering the fact that the matter is getting decided in the year 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 15.5%. Accordingly, the rate of Return on Equity works out to 19.610% for the year 2014-15 and 19.705% for the year 2015-16 onwards. This is however, subject to true-up. Accordingly, return on equity has been worked out as under:

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Normative Equity	105991.98	107683.08	108685.08	109106.88	109444.08
Addition due to Additional capital expenditure	1691.10	1002.00	421.80	337.20	834.90
Closing Equity	107683.08	108685.08	109106.88	109444.08	110278.98
Average Equity	106837.53	108184.08	108895.98	109275.48	109861.53
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) - Annualised	20950.84	21317.67	21457.95	21532.73	21648.21

(₹ in lakh)

Interest on Loan

25. 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 or the 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.”

26. Interest on loan has been worked out as under:

- (a) The gross normative loan of ₹247314.61 lakh as on 1.4.2014 has been considered.
- (b) Cumulative repayment of loan of ₹117343.44 lakh as on 31.3.2014 as considered in order dated 2.11.2015 in Petition No.304/GT/2014 has been considered as on 1.4.2014.
- (c) Accordingly, the net normative opening loan as on 1.4.2014 works out to ₹ 129971.17 lakh.
- (d) Addition to normative loan on account of the admitted additional capital expenditure has been considered on year to year basis.
- (e) Depreciation allowed for the period has been considered as repayment of normative loan during the respective year for the period 2009-14.
- (f) In line with the provisions of the regulation, the 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 generating 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. The calculations for weighted average rate of interest on loan have been enclosed as Annexure-I to this order.

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

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Notional Loan	247314.61	251260.51	253598.51	254582.71	255369.51
Cumulative Repayment of Loan up to previous year	117343.44	135261.10	146264.58	157451.12	168744.40
Net Opening Loan	129971.17	115999.41	107333.92	97131.58	86625.11
Addition due to Additional Capitalisation	3945.90	2338.00	984.20	786.80	1948.10



Repayment of Loan during the period	17917.66	11003.48	11186.54	11293.27	11475.15
Net Closing Loan	115999.41	107333.92	97131.58	86625.11	77098.06
Average Loan	122985.29	111666.67	102232.75	91878.35	81861.58
Weighted Average Rate of Interest on Loan	3.1374%	3.1356%	3.1336%	3.1312%	3.1284%
Interest on Loan	3858.50	3501.45	3203.57	2876.94	2561.00

Depreciation

28. Regulation 27 of 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 on 1.4.2014 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 licensee, 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.”

29. The cumulative depreciation amounting to ₹160349.22 lakh as on 31.3.2014 as considered in order dated 2.11.2015 has been considered for the purpose of tariff. Further, the value of freehold land included in the average capital cost has been adjusted while calculating depreciable value for the purpose of tariff. Accordingly, the balance depreciable value (before providing depreciation) for the year 2014-15 works out to ₹153255.43 lakh. Since as on 1.4.2014, the used life of the generating station is 11.33 years which is less than 12 years from the effective station COD of 30.11.2002, the depreciation shall be calculated by applying weighted average rate of depreciation for the year 2014-15. Further, since the used life of the generating station as on 1.4.2015 exceed 12 years from the effective station COD, the depreciation for the period 2015-19 shall be calculated using spreading of the remaining depreciable value over the balance useful life for respective years.

30. The petitioner has claimed the depreciation considering the weighted average rate of depreciation of 5.03% for the year 2014-15 after spreading of the remaining depreciable value over the balance useful life for period 2015-19. However, considering the rates of depreciation as specified in Appendix-II to the 2014 Tariff Regulations, the weighted average rate of depreciation for the year 2014-15 works out to 5.0313%, and the same has been considered for calculating depreciation for the year 2014-15. For the year 2015-16 and onwards, depreciation has been calculated by spreading over the remaining depreciable value over the balance useful life of the generating station for respective years.

31. Accordingly, depreciation has been computed as follows:

	<i>(₹ In lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Average Capital Cost	356125.08	360613.58	362986.58	364251.58	366205.08
Freehold land included above	7675.47	7675.47	7675.47	7675.47	7675.47
Depreciable value @ 90%	313604.66	317644.31	319780.01	320918.51	322676.66



Remaining useful life at the beginning of the year	13.67	12.67	11.67	10.67	9.67
Balance depreciable value	153255.43	139377.42	130509.64	120461.60	110926.47
Depreciation (annualized)	17917.66	11003.48	11186.54	11293.27	11475.15
Cumulative depreciation at the end	178266.89	189270.37	200456.91	211750.18	223225.33

Compensation Allowance

32. The petitioner has claimed compensation allowance (unit-wise) to meet expenses on new assets of capital nature including in the nature of minor assets as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
200.00	200.00	200.00	200.00	500.00

33. Regulation 17(1) of the 2014 Tariff Regulations provides as under:

“17. Compensation Allowance: (1) In case of coal-based or lignite-fired thermal generating station or a unit thereof, a separate compensation allowance shall be admissible to meet expenses on new assets of capital nature which are not admissible under Regulation 14 of these regulations, and in such an event, revision of the capital cost shall not be allowed on account of compensation allowance but the compensation allowance shall be allowed to be recovered separately.

(2) The Compensation Allowance shall be allowed in the following manner from the year following the year of completion of 10, 15, or 20 years of useful life:”

Years of operation	Compensation Allowance (₹ lakh/MW/year)
0-10	Nil
11-15	0.20
16-20	0.50
21-25	1.00

34. In terms of above regulation, both the units of the generating station are in commercial operation for more than 10 years from their respective date of CODs and accordingly, the compensation allowance worked out is as under:

(₹ in lakh)		
Description	Unit-I	Unit -II
Capacity in MW	500	500
COD	1.9.2002	1.3.2003
Useful life as on 1.4.2014	11.58	11.085
Actual useful life		
a) 10 years	1.9.2012	1.3.2013
b) 15 years	1.9.2017	1.3.2018
c) 20 years	1.9.2022	1.3.2023
d) 25 years	1.9.2027	1.3.2028
2014-15	100.00	100.00
2015-16	100.00	100.00
2016-17	100.00	100.00
2017-18	100.00	100.00



2018-19	250.00	250.00
Total	650.00	650.00

35. Therefore, the compensation allowance of ₹650.00 lakh each for Unit-I and Unit-II during the period 2014-19 is allowed.

O&M Expenses

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

<i>(₹ in lakh/MW)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
16.00	17.01	18.08	19.22	20.43

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

<i>(₹ in lakh)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
16000.00	17010.00	18080.00	19220.00	20430.00

Water Charges

38. Regulation 29(2) of the 2014 Tariff 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

39. In terms of the above regulation, 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.

40. The petitioner has claimed water charges based on the expected water consumption of the generating station and the type of cooling water system has also been furnished. The water charges claimed by the petitioner are as follows:



(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
526.32	559.74	595.28	633.09	673.29

41. 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 27.2.2015 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 relevant notification in support of the same. The details in respect of water charges such as type of cooling water system, water consumption, rate of water charges as applicable for 2013-14 have been furnished by the petitioner as under:

Description	Remarks
Type of Plant	Coal
Type of cooling water system	Closed circuit cooling
Consumption of water	4247969 kl/Annum
Rate of water charges	₹12.39/kl
Total water charges in 2013-14	₹526.32 lakh

42. In compliance with the above, the petitioner vide affidavit dated 4.6.2015 has furnished the details of the year-wise actual water consumption and water charges for last 5 years as detailed below:

Year	Quantity of sweet water (KL)	Rate (₹/KL)	Total Water Charges (₹ in lakh)
2009-10	8619520	8.26	712
2010-11	5882776	8.54	495*
2011-12	6325694	8.82	558
2012-13	5351397	11.8	631
2013-14	4247969	12.39	526

* ₹ 7.00 lakh in 2010-11 were on account of construction activities and hence not included in revenue expenditure

43. The petitioner vide ROP of the hearing dated 10.9.2015 was further directed to submit the reason for variation in quantity of water consumed from 2009-10 to 2013-14. In response, the petitioner vide affidavit dated 22.9.2015 has submitted that the reason for variation is due to rainwater received in the reservoir during the year, raising of reservoir bund height from 3.00 meter to 3.10 meter, need of building up reservoir level due to frequent canal closure and lower generation in 2013-14 as compared to 2009-10. It has further submitted that the permissible quantity of water to be consumed on yearly basis shall be governed by the Bulk Water Supply Agreement between GoAP, VIWSCO and NTPC. It has also stated that the user shall pay to the operator the special charges of ₹7 per KL till 31.3.2005 and it shall be escalated @ 2% for the



financial year 2005-06 and thereafter @ 4% annually to a maximum of ₹8.93 per KL. The petitioner has added that the charges of ₹8.93 per KL or charge fixed by Charges Review Committee whichever is lower, shall be applicable to contract volume or up to 32 MLD whichever is lower and beyond 32 MLD or beyond the contract volume whichever is lower at that point, the charges shall be as fixed by Charges Review Committee. The notification of the Govt. of Andhra Pradesh, Irrigation and CAD, Department, dated 25.2.2015, fixing the revised rate of ₹11.80 per KL for 2012-13 w.e.f. 1.4.2012, with annual escalation of 5% has been enclosed by the petitioner.

44. The petitioner has claimed the water charges during 2014-19 as under:

<i>(₹ in lakh)</i>	
Year	Projected Water charges
2014-15	526.32
2015-16	559.74
2016-17	595.28
2017-18	633.09
2018-19	673.29

45. From table above, it is noted that the petitioner has claimed the same water charges during 2014-15 as in the year 2013-14. It is observed that the water consumption was minimum during the period 2009-14. The petitioner has claimed the water charges during 2014-15 based on the water consumption and water charges paid during the year 2013-14 and have escalated the same @ 6.35% as per the escalation rate in O&M norms specified by the Commission for the period 2014-19. This escalation rate of 6.35% considered by the petitioner is not in line with the escalation rate of 5% specified in the Notification dated 25.2.2015 of the GoAP. Hence, the yearly escalation of water charges rate as per notification dated 25.2.2015 has been considered. Accordingly, water charges have been allowed with the annual escalation of 5% to the water charges claimed during 2014-15. Based on this, water charges for the period 2014-19 are allowed as under:

<i>(₹ in lakh)</i>	
Year	Water charges allowed
2014-15	526.32
2015-16	552.64
2016-17	580.27
2017-18	609.28
2018-19	639.75



46. The water charges allowed as above is subject to truing -up at the end of the tariff period for which the petitioner is directed to place on record all relevant information.

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

	(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19	Total
O&M Expenses as claimed	16000.0	17010.0	18080.0	19220.0	20430.0	90740.0
O&M Expenses as allowed	16000.0	17010.0	18080.0	19220.0	20430.0	90740.0
Water Charges as claimed	526.32	559.74	595.28	633.09	673.29	2987.71
Water Charges as allowed	526.32	552.64	580.27	609.28	639.75	2908.25
Total O&M Expenses as claimed (including Water charges)	16526.32	17569.74	18675.28	19853.28	21103.29	93727.72
O&M Expenses allowed (including water charges)	16526.32	17562.64	18660.27	19829.28	21069.74	23648.25

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, at the time of truing-up, shall be considered on merits, after prudence check.

Operational Norms

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

Target Availability (%)	83.00
Heat Rate (kcal/kwh)	2375.00
Auxiliary Energy Consumption (%)	5.25
Specific Oil Consumption (ml/ kwh)	0.50

50. The operational norms claimed by the petitioner are in accordance with Regulation 36 of the 2014 Tariff Regulations and discussed as under:

Normative Annual Plant Availability Factor (NAPAF)

51. Regulation 36 (A) (a) of the 2014 Tariff 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.



52. The petitioner has considered the target availability norm of 83% during 2014-19. The Commission due to shortage of domestic coal supply has relaxed target availability norm to 83% for first 3 years from 1.4.2014 and the same shall be reviewed after 3 years. Hence, in view of the above provision the target availability of 83% is allowed for the period 2014-15 to 2016-17 and 85% for the period 2017-18 & 2018-19 in terms of the Regulation 36(A) (a) of the 2014 Tariff Regulations.

Heat Rate (kcal/kwh)

53. Regulation 36(C)(a) of the 2014 Tariff Regulations, provides Gross Station Heat Rate of 2375 kCal/kWh for existing coal based thermal generating stations of 500 MW sets whose COD's were before 1.4.2009. The COD of the generating station was 1.3.2003. Hence, the heat rate considered by the petitioner is as per norms and is allowed.

Auxiliary Power Consumption

54. Regulation 36(E)(a) of Tariff Regulations, 2014 provides Auxiliary Energy Consumption of 5.25% for coal based generating stations of 500 MW sets with Natural Draft cooling tower or without cooling tower with steam driven BFP. Hence, the Auxiliary Energy Consumption considered by the petitioner is as per norms and is allowed.

Specific Oil Consumption

55. Regulation 36(D)(a) of the 2014 Tariff Regulations, provides 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.

Interest on Working Capital

56. Sub-section (c) 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

(b) Open-cycle Gas Turbine/Combined Cycle thermal generating stations

(i) Fuel cost for 30 days corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;



(ii) Maintenance spares @ 30% of operation and maintenance expense specified in regulation 29; and

(iii) Liquid fuel stock for 15 days corresponding to the normative annual plant availability factor and in case of use of more than one liquid fuel, cost of main liquid fuel duly taking into account mode of operation of the generating stations of gas fuel and liquid fuel’;

(iv)Receivables equivalent to two months of capacity charge and energy charge for sale of electricity calculated on normative plant availability factor, duly taking into account mode of operation of the generating station on gas fuel and liquid fuel;

(v) Operation and maintenance expenses for one month.”

Fuel Components and Energy Charges in working capital

57. The petitioner has claimed cost for fuel components 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 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 2 months	30954	31038	30954	30954	30954
Cost of Secondary fuel oil 2 months	328.75	329.65	328.75	328.75	328.75

58. The Commission vide ROP of the hearing dated 27.2.2015 directed the petitioner to submit the GCV of coal on ‘as received’ basis. In response, the petitioner vide affidavit dated 4.6.2015 has submitted that they did not have suitable infrastructure for measurement of representative GCV on ‘as received’ basis.

59. The issue of ‘as received’ GCV for computation of energy charges was challenged by NTPC and other generating companies through writ petition in the Hon’ble High Court of Delhi. The writ petition was heard on 7.9.2015 and Hon’ble High Court of Delhi had directed that the Commission shall decide the place from where the sample of coal should be taken for measurement of GCV of coal on as received basis within 1 month on the request of petitioners.

60. As per the directions of the Hon’ble High Court, the Commission vide order dated 25.1.2016 in Petition No. 283/GT/2014 has decided as under:

“58. In view of the above discussion, the issues referred by the Hon’ble High Court of Delhi are decided as under:



(a) *There is no basis in the Indian Standards and other documents relied upon by NTPC etc. to support their claim that GCV of coal on as received basis should be measured by taking samples after the crusher set up inside the generating station, in terms of Regulation 30(6) of the 2014 Tariff regulations.*

(b) *The samples for the purpose of measurement of coal on as received basis should be collected from the loaded wagons at the generating stations either manually or through the Hydraulic Auger in accordance with provisions of IS 436(Part1/Section1)-1964 before the coal is unloaded. While collecting the samples, the safety of personnel and equipment as discussed in this order should be ensured. After collection of samples, the sample preparation and testing shall be carried out in the laboratory in accordance with the procedure prescribed in IS 436(Part1/Section1)-1964 which has been elaborated in the CPRI Report to PSERC.”*

61. Further, the petitioner has claimed energy charge rate (ECR) of 272.452 Paise/kWh based on the weighted average price, GCV of coal (as fired basis) & oil procured and burnt for the preceding three months. It is observed that the petitioner has not placed on record the GCV of coal on ‘as received’ basis though the petitioner was statutorily required to furnish such information with effect from 1.4.2014. In compliance with the direction of the Hon’ble High Court of Delhi, the Commission in its order dated 25.1.2016 in Petition No. 283/GT/2014 has clarified that the measurement of GCV of coal on as received basis shall be taken from the loaded wagons at the unloading point either manually or through the Hydrolic Augur. The petitioner has not submitted the required data regarding measurement of GCV of coal in compliance with the directions contained in the said order dated 25.1.2016. The present petition cannot be kept pending till the petitioner submits the required information. Hence, the Commission has decided to compute fuel components and the energy charges in the working capital by provisionally taking the GCV of coal on as ‘billed basis’ and allowing an adjustment for total moisture as per the formula given as under:

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

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

62. In view of the above, the cost for fuel components in working capital have been computed at 83% NAPAF for the years 2014-15, 2015-16 and 2016-17 and at 85% NAPAF for the year 2017-18 & 2018-19 and based on ‘as billed’ GCV of coal and price of coal procured and secondary fuel oil for the preceding three months from January 2014 to March 2014 and allowed as under:



(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Coal for stock-30 days	11799.15	11799.15	11799.15	12083.47	12083.47
Cost of Coal for Generation-30 days	11799.15	11799.15	11799.15	12083.47	12083.47
Cost of Secondary fuel oil 2 months	328.75	329.65	328.75	336.67	336.67

63. Similarly, the energy charge rate (ECR) based on operational norms specified in 2014 Regulations and on 'as billed' GCV of coal for preceding 3 months i.e. March to January 2014 is worked out as under:

Sr. No.		Unit	2014-19
1	Capacity	MW	2x500
2	Gross Station Heat Rate	Kcal/kWh	2375
3	Aux. Energy Consumption	%	5.25
4	Weighted average GCV of oil (As fired)	Kcal/lit	9793
5	Weighted average GCV of Coal (As Billed)	Kcal/kg	4809.20
6	Adjustment on account of coal received at the generating station for equilibrated basis (Air dried) in the billed GCV Of Coal India		*
7	Weighted average price of oil	Rs/KL	54258.31
8	Weighted average price of Coal	Rs/MT	4006.32
9	Rate of energy charge ex-bus	Paise/kWh	211.246**

* To be calculated by the petitioner based on the adjustment formula

** To be revised as per the figures at Sr. No. 6

64. The GCV of coal as computed above shall be adjusted in the light of the GCV of coal on 'as received basis' computed by the petitioner as per our directions in order dated 25.1.2016 in Petition No. 283/GT/2014.

65. Energy charges for 2 months on the basis of 'as billed' GCV for the purpose of interest on working capital has been worked out as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
24254.80	24321.26	24254.80	24839.26	24839.26

Maintenance Spares

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

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
3305.26	3513.95	3735.06	3970.62	4220.66

67. 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. As specified in



Regulation 29 (2) of the 2014 Tariff Regulations and as allowed by the Commission in order dated 6.10.2015 in Petition No. 186/GT/2014 (Sugen Power Plant), the maintenance spares @ 20 % of the operation & maintenance expenses including water charges, allowed are as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
3305.26	3512.53	3732.05	3965.86	4213.25

Receivables

68. Receivables equivalent to two months of capacity charge and energy charges (based on primary fuel only) has been worked out and allowed as under:

(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19
Variable Charges - 2 months	24249.57	24316.01	24249.57	24833.90	24833.90
Fixed Charges - 2 months	11319.57	10327.35	10524.45	10733.37	10949.80
	35569.14	34643.36	34774.02	35567.27	35783.70

O & M Expenses (1 month)

69. O&M expenses for 1 month claimed by the petitioner for the purpose of working capital are as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
1377.19	1464.15	1556.27	1654.42	1758.61

70. Based on the O&M expense norms specified by the Commission and in terms of the Commission's order dated 6.10.2015 in Petition No. 186/GT/2014, the O&M expenses for 1 month is allowed as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
1377.19	1463.55	1555.02	1652.44	1755.81

Rate of interest on working capital

71. 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."



72. In terms of the above regulations, SBI PLR of 13.50% (Bank rate 10.00 + 350bps) has been considered for the purpose of calculating interest on working capital. Interest on working capital has been computed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of coal toward stock – 30 days	11799.15	11799.15	11799.15	12083.47	12083.47
Cost of coal towards generation - 30 days	11799.15	11799.15	11799.15	12083.47	12083.47
Cost of secondary fuel oil - 2 months	328.75	329.65	328.75	336.67	336.67
Maintenance Spares - 20% of O&M	3305.26	3512.52	3732.05	3965.85	4213.94
Receivables	35569.14	34643.36	34774.02	35567.27	35783.70
O&M expenses - 1 month	1377.19	1463.55	1555.02	1652.44	1755.81
Total Working Capital	64178.65	63547.39	63988.15	65689.16	66257.06
Rate of Interest	13.50%	13.50%	13.50%	13.50%	13.50%
Interest on Working Capital	8664.12	8578.90	8638.40	8868.04	8944.70

73. 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	17917.66	11003.48	11186.54	11293.27	11475.15
Interest on Loan	3858.50	3501.45	3203.57	2876.94	2561.00
Return on Equity	20950.84	21317.67	21457.95	21532.73	21648.21
Interest on Working Capital	8664.12	8578.90	8638.40	8868.04	8944.70
O&M Expenses	16526.32	17562.64	18660.27	19829.28	21069.74
Compensation Allowance	200.00	200.00	200.00	200.00	500.00
Total	68117.43	62164.12	63346.72	64600.23	66198.78

Month to Month Energy Charges

74. Clause 6 sub-clause (a) of Regulation 30 of the 2014 Tariff Regulations provides for computation and payment of Capacity Charge and Energy Charge for thermal generating stations:

“6. Energy charge rate (ECR) in Rupees per kWh on ex-power plant basis shall be determined to three decimal place in accordance with the following formula:

(a) For coal based and lignite fired stations

$$ECR = \{(GHR - SFC \times CVSF) \times LPPF / CVPF + SFC \times LPSFi + LC \times LPL\} \times 100 / (100 - AUX)$$

Where,

AUX = Normative auxiliary energy consumption in percentage.

CVPF = Gross calorific value of primary fuel as fired, 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, per



75. 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, 2014 read with Commission's order dated 25.1.2016 in Petition No. 283/GT/2014.

76. The petitioner has been directed by the Commission in its order dated 19.2.2016 in Petition No. 33/MP/2014, to introduce helpdesk to attend to the queries of the beneficiaries with regard to the Energy Charges. Accordingly, contentious issues if any, which arise regarding the Energy Charges, should be sorted out with the beneficiaries at the Senior Management level.

Application Fee and Publication Expenses

77. 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 ₹4400000/- for the period 2014-15 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 and in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, we direct that the petitioner shall be entitled to recover *pro rata*, the filing fees and the expenses incurred on publication of notices for the period 2014-15 directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

78. 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.

79. Petition No. 270/GT/2014 is disposed of in terms of the above.

-Sd/-
(Dr. M.K.Iyer)
Member

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

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

-Sd/-
(Gireesh B. Pradhan)
Chairperson



Annexure-I**Calculation Of Weighted Average Rate Of Interest On Loan**

(₹ in lakh)

Sl. no.	Name of loan	Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
1	JBIC I	Net opening loan	52060.64	48055.97	44051.30	40046.63	36041.96
		Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
		Less: Repayment during the period	4004.67	4004.67	4004.67	4004.67	4004.67
		Net Closing Loan	48055.97	44051.30	40046.63	36041.96	32037.29
		Average Loan	50058.31	46053.64	42048.97	38044.30	34039.63
		Rate of Interest	3.5000%	3.5000%	3.5000%	3.5000%	3.5000%
		Interest	1752.04	1611.88	1471.71	1331.55	1191.39
2	JBIC II	Net opening loan	42847.48	40327.04	37806.60	35286.16	32765.72
		Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
		Less: Repayment during the period	2520.44	2520.44	2520.44	2520.44	2520.44
		Net Closing Loan	40327.04	37806.60	35286.16	32765.72	30245.28
		Average Loan	41587.26	39066.82	36546.38	34025.94	31505.50
		Rate of Interest	3.0000%	3.0000%	3.0000%	3.0000%	3.0000%
		Interest	1247.62	1172.00	1096.39	1020.78	945.17
3	JBIC III	Net opening loan	90282.55	84639.89	78997.23	73354.57	67711.91
		Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
		Less: Repayment during the period	5642.66	5642.66	5642.66	5642.66	5642.66
		Net Closing Loan	84639.89	78997.23	73354.57	67711.91	62069.25
		Average Loan	87461.22	81818.56	76175.90	70533.24	64890.58
		Rate of Interest	3.0000%	3.0000%	3.0000%	3.0000%	3.0000%
		Interest	2623.84	2454.56	2285.28	2116.00	1946.72
4	JBIC IV	Net opening loan	3233.81	2975.11	2716.41	2457.71	2199.01
		Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
		Less: Repayment during the period	258.70	258.70	258.70	258.70	258.70
		Net Closing Loan	2975.11	2716.41	2457.71	2199.01	1940.31
		Average Loan	3104.46	2845.76	2587.06	2328.36	2069.66
		Rate of Interest	3.0000%	3.0000%	3.0000%	3.0000%	3.0000%
		Interest	93.13	85.37	77.61	69.85	62.09
5	Gross Total	Net opening loan	188424.48	175998.01	163571.54	151145.07	138718.60
		Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
		Less: Repayment during the period	12426.47	12426.47	12426.47	12426.47	12426.47
		Net Closing Loan	175998.01	163571.54	151145.07	138718.60	126292.13
		Average Loan	182211.25	169784.78	157358.31	144931.84	132505.37
		Rate of Interest	3.1374%	3.1356%	3.1336%	3.1312%	3.1284%
		Interest	5716.63	5323.81	4930.99	4538.18	4145.36

