

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 322/GT/2014

Coram:

**Shri Gireesh B. Pradhan, Chairperson
Shri A. K. Singhal, Member
Dr. M. K. Iyer, Member**

Date of Order : 21.3.2017

In the matter of

Approval of tariff of Sipat Super Thermal Power Station Stage – II (2 X 500 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. Madhya Pradesh Power Management Company Ltd.,
Shakti Bhawan, Vidyut nagar,
Jabalpur-482008
2. Maharashtra State Electricity Distribution Company Ltd.,
Prakashgad, Bandra (East),
Mumbai-400051
3. Gujarat Urja Vikas Nigam Limited,
Vidyut Bhawan, Race Course
Vadodora-390007
4. Chhattisgarh State Power Distribution Company Ltd,
Sundar Nagar,
Danganiya, Raipur-492013
5. Electricity Department, Govt. of Goa,
Vidyut Bhawan, Panjim
Goa
6. Electricity Department,
Administration of Daman & Diu,
Daman-396210



7. Electricity Department,
Administration of Dadra and Nagar Haveli,
Silvassa

...Respondents

Parties present:

For Petitioner: Shri Bhupinder Kumar, NTPC
Shri Rajeev Chaudhary, NTPC
Shri Ajay Dua, NTPC
Shri Nishant Gupta, NTPC

For Respondents: None

ORDER

This petition has been filed by the petitioner, NTPC Ltd. for approval of tariff of Sipat Super Thermal Power Station Stage-II (2 x 500 MW) (hereinafter referred to as “the generating station”) for the period 2014-19 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. The dates of commercial operation of different units of the generating station are as under:

	Date of commercial operation (COD)
Unit-I	20.6.2008
Unit-II/ Generating Station	1.1.2009

3. In Petition No. 132/GT/2013 filed by the petitioner for determination of tariff of the generating station for the period from 1.4.2009 to 31.3.2014, the Commission vide order dated 17.9.2014, determined the annual fixed charges based on actual additional capital expenditure for the period from 1.4.2009 to 31.3.2012 and projected additional capital expenditure for the period from 1.4.2012 to 31.3.2014. Thereafter, the Commission in order in Petition No. 344/GT/2014 revised the capital



cost and annual fixed charges of the generating station for the period from 1.4.2009 to 31.3.2014 after true-up exercise in terms of Regulation 6 (1) of the 2009 Tariff Regulations, as summarized below:

Capital Cost

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Gross Block	384409.56	407581.48	415224.00	425405.57	428102.15
Net Additional capital expenditure	23171.92	7642.52	10181.57	2696.57	2401.17
Closing Gross Block	407581.48	415224.00	425405.57	428102.15	430503.32
Average Gross Block	395995.52	411402.74	420314.79	426753.86	429302.74

Annual Fixed Charges

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	20264.50	20961.59	21403.27	21806.79	21940.72
Interest on Loan	16959.89	16773.29	17648.66	17705.07	16316.80
Return on Equity	27895.11	28645.97	28931.11	29374.32	30241.37
Interest on Working Capital	3805.79	3873.72	3956.30	4017.10	4058.55
O&M Expenses	13000.00	13740.00	14530.00	15360.00	16240.00
Cost of secondary fuel oil	1414.92	1414.92	1418.80	1414.92	1414.92
Total	83340.22	85409.49	87888.14	89678.20	90212.37

4. The petitioner vide affidavit dated on 19.8.2014 has filed the instant petition for determination of tariff in accordance with the provisions of the 2014 Tariff Regulations for the period 2014-19. 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	441929.62	442946.62	442946.62	442946.62	444546.62
Add: Additional capital expenditure	1017.00	0.00	0.00	1600.00	0.00
Closing Capital Cost	442946.62	442946.62	442946.62	444546.62	444546.62
Average Capital Cost	442438.12	442946.62	442946.62	443746.62	444546.62

Annual Fixed Charges

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	22440.02	22465.81	22465.81	22506.38	22546.96
Interest on Loan	15366.57	13819.35	12669.91	11099.82	9168.48
Return on Equity	27048.66	27079.75	27079.75	27128.65	27177.56
Interest on Working Capital	6710.73	6765.19	6810.33	6864.14	6915.07
O&M Expenses	19817.75	21070.18	22398.00	23812.19	25313.80
Total	91383.73	91200.27	91423.79	91411.19	91121.87

5. In compliance with the directions of the Commission, the petitioner has filed additional information and has served copies of the same on the respondents. The respondent, Madhya Pradesh Power Management Company Ltd. (MPPMCL) has filed its replies in the matter vide affidavit dated 2.8.2016. In response the petitioner has filed its rejoinder vide affidavit dated 31.8.2016 to the said reply of the respondent, MPPMCL. We now proceed to examine the claim of the petitioner based on the submissions of the parties and the documents available on record, as discussed in the subsequent paragraphs.

Capital Cost as on 1.4.2014

6. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause 3 of Regulation 9 of the 2014 Tariff Regulations provides 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 capital cost claimed by the petitioner as on 1.4.2014 is ₹441929.62 lakh. The respondent, MPPMCL has submitted that the capital cost as on 1.4.2014 should be considered after the approval of the capital cost as on 31.3.2014 in truing up petition for the period 2009-14. The petitioner was directed to submit the certificate to the effect that all assets of the gross block as on 1.4.2014 are in service and in case any asset has been taken out from the service, the same should be indicated along with the date of putting the asset in use, the date of taking out the asset from service. In response the petitioner has certified that all assets of the gross block as on 1.4.2014 were in service. As per Clause 3 of Regulation 9 of the 2014 Tariff Regulations, the capital cost admitted prior to 1.4.2014 is to be considered as opening capital cost. Accordingly, the closing

capital cost of ₹430503.32 lakh as on 31.3.2014 as admitted by the Commission in order dated 15.3.2017 in Petition No. 344/GT/2014 has been considered as the opening capital cost as on 1.4.2014.

Projected Additional Capital Expenditure

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

“14. Additional Capitalisation and De-capitalisation:

(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.”

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

(₹ in lakh)

Sl. No.	Head of Work /Equipment	Additional capital expenditure claimed	Regulations under which claimed
1	2014-15		
	1 st raising of Ash Dyke	1017.00	14(3)(iv)
2	2015-16	-	-
3	2016-17	-	-
4	2017-18		
	2 nd raising of Ash Dyke	1600.00	14(3)(iv)
5	2018-19	-	-
	Total Add Cap	2617.00	

10. We now proceed to discuss the projected additional capital expenditure claimed by the petitioner in the succeeding paragraphs:

11. The petitioner has claimed projected additional capital expenditure towards 1st raising of Ash Dyke and 2nd raising of Ash Dyke during 2014-15 and 2017-18 respectively under Regulation 14(3)(iv) of the 2014 Tariff Regulations. As regards the 1st raising of Ash Dyke the petitioner has submitted that it is a part of ongoing raising work of existing ash dyke which is within the original scope and the existing capacity of ash dyke shall be filled by 2014-15. The petitioner has submitted

that being an on-going work, 1st raising is required during 2014-15 as the existing dyke will not be available for further use. As regards the 2nd raising of Ash Dyke, the petitioner has submitted that the capacity of Ash Dyke shall be filled by 2017-18 after 1st raising and therefore, 2nd raising is required by 2017-18 as the dyke will not be available for further use. The respondent, MPPMCL has submitted that the petitioner has not submitted any documentary evidence i.e. investment approval etc. in order to justify its claim that this expenditure belongs to original scope of work and its cost is not exceeding the investment approval and therefore has requested the Commission to disallow the claimed projected additional capital expenditure if it is over and above the original scope of work and original estimate. In response, the petitioner has submitted that Ash generation and Ash disposal are integral part of the generation process and a continuous process and therefore it is not possible and prudent on the part of generating company to create the ash disposal area for the entire 25 years useful life from the start of its commercial operation. Accordingly, the petitioner has submitted that the generating stations are carrying out the Ash Dyke raising from time to time during the life of the plant, as and when its required for creation of ash disposal capacity. The petitioner vide ROP was directed to submit the details of estimated expenditure of ash dyke raising, along with the scope of work and justification for undertaking such expenditure and in response the petitioner has submitted that the capacity of starter Dyke has already exhausted during 2014-15 and accordingly for enhancing the capacity of the starter Dyke it had carried out its first raising thereby increasing the height of the dyke by 2.5 meters. The petitioner has also submitted that the raising as carried out has increased the ash disposal area to around 203.67 acres which can accommodate around 31.43 lakh m³ of ash from the generating station. The petitioner has further submitted that the existing capacity which has been created from 1st raising of dyke is envisaged to get exhausted by end of 2016-17 necessitating the need of 2nd raising of ash dyke to enhance the capacity for further ash disposal. Accordingly, the petitioner has claimed projected additional capital expenditure towards 1st and 2nd raising of Ash dyke during the year 2014-15 and 2017-18 respectively.

12. The petitioner was directed to furnish the details of as to (a) how the fund for ash sale has been utilized along with a statement of Income from sale of ash and (b) the expenditure incurred

from ash fund till date. In response, the petitioner has submitted that till 2014-15, no revenue was generated from the sale of ash from the generating station. The petitioner has further submitted that during 2015-16, the generating station as a whole had earned a revenue of ₹4.97 lakh from the sale of fly ash, however it has incurred more expenditure on overheads than the revenue generated on the activities related to ash utilization generated from the generating station.

13. We have examined the matter. It is observed that the 1st raising of Ash Dyke is to cater to the requirement of Ash handling for a period of 3 years from 2014-15 to 2016-17 after which the 2nd raising of Ash Dyke will be required from 2017-18 onwards for further use. In this background, we are inclined to allow the projected expenditure towards 1st and 2nd raising of Ash dyke in order to have a smooth and continuous handling of ash disposal in the generating station. However, the revenue earned from the sale of fly ash as submitted by the petitioner, shall be considered at the time of revision of tariff of the generating station based on true-up exercise in terms of Regulation 8 of the 2014 Tariff Regulations. Accordingly, the projected additional capital expenditure of ₹1017.00 lakh and ₹1600.00 lakh claimed during the years 2014-15 and 2017-18 is allowed under Regulation 14(3)(iv) of the 2014 Tariff Regulations.

14. Accordingly, the projected additional capital expenditure allowed is summarized as under:

(₹ in lakh)		
Sl. No.	Head of Work /Equipment	Additional capital expenditure allowed
1	2014-15	
	1 st raising of Ash Dyke	1017.00
2	2015-16	-
3	2016-17	-
4	2017-18	
	2 nd raising of Ash Dyke	1600.00
5	2018-19	-
	Total Additional Capital Expenditure	2617.00

15. Based on this, the capital cost approved in respect of the generating station for the period 2014-19 is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	430503.32	431520.32	431520.32	431520.32	433120.32
Add: Additional capital expenditure	1017.00	0.00	0.00	1600.00	0.00
Closing capital cost	431520.32	431520.32	431520.32	433120.32	433120.32
Average capital cost	431011.82	431520.32	431520.32	432320.32	433120.32

Debt-Equity Ratio

16. 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.

17. Accordingly, the gross normative loan and equity amounting to ₹301352.32 lakh and ₹129151.00 lakh, respectively as on 31.3.2014 as considered in order dated 15.3.2017 in Petition No. 344/GT/2014, has been considered as gross normative loan and equity as on 1.4.2014. 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 Regulation 8 of the 2014 Tariff Regulations.

<i>(₹ in lakh)</i>						
	Capital cost upto COD 1.4.2014		Estimated completion cost including additional capitalization		Capital cost as on 31.3.2019	
	Amount	(%)	Amount	(%)	Amount	(%)
Debt	301352.32	70.00%	1831.90	70.00%	303184.22	70.00%
Equity	129151.00	30.00%	785.10	30.00%	129936.10	30.00%
Total	430503.32	100.00%	2617.00	100.00%	433120.32	100.00%

Return on Equity

18. 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.*

19. 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.

20. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate of 23.939%.

21. 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 15.50%. 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:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Notional Equity- Opening	129151.00	129456.10	129456.10	129456.10	129936.10
Addition of Equity due to additional capital expenditure	305.10	0.00	0.00	480.00	0.00
Normative Equity-Closing	129456.10	129456.10	129456.10	129936.10	129936.10
Average Normative Equity	129303.55	129456.10	129456.10	129696.10	129936.10
Return on Equity (Base Rate) (%)	15.500	15.500	15.500	15.500	15.500
Tax Rate for the year (%)	20.961	21.342	21.342	21.342	21.342
Rate of Return on Equity (Pre Tax) (%)	19.610	19.705	19.705	19.705	19.705
Return on Equity(Pre Tax)	25356.43	25509.32	25509.32	25556.62	25603.91

Interest on Loan

22. 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 refinancing.

(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.”

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

(a) The gross normative loan of ₹301352.32 lakh (on cash basis) as approved as on 31.3.2014 in order dated 15.3.2017 in Petition No. 344/GT/2014 has been considered as on 1.4.2014. In addition to this, loan component towards additional capitalization has been considered as per the debt equity ratio of 70:30.

(b) Cumulative repayment of loan approved as on 31.3.2014 in order dated 15.3.2017 in Petition No. 344/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 on year to year basis.

(d) Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2014-19.

(e) In line with the provisions of the regulations, the weighted average rate of interest has been calculated by 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 necessary calculation for interest on loan is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross opening loan	301352.32	302064.22	302064.22	302064.22	303184.22
Cumulative repayment of loan upto previous year	117403.61	139264.10	161150.38	183036.66	204963.51
Net Loan Opening	183948.71	162800.12	140913.84	119027.56	98220.71
Addition due to additional capital expenditure	711.90	0.00	0.00	1120.00	0.00
Repayment of loan during the year	21860.49	21886.28	21886.28	21926.85	21967.43
Net Loan Closing	162800.12	140913.84	119027.56	98220.71	76253.28
Average Loan	173374.42	151856.98	129970.70	108624.14	87236.99
Weighted Average Rate of Interest of loan	8.5753%	8.7966%	9.4107%	9.8484%	10.1041%
Interest on Loan	14867.38	13358.26	12231.18	10697.77	8814.50

Depreciation

24. 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 12years 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 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.”

25. The cumulative depreciation as on 31.3.2014 as considered in order in Petition No. 344/GT/2014 has been considered for the purpose of tariff. Further, the depreciation has been

calculated by applying the weighted average rate of depreciation as on 1.4.2014 for the period 2014-19. Accordingly, depreciation has been computed as follows:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	430503.32	431520.32	431520.32	431520.32	433120.32
Add: Additional Capital Expenditure	1017.00	0.00	0.00	1600.00	0.00
Closing Capital Cost	431520.32	431520.32	431520.32	433120.32	433120.32
Average Capital Cost	431011.82	431520.32	431520.32	432320.32	433120.32
Depreciable value (excluding land) @ 90%	383257.30	383714.95	383714.95	384434.95	385154.95
Balance depreciable Value	265013.91	243611.07	221724.79	200558.51	179351.65
Rate of Depreciation	5.0719%	5.0719%	5.0719%	5.0719%	5.0719%
Depreciation	21860.49	21886.28	21886.28	21926.85	21967.43
Cumulative depreciation at the end of the period (after adjustment)	140103.88	161990.16	183876.44	205803.29	227770.72

O&M Expenses

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

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

27. In terms of above Regulation 29(1)(a) and (b) of the 2014 Tariff Regulations the petitioner has claimed following O&M expenses :-

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

28. The petitioner has also prayed to allow the revision of O&M charges including the revised salary of the employee's with effect from 1.1.2017 as and when it is finalized. The respondent, MPPMCL has submitted that the petitioners company is a profit making Public Sector Company and therefore petitioner should bear the burden of wage revision of its employees. Accordingly, the respondent has submitted that the petitioner's prayer for revision in O&M norms should not be allowed. In response, the petitioner has clarified that it is a government company and the salary

revision of its employees is carried out as per the recommendations of Department of Public Enterprises, Govt of India. The petitioner has further submitted that during the finalization of these regulations, different stakeholders had pointed out the issue of salary & wage revision and inclusion of the same in comprehensive manner for allowing the O&M expenditure. The petitioner has submitted that the Commission in order dated 31.5.2016 in Petition No. 286/GT/2014 has directed as under:

29.26: *“In order to ensure that such increase in employee expenses on account of pay revision in case of central generating stations and private generating stations are considered appropriately, the Commission is of the view that it shall be examined on case to case basis, balancing the interest of generating stations and consumers.”*

29. We have examined the matter. Accordingly, the prayer of the petitioner for enhancement of O&M expenses if any, due to pay revision may be examined by the Commission, on a case to case basis, subject to the implementation of pay revision as per DPE guidelines and the filing of an appropriate application by the petitioner in this regard. The O&M Expenses have been worked out as per the norms specified under the 2014 Tariff Regulations. Accordingly, the year-wise O&M expenses claimed by the petitioner in terms of the said regulations 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

30. 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”

31. 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. In the present petition, the petitioner has submitted the details of type of cooling water system, water consumption, rate of water charges as applicable for 2013-14. The petitioner has claimed water charges based on the expected water consumption of the generating station.

<i>(₹ in lakh)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
3817.75	4060.18	4318.00	4592.19	4883.80

32. The respondent, MPPMCL has submitted that as per Regulation 29(2) of the 2014 Tariff Regulations the water charges has to be recovered separately. The respondent has further requested the Commission to disallow the same as it is beyond the scope of the Regulation. The respondent, has also requested the Commission to direct the petitioner to recover water charges from the beneficiaries on actual basis for the year 2014-15 and 2015-16.

33. The respondent, has submitted that against the allocated capacity of 120 MCM and liability of 90% minimum charge payment, the petitioner is able to consume only about 60-70% of water, hence the petitioner is paying enormous extra amount in the head of water charges. Accordingly, the respondent, has requested the Commission to disallow the excess water charges being claimed by the petitioner. The respondent, has further submitted that in previous tariff control period the water charges were fixed on enhanced value of extra water charges and the same needs to be revised downward thus resulting in reduction in O&M charges for previous tariff control period. Therefore, the respondent has requested the Commission to pass on the benefit of reduced O&M charges for previous control periods to the beneficiaries.

34. In response the petitioner has submitted that the expenses made towards the water charges which are determined by the state agencies and over which generator has no direct control. The petitioner submitted that the O&M expenditure (a part of annual fixed charges) recoverable from the

beneficiaries consists of normative O&M expenses and the water charges as paid for the instant station for the corresponding year and forms part of Annual Fixed Charges.

35. Further, the petitioner has submitted that the agreement of water for a thermal generating station is carried out based on Water Balance Diagram based on various considerations like temperature and relative humidity affecting rate of evaporation of water from raw water pond, Cooling Towers etc, blow-down for design Cycle of Concentration (COC) for circulating water, drift loss of cooling tower, steam loss in the cycle, maximum generation capacity etc. The petitioner submitted that considering the above factors, it has worked out the daily water requirement of Sipat STPS and has executed the water agreement for the instant station for the drawl of 0.328 MCM/day of water quantity. The petitioner has further referred to the report of CEA on minimization of water requirement in coal based thermal power station along with the water requirement in plant. The relevant extract of the report is as under:

3.0 Plant Water Requirement

*“Plant consumptive water requirement is governed by a number of factors such as quality of raw water, type of condenser cooling system, quality of coal, ash utilization, type of ash disposal system, waste water management aspects etc. In the past, power stations were designed with water systems having liberal considerations for various requirements and high design margins. Ash handling system used to be designed for disposal of both fly ash and bottom ash in wet form using lean slurry with ash to water ratio of typically 1:10. The consumptive water requirement for coal based plants with cooling tower used to be about **7m³/h per MW** without ash water recirculation and **5 m³/h per MW** with ash water recirculation “*

36. In view of the above, the petitioner has submitted that, the water requirement for 2980 MW (Sipat STPS Stage-I and Sipat STPS Stage-II) at the rate of 5 m³/hr/MW works out to be 0.357 MCM/day which is more than the agreed water quantity. As regards the O&M norms for the previous tariff period, the petitioner has submitted that the Commission has fixed the O&M norms for 2009-14 period based on the actual expenditure of 2004-05 to 2007-08 considering various expenses such as employee cost, repair and maintenance, overheads including the water charges and has also provided a yearly escalation of 5.72% for the tariff period 2009-14. The petitioner has further submitted that during tariff period 2009-14, Water Resource Dept. Government of Chattisgarh abnormally increased the rate of water charges from ₹3.6/m³ to ₹10.65/m³ i.e an increase of 295% from the water charges as existed during 2009-10 which was not allowed to be recovered in tariff by

the Commission during the tariff period 2009-14. Accordingly, the petitioner submitted that there is under recovery of water charges during the tariff period 2009-14 in the instant station.

37. In response to the directions of the Commission, the petitioner vide affidavit dated 29.8.2016 has submitted the details of contracted quantity, allocated quantity, actual water consumption and the water charges paid. It has also submitted that water charges forms part of audited financial statement. The petitioner has also clarified that the cooling water system in Sipat STPS Stage-I is the closed circulating water system with Induced Draft Cooling Tower (IDCT). It has further submitted that water agreement has been entered into this generating station for the period of 30 years based on allocation of water quantity on daily basis for 0.328 MCM and the aggregated billing for water consumption is carried out on monthly basis. The petitioner has stated that if the actual drawl is less than contracted quantity, the minimum payment of water charges is to be made based on allocation equivalent to 90% of the monthly contracted quantity of 10 MCM i.e. 9 MCM for Sipat STPS Stage-I & Stage-II and if the actual drawl exceeds the contracted quantity on monthly basis, the water charges are payable to the Govt. of MP @1.5 times the applicable rate of water charges. The petitioner has further, stated that the water agreement for a thermal generating station is executed for water requirement based on Water Balance Diagram which is based on various considerations like temperature and relative humidity affecting rate of evaporation of water from raw water pond, Cooling Towers etc, blow-down for design Cycle of Concentration (COC) for circulating water, drift loss of cooling tower, steam loss in the cycle, level of generation etc. The petitioner has submitted that with better O&M practices like chemical dosing, Ash Water Recirculation System (AWRS) etc., in place the generating station is able to reduce the raw water make-up and maintaining its water requirement within the allocated quantity, however, in few months the actual drawl has reached up to the contracted quantity during seasonal peak demands. The petitioner has also stated that it would not be possible to reduce the allocation, as against the monthly allocation of 10 MCM, the actual consumption is in the range or 9 to 10 MCM in certain months and in case, the contracted quantity is reduced from 10 MCM, it is likely that there would be loss of generation due to reduced availability of water. Therefore, the petitioner has requested the Commission to allow the

expenditure pertaining to the allocated quantity for successful and efficient running of the generating station.

38. The details of water charges as submitted by the petitioner vide affidavit dated 23.6.2016 for Sipat STPS Stage-I (1980 MW) & Stage-II (1000 MW) for the period 2009-14 is as under:

(₹ in lakh)						
2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
2223.00	7254.00	8600.00	10209.00	11377.00	13086.00	13368.00

39. It is also observed from the notification of Water Resource Department, Chattisgarh dated May, 2010 submitted by the petitioner that the rate of water charges shall increase every year by 15% with effect from 1.5.2010. It is noticed from the above table that there is abnormal increase in water charges over the tariff period 2009-14 on account of variation in water consumption. It is observed from the submissions of the petitioner that there is abnormal increase in water consumption to 8.05 MCM during June, 2013, 7.56 MCM during March, 2014 and 8.38 MCM during January, 2015, whereas the average consumption in other months during the year 2013-14 is 5.84 MCM and during the year 2014-15 is 5.54 MCM against the contracted quantity of 10 MCM/month, for which the petitioner has not submitted any justification. Accordingly, we direct the petitioner to submit the justification for such abnormal increase (in few months) as stated above. The petitioner is also directed to review the contracted quantity of water as the actual consumption is much less than contracted quantity. It is further observed that as per notification of Water Resource Department, Chattisgarh, the rate of water charges would increase every year by 15% with effect from 1.5.2010, but, the petitioner has considered 6.35% annual increase over the actual expense for the year 2013-14. In this background, considered the petitioner's claim for water charges for the period 2014-19. The water charges allowed as above is subject to revision based on truing -up exercise at the end of the period, for which the petitioner is directed to submit the additional information as above.

40. We have examined the matter. It is noticed that the petitioner has claimed water charges during 2009-16 as per the actual water charges incurred for the period. Further the petitioner has claimed ₹3817.75 lakh in respect of water charges during 2014-15 based on the total water charges

paid for combined Sipat STPS stage-I and II of ₹11377 lakh during 2013-14. The petitioner in the instant petition has considered ₹11377 lakh as water charges in 2014-15 as against the claim of ₹13086 lakh during 2014-15. The water charges paid during 2014-15 and 2015-16 as submitted vide affidavit dated 23.6.2016 are based on actuals and hence the same is considered for allowing water charges in the year 2014-15 and 2015-16. Further, the water charges paid during 2015-16 shall be considered during the period 2016-19.

41. The Commission has also referred to the report of CEA on minimization of water requirement in coal based thermal power station along with the water requirement in plant. The relevant extract of the report is as under:

“As per the above study, the recommended plant consumptive water for different types of plants is indicated as below:-

Table- 2, Plant water requirement in m^3/h for 2x500 MW plant.

S.No.	Description	In-land plants using indigenous coal		Sea water based coastal plants (fresh water requirement)
		Plant with wet cooling tower	Plant with dry cooling system	
1	Water requirement for first year of plant operation	3600* (3.6)	750\$ (0.75)	400 (0.4)
2	Water requirement during subsequent period	3000 (3.0)	550\$ (0.55)	

Figures within bracket indicate water requirement in m^3/h per MW of the plant.

Notes:

- i) *The above plant water requirements are for normal sources of raw water with COC of 5 for CW system. In case, treated sewage water or high TDS water is used as source for raw water or plant is required to be provided with FGD plant, the plant water requirement could be higher which needs to be worked out on case to case basis. In some cases, it may be possible to increase COC of CW system above 5.0 based on quality of raw water and feasibility of cooling water treatment. In such case, plant consumptive water would reduce according to CT blow down reduction.*
- ii) ** The indicated figure of 3600 m^3/h is for fly ash disposal in wet slurry mode. In case HCSD system is used for fly ash disposal, the plant consumptive water requirement shall be 3000 m^3/h (3 m^3/h per MW) right from first year of plant operation.*
- ii) *\$ It is presumed that dry cooling system based plants would be designed with fly ash disposal in dry mode right from initial period of plant operation. In case, HCSD system is used for fly ash disposal, additional raw water to the tune of 150 m^3/h (0.15 m^3/h per MW) would be required.*

iii) In case CMB water is treated using R.O. plant, the requirement of plant input water shall get further reduced as per recovery of permeate water and scheme for utilisation of waste waters including R.O. reject.”

42. The petitioner has submitted the details of the water requirement for Combined Sipat STPS, out of which yearly water requirement for Sipat Stage-II is as under:

	<i>(MCM/year)</i>				
Combined for Sipat	69.27	89.90	89.90	89.90	89.90
Capacity of Stage-I	1980.00	1980.00	1980.00	1980.00	1980.00
Capacity of Stage-II	1000.00	1000.00	1000.00	1000.00	1000.00
Total Capacity	2980.00	2980.00	2980.00	2980.00	2980.00
Water Charge for Stage-I	23.24	30.17	30.17	30.17	30.17

43. Based on the above norms as indicated by the CEA, the consumptive water charges requirement for 1000 MW (Sipat STPS Stage-II) at the rate of 3 m³/hr/MW works out to be 0.072 MCM/day. The yearly water requirement for Combined Sipat STPS (Stage-I and Stage-II) of 2980MW for the year 2014-15 is 69.27 MCM and 89.90 MCM in 2015-16. Further, pro rata yearly water requirement based on combined requirement for Sipat STPS Stage-II (1000 MW) for the year 2014-15 is 23.24 MCM and 30.17 MCM in 2015-16. As per CEA norms of 3 m³/hr/MW the average water requirement works out to be 25.85 MCM. The actual water consumption of 23.24 MCM as submitted by the petitioner is within the CEA norms during 2014-15, and for the year 2015-16 the water consumption of 30.17 MCM is slightly higher, which may be accepted. The petitioner has claimed ₹13086 lakh and ₹13368 lakh as water charges in 2014-15 and 2015-16 for combined Sipat STPS (Stage-I and Stage-II) (2980 MW). Further, the petitioner has submitted the pro-rata water charges for Sipat Stage-II (1000 MW) as ₹4391.28 lakh in 2014-15 and ₹4485.91 lakh in the year 2015-16 respectively. Since this is the actual water charges claimed by the petitioner in 2014-15 and 2015-16, the Commission is inclined to allow the same. However the Commission directs the petitioner to furnish the details of the actual water charges paid at the end of the tariff period along with the measures taken to minimize the consumptive water requirement for the generating station. The detailed computation for water charges for Sipat STPS Stage-I is shown under:

<i>(₹ in lakh)</i>					
Actual Water Charges	2014-15	2015-16	2016-17	2017-18	2018-19
Combined for Sipat	13086.00	13368.00	13368.00	13368.00	13368.00
Capacity of Stage-I	1980.00	1980.00	1980.00	1980.00	1980.00
Capacity of Stage-II	1000.00	1000.00	1000.00	1000.00	1000.00
Total Capacity	2980.00	2980.00	2980.00	2980.00	2980.00
Water Charge for Stage-I	4391.28	4485.91	4485.91	4485.91	4485.91

44. The total water charges thus derived for 2014-15 as per the actual water charges paid by the petitioner is approximately closer to the consumptive water requirement as mentioned in the CEA report. In view of the above the Commission has considered the actual water charges paid by the petitioner for the year 2014-15 and 2015-16. Further, the Commission has considered the water charges for the period 2016-19 same as the actual water charges paid by the petitioner in 2015-16.

45. Based on the above, the total O&M expenses including water charges as allowed for the purpose of tariff is as under:

<i>(₹ in lakh)</i>					
	2014-15	2015-16	2016-17	2017-18	2018-19
O&M Expenses as allowed	16000.00	17010.00	18080.00	19220.00	20430.00
Water charges as allowed	4391.28	4485.91	4485.91	4485.91	4485.91
Total O&M Expenses as allowed(including Water charges)	20391.28	21495.91	22565.91	23705.91	24915.91

Capital spares

46. 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.

Operational Norms

47. 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 (%)	5.75
Specific Oil Consumption (ml/ kWh)	0.50

48. The respondent, MPPMCL has submitted that the beneficiaries are required to meet their power requirement based on merit order dispatch and the cheaper the power the more schedule will it get. The respondent, has submitted that it is essential on the part of the petitioner to endeavor to reduce the cost of supply specifically energy charges rate in order to get more schedule instead of pleading for relaxation in norms. In response, the petitioner has submitted that due to very low scheduling of power by the beneficiaries, the station has been forced to operate either on partial load or to remain under reserve shut down and therefore the prevailing operating conditions are making it difficult to achieve the normative operating parameters as set out in the 2014 Tariff Regulations, which are fixed based on the operating parameters achieved during the period 2008-13. Accordingly, the petitioner has prayed for grant of liberty to approach the Commission for relaxation of norms as well as removal of difficulty as per the Regulation 54 & Regulation 55 of the 2014 Tariff Regulations, in case the need arises.

49. The operational norms claimed by the petitioner and considered by the Commission are discussed as under:

Normative Annual Plant Availability Factor (NAPAF)

50. 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.

The respondent, MPPMCL while pointing out that there is no shortage of coal to petitioner based on the availability details of the plant for the past 4 years, has submitted that the petitioner has not submitted any justification for considering target availability of 83% and therefore has requested the Commission to disallow the petitioners claim for target availability of 83%. The respondent, has also submitted that the petitioner vide affidavit dated 23.6.2016 has indicated that the generating station has been achieving the normative PAF as per regulation and hence there is no justification for

claiming relaxation in PAF. Accordingly, it has requested the Commission to direct the petitioner to revise target availability to 85% with retrospective effect. In response, the petitioner has submitted that with the intent to mitigate the risk of recovery of fixed charges by the generators, the Commission has decided that in view of shortage of coal and uncertainty of assured coal supply on sustained basis, the fixed charges will be recovered at availability of 83% which shall be reviewed by the Commission after 3 years from 1.4.2014. The petitioner has further submitted that the said petition, it has worked out interest in working capital by considering target availability of 83 % for the cost of coal and oil.

51. We have examined the matter. We have gone through the submissions of the petitioner and respondent. PAF of 83% is norms specified by the Commission for the period 2014-15 to 2016-17 for 3 years. For this no justification is required from the petitioner. Regarding PAF for the year 2017-18 and 2018-19, the same shall be 85%.

Heat Rate (kCal/kWh)

52. The petitioner has claimed Gross Station Heat Rate of 2375 kCal/kWh in accordance with Regulation 36(C)(a)(i) of the 2014 Tariff Regulations. We accordingly, allow the heat rate of 2375 kCal/kwh for this generating station.

Auxiliary Energy Consumption

53. The petitioner has claimed Auxiliary Energy Consumption at 5.75% {5.25% for Steam driven BFP as per Regulation 26(E)(a)(ii) of the 2014 Tariff Regulations + 0.5% for induced draft cooling tower as per first proviso to Regulation 26(E)(a) of the 2014 Tariff Regulations} during the period 2014-19 period. The Auxiliary Energy Consumption claimed is in accordance with above regulations, and hence the Auxiliary Energy Consumption of 5.75% as per the norms is allowed for the purpose of tariff.

Specific Oil Consumption

54. Regulation 36(D)(a) of the 2014 Tariff Regulations, provides secondary fuel oil consumption of 0.50 ml/kWh for coal-based generating station and the same has been allowed for 2014-19 tariff period.

Interest on Working Capital

55. Sub-section (1) of clause (1) of Regulation 28 of the 2014 Tariff Regulations provides asunder:

“28. Interest on Working Capital:

(1) The working capital shall cover

(a) Coal-based/lignite-fired thermal generating stations

(i) Cost of coal or lignite and limestone towards stock, if applicable, for 15 days for pit-head generating stations and 30 days for non-pit-head generating stations for generation corresponding to the normative annual plant availability factor or the maximum coal/lignite stock storage capacity whichever is lower;

(ii) Cost of coal or lignite and limestone for 30 days for generation corresponding to the normative annual plant availability factor;

(iii) Cost of secondary fuel oil for two months for generation 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 charges and energy charges for sale of electricity calculated on the normative annual plant availability factor; and

(vi) Operation and maintenance expenses for one month.

56. The respondent, MPPMCL has submitted that the petitioner has claimed O & M expenses for working capital including the expenditure of water charges, but the proviso of the 2014 Tariff Regulations provides that water charges should be recovered separately. Accordingly, the respondent has requested the Commission to exclude water charges from O&M expense while calculating Interest on Working Capital. The respondent has also submitted that receivables which is also a part of working capital and comprises of annual of fixed charges and energy charges equal to two months charges also the Annual Fixed Charges which is a part of receivable comprises of

return on equity, which is inclusive of grossing up of income tax, thus petitioner is earning interest on amount of income tax also towards interest on working capital. The respondent, has further submitted that the 2014 Tariff Regulations do not provide to pass on such an extra interest on amount of income tax and therefore has requested the Commission to exclude amount of grossing up of income tax while calculating receivable. The respondent, has requested the Commission to consider 83% target availability for computation of interest in working capital. The respondent, has also submitted that normative rate has increased from 12.25% to 13.50% from tariff period 2009-14 to 2014-19 when there is steep reduction in prevailing rate of interest has been observed and therefore has requested the Commission to amend the existing normative rate of interest on working capital in the 2014 Tariff Regulations.

57. In response, the petitioner has submitted that since water charges form part of O&M expenses (as discussed above) which are allowed to be recovered by the generating station on year to year basis forms the part of annual fixed charges and that the working capital inter- alia allows for 1 month O&M expenses, therefore the claim of O&M expenses including the water charges for calculation of interest on working capital is in line with the 2014 Tariff Regulations. As regards the grossing up of ROE, the petitioner has submitted that during Tariff Regulations prior to 2009 Tariff Regulations, the income tax was pass through to the beneficiaries, whereas as per 2014 Tariff Regulations, the Pre-Tax ROE is allowed for tariff and income tax is not pass through. As regards to interest rate of 12.25 % is to be applied instead of 13.50 % for calculating the interest on working capital, the petitioner has submitted that applicable rate of interest should be considered as Regulation 28(3) of the 2014 Tariff Regulations for calculation of interest on working capital.

58. The respondent, MPPMCL has submitted that demurrage has been levied/imposed on the petitioner for its default in handling the racks and therefore the beneficiaries are not liable to bear the demurrage charges. The respondent, MPPMCL has therefore requested the Commission to disallow the demurrage charges claimed by the petitioner in landed cost of fuel. The respondent, MPPMCL has requested the Commission to direct the petitioner to review all the bills wherein

demurrage and penalties has been included in landed cost of fuel and pass on the corresponding adjustment to the beneficiaries. In response the petitioner has submitted that it has already deducted the demurrage charges while calculating the total transportation charges for that particular month.

59. The interest on working capital worked out in accordance with Regulation 28 of the 2014 Tariff Regulations is as under:

Fuel Components and Energy Charges

60. The petitioner has claimed cost for fuel components in working capital based on the average fuel data for preceding three months of January, 2014, February, 2014 and March, 2014 and has considered the same for each year of the tariff period as under:

		(₹ in lakh)				
Sl. No.		2014-15	2015-16	2016-17	2017-18	2018-19
1A	Cost of Coal for Stock for 15 days	4034.00	4045.05	4034.00	4034.00	4034.00
1B	Cost of Coal for Generation for 30 days	8068.01	8090.11	8068.01	8068.01	8068.01
2	Cost of Main Secondary Fuel Oil for 2 months	312.73	313.59	312.73	312.73	312.73

61. The respondent, MPPMCL has submitted that the petitioner has not furnished the details of GCV of coal on as received basis and therefore has requested the Commission to direct the petitioner to provide the GCV of coal on as received basis. The respondent, has also submitted GCV of primary fuel as billed by the coal company may be considered in absence of GCV of coal on as received basis for calculation of energy charges. The respondent, MPPMCL has further submitted that the petitioner is charging ECR on as fired basis and therefore has requested the Commission to direct the petitioner to revise all its bill with effect from 1.4.2014 on the basis of GCV of primary fuel on as received basis. In response, the petitioner has submitted that the GCV of coal as loaded by the Coal Companies, based on which the bills are raised by the Coal Companies on the purchaser of coal are generally found to be different from the GCV as measured on `as received

basis'. The petitioner has also submitted that this is a nationwide phenomenon faced not only by the answering respondent but all the generating companies in India whether in Public Sector or Private Sector, whether owned and controlled by the Central Government or owned and controlled by the State Government, whatsoever. The petitioner has stated that the aspect on the grade slippage from the time of loading till the measurement on 'as received basis' has been a subject matter of representation to the Government of India and has also been a subject matter of the proceedings before the Competition Commission of India. The petitioner has stated that till an acceptable and satisfactory resolution of the above aspects, there is no option but to proceed on the basis that there is a grade slippage in regard to the GCV measured at the time of loading and measured at the time on 'as received basis'. The petitioner has clarified that on the issue of grade slippage, petitioners initiative in this regard has resulted in formation of a high level committee comprising of Director (Operation) the petitioners company, Director (Marketing) CIL as Co-Chairman and other stakeholders such as the Railways, CEA, & other State generating station to address the issue. The petitioner has submitted that it has also liaised with CIL on this issue and consequently, third party sampling of GCV at the mine end has been introduced to ensure greater transparency in the system. Accordingly, the petitioner has submitted that the cost of any slippage in the grade of coal between the loading point and petitioners stations is not to be borne by generators. The petitioner has submitted the observation of the Commission in its order dated 19.02.2016 in Petition No. 33/MP/2014, Tata Power Delhi Distribution Limited V/s NTPC Ltd & Others, wherein the issue of grade slippage was dealt.

62. We have examined the matter. 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.

63. 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 IS436(Part1/Section1)-1964 which has been elaborated in the CPRI Report to PSERC.”

64. 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 Hydraulic 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”(as derived by the petitioner based on Mazumdar's empirical formula) 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

65. In view of the above, the cost for fuel components in working capital have been computed at 85% NAPAF for the tariff period 2014-19 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– 15 days	2975.30	2975.30	2975.30	3046.99	3046.99
Cost of Coal for generation– 30 days	5950.60	5950.60	5950.60	6093.98	6093.98
Cost of secondary fuel oil – two months	312.73	313.59	312.73	320.27	320.27

66. The petitioner has claimed Energy Charge Rate (ECR) based on the operational norms specified in 2014 Regulation as 1.440₹/Wh. We have computed 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:

Sl. No		Unit	2014-19
1	Capacity	MW	1000.00
2	Gross Station Heat Rate	kCal/kWh	2375.00
3	Aux. Energy Consumption	%	5.75%
4	Weighted average GCV of oil	kCal/lt.	10130.00
5	Weighted average GCV of Coal (As Billed)	kCal/kg	4463.48
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	₹/kl	51614.61
8	Weighted average price of Coal	₹/MT	1875.37
9	Rate of energy charge ex-bus	Rs./kWh	1.084**

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

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

67. 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.

Maintenance spares

68. The maintenance spares in the working capital claimed by the petitioner, in line with the Regulation 28(1)(1) of the 2014 Tariff Regulations, are allowed as under:



(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
4078.26	4299.18	4513.18	4741.18	4983.18

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 (two months)	12379.22	12413.13	12379.22	12677.51	12677.51
Fixed Charges (two months)	14692.91	14662.42	14658.87	14626.19	14534.27
Total	27072.13	27075.55	27038.08	27303.70	27211.78

O&M Expenses

70. O&M expenses for 1 month claimed by the petitioner in line with the Regulation 28(1)(1) of the 2014 Tariff Regulations for the purpose of working capital is allowed as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
1699.27	1791.33	1880.49	1975.49	2076.33

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, rate of 13.50% (Bank rate 10.00% + 350 bps) 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 towards stock- 15 days	2975.30	2975.30	2975.30	3046.99	3046.99
Cost of coal towards generation- 30 days	5950.60	5950.60	5950.60	6093.98	6093.98
Cost of secondary fuel oil- 2 months	312.73	313.59	312.73	320.27	320.27
O & M expenses- 1 Month	1699.27	1791.33	1880.49	1975.49	2076.33
Maintenance Spares	4078.26	4299.18	4513.18	4741.18	4983.18
Receivables- 2 Month	27072.13	27075.55	27038.08	27303.70	27211.78
Total Working Capital	42088.28	42405.54	42670.38	43481.62	43732.53
Rate of Interest (%)	13.500%	13.500%	13.500%	13.500%	13.500%
Interest on Working Capital	5681.92	5724.75	5760.50	5870.02	5903.89

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	21860.49	21886.28	21886.28	21926.85	21967.43
Interest on Loan	14867.38	13358.26	12231.18	10697.77	8814.50
Return on Equity	25356.43	25509.32	25509.32	25556.62	25603.91
Interest on Working Capital	5681.92	5724.75	5760.50	5870.02	5903.89
O&M Expenses	20391.28	21495.91	22565.91	23705.91	24915.91
Total	88157.48	87974.52	87953.19	87757.16	87205.63

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 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

75. The respondent, MPPMCL has requested the Commission to direct the petitioner to furnish the information for determination of base energy charge rate. In response the petitioner submitted that as per Regulation 30 (11) of the 2014 Tariff Regulations the Commission shall specify the base energy charge for each Station taking into account tariff petition for that station.

76. We have examined the matter. 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.

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 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. 322/GT/2014 is disposed of in terms of the above.

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

Sd/-
(A. K. Singhal)
Member

Sd/-
(Gireesh B. Pradhan)
Chairperson



**CALCULATION OF WEIGHTED AVERAGE RATE OF INTEREST ON LOAN FOR
TARIFF PERIOD 2014-19**

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Net opening loan	139859.29	115184.63	58450.30	39418.50	24555.58
Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
Less: Repayment during the period	24674.66	56734.33	19031.80	14862.92	9765.48
Net Closing Loan	115184.63	58450.30	39418.50	24555.58	14790.10
Average Loan	127521.96	86817.47	48934.40	31987.04	19672.84
Rate of Interest (%)	8.5753%	8.7966%	9.4107%	9.8485%	10.1041%
Interest	10935.39	7636.99	4605.08	3150.23	1987.76