

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 342/GT/2014

Coram:

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

Date of Order : 24.02.2017

In the matter of

Approval of generation tariff of Vindhyachal Super Thermal Power Station Stage-III (1000 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 Limited,
Shakti Bhavan, Vidyut Nagar, Jabalpur-482 008
2. Maharashtra State Electricity Distribution Company Limited,
'Prakashgard', Bandra (East)
Mumbai-400 051
3. Gujarat Urja Vikas Nigam Limited,
Sardar Patel Vidyut Bhawan
Race Course, Baroda – 390007
4. Chhattisgarh State Power Distribution Company Ltd,
Dhagania, Raipur-492 013
5. Electricity Department, Govt. of Goa,
Vidyut Bhavan, Panaji, Goa
6. Electricity Department
Administration of Daman & Diu,
Daman-396 210
7. Electricity Department
Administration of Dadra and Nagar Haveli,
Silvassa

....Respondents



Parties present:

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

For Respondents: Shri Rishabh Singh, Advocate, MPPMCL

ORDER

This petition has been filed by the petitioner NTPC for approval of tariff of Vindhyachal Super Thermal Power Station, Stage-III (1000 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 (herein after 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 (COD) of the different units of the generating station are as under:

Unit	COD
Unit-I	1.12.2006
Unit-II	15.7.2007

3. Petition No. 260/2009 was filed by the petitioner for approval of tariff of the generating station for the period 2009-14 and the Commission by its order dated 28.5.2012 approved the annual fixed charges of the generating station. Thereafter, the Commission vide order dated 6.2.2017 in Petition No. 343/GT/2014 had revised the tariff of the generating station for the period 2009-14 after truing-up of the additional capital expenditure in terms of Regulation 6 (1) of the 2009 Tariff Regulations, considering the capital cost of ₹355879.73 lakh as on 31.3.2014. The annual fixed charges approved by the Commission in the said order is as under:



(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	18012.03	18190.73	18296.16	18326.38	18361.17
Interest on Loan	16323.42	15256.54	14386.74	12799.63	11339.15
Return on Equity	24552.08	24521.17	24381.72	24416.20	25035.39
Interest on Working Capital	5209.68	5232.16	5266.69	5272.76	5305.47
O&M Expenses	13000.00	13740.00	14530.00	15360.00	16240.00
Secondary fuel oil cost	1692.37	1692.37	1697.01	1692.37	1692.37
Total	78789.58	78632.98	78558.31	77867.33	77973.54

4. The petitioner vide affidavit dated on 19.8.2014 has sought the approval of tariff of the generating station 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 are as under:

Capital Cost

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	356330.58	366664.95	367367.33	368314.33	369591.33
Add: Additional capital expenditure	10334.37	702.38	947.00	1277.00	1103.00
Closing Capital Cost	366664.95	367367.33	368314.33	369591.33	370694.33
Average Capital Cost	361497.76	367016.14	367840.83	368952.83	370142.83

Annual Fixed Charges

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	18681.84	18967.03	19009.65	19067.11	19128.61
Interest on Loan	10174.36	9014.28	7661.26	6194.63	4677.64
Return on Equity	22100.33	22437.70	22488.12	22556.10	22628.85
Interest on Working Capital	6394.35	6464.32	6499.48	6548.90	6602.32
O&M Expenses	18116.36	19260.75	20473.67	21765.67	23137.32
Compensation Allowance	0.00	0.00	0.00	100.00	200.00
Special Allowance	0.00	0.00	0.00	0.00	0.00
Total	75467.25	76144.08	76132.18	76232.42	76374.74

5. In compliance with the directions of the Commission, the petitioner has filed additional information and has served copies on the respondents. The respondent, Madhya Pradesh Power



Management Company Limited (“MPPMCL”) has filed its reply in the matter and the petitioner has filed its rejoinder to the same. 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 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 annual fixed charges claimed by the petitioner are based on opening capital cost of ₹356330.58 lakh as on 1.4.2014 against ₹355879.73 lakh as on 31.3.2014 admitted vide order dated 6.2.2017 in Petition No. 343/GT/2014. Accordingly, the opening capital cost of ₹355879.73 lakh as on 1.4.2014 has been considered.

Actual/ Projected Additional Capital Expenditure

8. 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.”

9. The break-up of the projected additional capital expenditure claimed by the petitioner for the period 2014-19 is as under:-

(₹ in lakh)

Sl. No.	Head of Work /Equipment	Regulations	2014-15	2015-16	2016-17	2017-18	2018-19	Total
1	V-3B Dyke 1st raising	14(3)(iv)	300.00	0.00	0.00	0.00	0.00	300.00
2	V-3A Ash Dyke 2nd raising		0.00	550.00	197.00	0.00	0.00	747.00
3	V-3B Dyke 2nd raising		0.00	0.00	400.00	277.00	0.00	677.00
4	V-3A Dyke 3rd raising		0.00	0.00	0.00	700.00	251.00	951.00
5	V-3B Dyke 3rd raising		0.00	0.00	0.00	0.00	852.00	852.00
6	Continuous Emission Monitoring system	14(3)(ii)	34.37	2.38	0.00	0.00	0.00	36.75
7	Wagon Tippler	14(3)(X)	10000.00	0.00	0.00	0.00	0.00	10000.00
8	On Line DGA Analyser Stage-II	14(3) with regulation 54	0.00	50.00	50.00	0.00	0.00	100.00
9	CCTV Surveillance System for Stage-III	14(3)(iii)	0.00	100.00	200.00	200.00	0.00	500.00
10	Installation of CCTV in Stage-III Cable Gallery		0.00	0.00	100.00	100.00	0.00	200.00
11	Total Additional Capital Expenditure		10334.37	702.38	947.00	1277.00	1103.00	14363.75

Regulation 14(3)(iv) - Ash Dyke and ash pond related works

10. The petitioner has claimed projected additional capital expenditure of ₹300.00 lakh in 2014-15 and ₹550.00 lakh in 2015-16 towards works related to Ash dyke 3-B (1st raising) and Ash dyke 3-A (2nd raising) respectively, ₹197.00 lakh and ₹400.00 lakh in 2016-17 towards works related to ash dyke 3-A (2nd raising) and Ash dyke 3-B (2nd raising) respectively, ₹277.00 lakh and ₹700.00 lakh in 2017-18 towards works related to Ash dyke 3-B (2nd raising) and Ash dyke 3-A (3rd raising) respectively and ₹251.00 lakh and ₹852.00 lakh in 2018-19 towards work related to Ash dyke 3-A (3rd raising) and Ash dyke 3-B (3rd raising) respectively. In justification of the said claim, the



petitioner has submitted that the works related to Ash dyke 3-B (1st raising) and Ash dyke 3-A (2nd raising), are within the original scope of work and as the present capacity of Ash Dyke 3A shall be exhausted in 2015-16, the 2nd raising of Ash dyke is required as part of capacity enhancement for further disposal of ash. The petitioner has further submitted that the present capacity of Ash dyke 3B shall be exhausted in 2015-16 and accordingly, the 2nd raising is required as part of capacity enhancement for further disposal of ash. The petitioner has also submitted that the capacity of Ash dyke 3A and 3B shall be exhausted in 2017-18 and 2018-19 and accordingly, 3rd raising is required as part of capacity enhancement for further disposal of ash. Accordingly, the petitioner has prayed that the Commission may allow the expenditure claimed under Regulation (14)(3)(iv) of the 2014 Tariff Regulations.

11. The respondent, MPPMCL has submitted that it is not clear as to how such huge expense can form part of original scope of work after the work the cut-off date and has accordingly prayed that the claim may be rejected. In response, the petitioner has submitted that ash generation and ash disposal are integral part of the generation and is a continuous process and accordingly an estimated expenditure of ₹14891.00 lakh has been claimed towards ash related works. Hence, the contention of the respondent is liable to be rejected.

12. We have examined the matter. It is observed that the Commission in order dated 28.5.2012 had allowed the expenditure under this head. The Commission vide order dated 6.2.2017 in Petition No. 343/GT/2014 has allowed an expenditure of ₹555.96 lakh for 2013-14 towards Ash dyke raising works (1st raising). The work relating to raising of ash dyke forms part of the original approved scope of works and these works are continuous in nature during the entire operational lifetime of the generating station which are normally taken up in stages as and when required. Accordingly, the additional capital expenditure of ₹300.00 lakh claimed in 2014-15 towards 1st raising of ash dyke 3B is allowed. It is further observed that the 1st raising of ash dyke 3B shall cater the requirement of ash handling in 2014-15 and thereafter 2nd raising of ash dyke 3A and 3B would be put to use. Accordingly, 2nd raising of ash dyke 3A and 3B and 3rd raising of ash dyke 3A and 3B shall cater the



requirement of ash handling till 2017-18 and 2018-19 respectively. In this background, we are allowing the expenditure for Ash dyke raising as it is essential for smooth and continuous handling of ash disposal in the generating station. Hence, the petitioner's claim of ₹400.00 lakh in 2014-15, ₹550.00 lakh in 2015-16, ₹197.00 lakh in 2016-17, ₹400.00 lakh in 2016-17, ₹277.00 lakh in 2017-18, ₹700.00 lakh in 2017-18, ₹251.00 lakh and ₹852.00 lakh in 2018-19 towards works related to 1st, 2nd & 3rd raising of Ash dyke 3A, 3B has been allowed under Regulation 14(3)(iv) of 2014 Tariff Regulations.

Regulation 14(3)(ii) - Change in law

13. The petitioner has claimed projected additional capital expenditure of ₹34.37 lakh in 2014-15 and ₹2.38 lakh in 2015-16 towards Continuous Emission Monitoring System (CEMS) under this head. In justification of the said claim, the petitioner has submitted that Continuous Emission Monitoring System is a new statutory requirement as per guidelines issued by MOEF, GOI on 6.4.2011, which provides that the stack emission as well as ambient air quality (as per notified standards) is to be continuously monitored. The petitioner has further submitted that the Commission vide order dated 15.5.2014 in Petition No. 148/GT/2013 has allowed an amount of ₹32.00 lakh as projected additional capital expenditure of ₹32.00 lakh in 2013-14 for the said work and the same is being implemented and capitalised during the period 2014-19 after the work was awarded in 2013-14.

14. The respondent, MPPMCL has submitted that the beneficiaries are not going to be benefitted by installation of CEMS in any manner in terms of generation of electricity. It has further submitted that the installation of CEMS is a social responsibility of the petitioner and accordingly it has prayed that the Commission may direct the petitioner to cater the expenditure through CSR funds. In response, the petitioner submitted that it has installed CEMS as per the directions/guidelines of MOEF,GOI vide circular dated 6.4.2011 and hence the expenditure claimed may be allowed.



15. We have examined the matter. It is noticed that in Petition No. 148/GT/2013, the petitioner had claimed an expenditure of ₹32.00 lakh in 2013-14 for this work and the same was allowed on projection basis vide order dated 15.5.2014 under Regulation 9(2)(ii) of the 2009 Tariff Regulations on the ground that the same is a statutory requirement as per guidelines issued by MoEF, GOI dated 6.4.2011. However, based on the submissions of the petitioner in Petition No. 343/GT/2014 (truing-up of 2009-14) that the expenditure towards CEMS has been awarded and will be capitalized during the period 2014-19, the Commission vide order dated 6.2.2017 had granted liberty to the petitioner to claim the expenditure during 2014-19 with the observation that the same will be considered in accordance with the 2014 Tariff Regulations. The petitioner, in this petition has claimed the expenditure on CEMS under Regulation 14 (3) (ii) of the 2014 Tariff Regulations on the ground that the same is a statutory requirement in terms of the MoEF, GOI guidelines dated 6.4.2011. On perusal of the said guidelines dated 6.4.2011, it is observed that the petitioner in terms of the said guidelines is required to comply with certain additional conditions which includes the continuous monitoring of stack emissions as well as ambient air quality and to take corrective measures from time to time to ensure that the levels are within permissible limits. In view of the above, we are inclined to allow the claim of the petitioner for ₹34.37 lakh in 2014-15 and ₹2.38 lakh in 2015-16 under Regulation 14 (3) (ii) of the 2014 Tariff Regulations.

Regulation 14(3)(iii)- Expenditure towards safety and security

16. The petitioner has claimed projected capital expenditure of ₹100.00 lakh in 2015-16, ₹200.00 lakh in 2016-17, ₹200.00 lakh in 2017-18 for CCTV Surveillance System for Stage-III and ₹100.00 lakh in 2016-17 and ₹100.00 lakh in 2017-18 for installation of CCTV in Stage-III cable gallery under Regulation 14(3)(iii) of 2014 Tariff Regulations on account of higher security of plant. In justification, the petitioner has submitted that the expenditure towards CCTV Surveillance System has been proposed to be incurred for improving the safety & security of the plant equipments as per the advice of National Security Agencies. The petitioner has further submitted that the installation of



CCTV in cable gallery was advised by CISF during the technical audit for keeping a watch, detection of fire at an initial stage and for monitoring any movement inside the cable gallery.

17. The respondent, MPPMCL has submitted that vigilance and security is a operational and maintenance activity and hence the expenditure on CCTV surveillance system may be covered under the O&M expenses being allowed to the generating station of the petitioner. It has further prayed that the additional capitalization of CCTV Surveillance System may be disallowed and the petitioner may be directed to meet such expenses through regular O&M expenses.

18. We have considered the matter. It is noticed from the submissions of the petitioner that it is not clear as to the nature of directions given by the agencies for requirement of this asset. The petitioner has not, in our view demonstrated the requirement of this expenditure in proper documentary evidence. In the absence of these, we are not inclined to allow to expenditure under this head. It is notice that the petitioner is granted Compensation allowance and the expenses can be met from the Compensation Allowance allowed to the generating station. Accordingly, the prayer of the petitioner is not allowed.

Online DG Analyzer

19. The petitioner has claimed projected additional capital expenditure of `50.00 lakh in 2015-16 and `50.00 lakh in 2016-17 towards online DG Analyzer Stage-II. In justification, the petitioner has submitted that on line DGA monitoring system is effective and useful system for transformer diagnostic and continuous DGA will help in deciding the best/ safe operating regime of generator transformer. It has further submitted that the said asset would help in early diagnosis of the fault and its dependence on load, voltage and frequency and corrective actions can be planned and downtime of Generator transformer will reduce. Hence, the petitioner has submitted that installation of online DGA system will contribute to sustained operation of the generating station thereby helping in reliable grid operation. Accordingly, the petitioner has prayed that the expenditure may be allowed under Regulation 14(3) read with Regulation 54 of the 2014 Tariff Regulations.



20. The respondent, MPPMCL has submitted that the claim of the petitioner for the said asset after the cut-off date and under Power to relax is not admissible since the benefit of the said asset is not transferred to beneficiaries. It has further submitted that tariff shall be levied on those assets which are relatable to generation of electricity as having some tangible benefit of being put in use, which is not applicable in this case. The respondent has accordingly prayed the Commission to disallow the plea of the petitioner. In response, the petitioner has submitted that for uninterrupted and quality power, the components of power generation process need to be made more effective and the downtime of the system is to be reduced. Hence it has prayed that the asset may be allowed to be capitalised by relaxation of Regulation 14(3)(ii) read with Regulation 54 of the 2014 Tariff Regulations.

21. We have considered the matter. It is observed that the petitioner is entitled for the compensation allowance and accordingly the claim of ₹100.00 lakh towards online DGA analyser stage-II is not permissible. The petitioner shall meet the expenditure from the Compensation Allowance granted to the generating station.

Wagons Tippler- Regulation (14)(3)(X)

22. The petitioner has claimed projected additional capital expenditure of ₹10000.00 lakh in 2014-15 towards Replacement of Wagon Tippler under Regulation 14(3)(x) of the 2014 Tariff Regulations. In justification of the said claim, the petitioner has submitted that the Commission in order dated 15.5.2014 in Petition No. 148/GT/2013 had allowed the expenditure towards Wagon Tippler for ₹10000.00 lakh in 2013-14 and the said work was awarded to M/S Indure on 16.6.2010 which was scheduled to be completed during the period 2009-14 tariff period. However, the petitioner has submitted that the delay in supply of material and poor mobilization of resources led to delay in completion of construction activities. The petitioner has further submitted that an



expenditure of ₹9639.00 lakh had already been incurred on this work up to 31.03.2014 and the work is expected to be completed and capitalized during the year 2014-15.

23. The respondent, MPPMCL has submitted that the generating station has been achieving the normative plant availability factor in terms of 2014 Tariff Regulations and hence imposing the burden of the expenditure on the beneficiaries based the apprehension of non-availability of coal is without any basis. It has submitted that in the absence of proper justification for considering the capitalization towards modification in fuel receiving system, the claim of the petitioner may be rejected. In response, the petitioner has submitted that the additional capital expenditure for the installation of wagon tippler has already been allowed in Commission's order dated 28.5.2012 in Petition No. 260/2009.

24. We have examined the matter. It is observed that the projected expenditure of ₹10000.00 lakh towards Wagon tippler has been allowed vide order dated 15.5.2014 in Petition No. 148/GT/2013. It is further observed that the petitioner had not claimed the same in Petition No. 343/GT/2014 during truing up of 2009-14 on the grounds that the work would be completed only during 2014-19. Considering the fact that the asset is necessary for coal unloading received through Railways from the non-linked mines. The installation of Wagon tippler in the generating station is allowed under Regulation 14(3)(X) of 2014 Tariff Regulations.

25. Based on the above discussions, following projected additional capital expenditure has been allowed for the period 2014-19 in respect of the claim made in the table under para 9 above:-

<i>(₹ in lakh)</i>							
Sl. No.	Head of Work /Equipment	2014-15	2015-16	2016-17	2017-18	2018-19	Total
1	V-3B Dyke 1st raising	300.00	0.00	0.00	0.00	0.00	300.00
2	V-3A Ash Dyke 2nd raising	0.00	550.00	197.00	0.00	0.00	747.00
3	V-3B Dyke 2nd raising	0.00	0.00	400.00	277.00	0.00	677.00
4	V-3ADyke 3rd raising	0.00	0.00	0.00	700.00	251.00	951.00



Sl. No.	Head of Work /Equipment	2014-15	2015-16	2016-17	2017-18	2018-19	Total
5	V-3B Dyke 3rd raising	0.00	0.00	0.00	0.00	852.00	852.00
6	Continuous Emission Monitoring system	34.37	2.38	0.00	0.00	0.00	36.75
7	Wagon Tippler	10000.00	0.00	0.00	0.00	0.00	10000.00
8	On Line DGA Analyser Stage-II	0.00	0.00	0.00	0.00	0.00	0.00
9	CCTV Surveillance System for ST-III	0.00	0.00	0.00	0.00	0.00	0.00
10	Installation of CCTV in St-III Cable Gallery	0.00	0.00	0.00	0.00	0.00	0.00
13	Total Additional Capitalisation Claimed	10300.00	550.00	597.00	977.00	1103.00	13563.75

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

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	355879.73	366214.10	366766.48	367363.48	368340.48
Add: Additional capital expenditure	10334.37	552.38	597.00	977.00	1103.00
Closing Capital Cost	366214.10	366766.48	367363.48	368340.48	369443.48

Debt-Equity Ratio

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

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

Provided that:

(i) where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:

(ii) the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:

(iii) any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt-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.

28. Accordingly, the gross normative loan and equity amounting to ₹249115.81 lakh and ₹106763.92 lakh, respectively as on 31.3.2014 as considered in order dated 6.2.2017 in Petition No. 343/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 the 2014 Tariff Regulations.

Return on Equity

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

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

(2) Return on equity shall be computed at the base rate of 15.50% for thermal generating stations, transmission system including communication system and run of the river hydro



generating station, and at the base rate of 16.50% for the storage type hydro generating stations including pumped storage hydro generating stations and run of river generating station with pondage:

Provided that:

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

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

iii). 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.

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

“Tax on Return on Equity

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

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

Rate of pre-tax return on equity = Base rate / (1-t)



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

31. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate of 23.939%. However this rate shall be revised as per Regulation 25(3) for the billing of the relevant financial year.

32. We have considered the matter. It is observed that the above regulation specify the computation of effective tax rate on the basis of tax paid. However, we deem it proper to allow grossing up on MAT rate considering the fact that the matter is disposed of 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 truing-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	106763.92	109864.23	110029.94	110209.04	110502.14
Addition of Equity due to additional capital expenditure	3100.31	165.71	179.10	293.10	330.90
Normative Equity-Closing	109864.23	110029.94	110209.04	110502.14	110833.04
Average Normative Equity	108314.07	109947.09	110119.49	110355.59	110667.59
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) annualised	21240.39	21665.07	21699.05	21745.57	21807.05



Interest on Loan

33. 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.”



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

- a. The gross normative loan of ₹249115.81 lakh as on 1.4.2014 has been considered.
- b. Cumulative repayment of loan of ₹118055.86 lakh as on 31.3.2014 as considered in order dated 6.2.2017 in Petition No. 343/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 for the period has been considered as repayment of normative loan during the respective year for the period 2009-14.
- e. 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 necessary calculation for interest on loan is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross opening loan	249115.81	256349.87	256736.54	257154.44	257838.34
Cumulative repayment of loan upto previous year	118055.86	136663.60	155551.87	174469.76	193428.21
Net Loan Opening	131059.95	119686.27	101184.67	82684.68	64410.12
Addition due to additional capital expenditure	7234.06	386.67	417.90	683.90	772.10
Repayment of loan during the year	18607.73	18888.27	18917.89	18958.45	19012.05
Less: Repayment adjustment on account of de-capitalization	0.00	0.00	0.00	0.00	0.00
Net Repayment	18607.73	18888.27	18917.89	18958.45	19012.05
Net Loan Closing	119686.27	101184.67	82684.68	64410.12	46170.17
Average Loan	125373.11	110435.47	91934.67	73547.40	55290.15
Weighted Average Rate of Interest of loan(%)	8.108	8.156	8.317	8.387	8.414
Interest on Loan	10164.75	9006.56	7645.93	6168.49	4652.06



Depreciation

35. 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.”

36. The cumulative depreciation amounting to ₹118358.93 lakh as on 31.3.2014 as considered in order dated 6.2.2017 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 ₹206583.29 lakh. Depreciation has been calculated by applying the weighted average rate of depreciation for the period 2014-19 in line with 2014 Tariff Regulations. However, considering the rates of depreciation as specified in Appendix-II to 2014 Tariff Regulation, the weighted average rate of depreciation works out to 5.1538% as against the petitioner's claim of 5.1679%. Accordingly, weighted average rate of depreciation is considered as 5.1538%. This is subject to truing-up. Accordingly, depreciation has been computed as follows:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	355879.73	366214.10	366766.48	367363.48	368340.48
Add: Additional Capital Expenditure	10334.37	552.38	597.00	977.00	1103.00
Closing Capital Cost	366214.10	366766.48	367363.48	368340.48	369443.48
Average Capital Cost	361046.92	366490.29	367064.98	367851.98	368891.98
Balance useful life at the beginning of the period	17.98	16.98	15.98	14.98	13.98
Depreciable value (excluding land) @ 90%	324942.22	329841.26	330358.48	331066.78	332002.78
Balance depreciable Value	206583.29	192874.60	174503.55	156293.95	138271.50
Depreciation (annualized)	18607.73	18888.27	18917.89	18958.45	19012.05
Cumulative depreciation at the end	118358.93	136966.66	155854.94	174772.83	193731.28
Less: Cumulative Depreciation adjustment on account of un-discharged liabilities	0.00	0.00	0.00	0.00	0.00
Less: Cumulative Depreciation reduction due	0.00	0.00	0.00	0.00	0.00



	2014-15	2015-16	2016-17	2017-18	2018-19
to de-capitalization					
Cumulative depreciation (at the end of the period)	136966.66	155854.94	174772.83	193731.28	212743.33

Compensation Allowance

37. 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

38. 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
0.00	0.00	0.00	100.00	200.00

39. Units I and II are completing 10 years in 2015-16 and 2016-17 respectively. Accordingly the compensation allowance claimed by the petitioner is allowed as under:

Description	Unit I	Unit II
Capacity in MW	500	500
Compensation Allowance		
2014-15	0.00	0.00
2015-16	0.00	0.00
2016-17	0.00	0.00
2017-18	100.00	0.00



2018-19	100.00	100.00
Total	200.00	100.00

O&M Expenses

40. 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:

Unit Size (MW)	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
500	16.00	17.01	18.08	19.22	20.43

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

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

Water Charges

42. 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”

43. 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.

44. The petitioner vide affidavit dated 23.6.2016 has claimed water charges paid for year 2009-10 to 2015-16 and escalated the same at 6.35% annually. The water charges claimed by the petitioner are as follows:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
2116.36	2250.75	2393.67	2545.67	2707.32

45. The Commission vide ROP dated 19.4.2016 had directed the petitioner to furnish the details in respect of water charges such as contracted quantum of water and allocated quantity, actual annual water consumption for the last 5 years (2009-14) along with the copy of the notification(s) of water charges. In response to the Commission's directions the petitioner has submitted the details of the water consumption and total water charges for 2009-10 to 2015-16 vide affidavit dated 23.6.2016.

46. The respondent, MPPMCL has submitted that O&M expenses claimed by the petitioner are inclusive of water charges which are grossly against the provision of Regulation 29(2) of Tariff Regulations, 2014. In response the petitioner has submitted that the O&M expenditure recoverable from the beneficiaries consists of Normative O&M expenses under Regulation 29(1) and the water charges as paid for the instant station for the corresponding year under Regulation 29(2).

47. We have considered the submissions of the parties in respect of water charges. It is observed that the petitioner has claimed water charges for the year 2014-15 considering the actual water charges for the year 2014-15 and escalating the same @ 6.35% on year to year basis for the period 2014-19. However, the petitioner has not furnished the basis of calculation of quantity of consumptive water during 2014-19 tariff period. In this backdrop, we have considered the water charge claimed by the petitioner in 2014-15 and allowed the same for 2014-19 without escalation. As per provisions of Regulation 29(2) of the 2014 Tariff Regulations, Water charges are to be allowed separately. Based on this, water charges allowed for the period 2014-19 are as under:



(₹ in lakh)

Year	Water charges allowed
2014-15	2116.36
2015-16	2116.36
2016-17	2116.36
2017-18	2116.36
2018-19	2116.36

48. The petitioner is directed to furnish the details such as the contracted quantity, allocation of water, the actual water consumed during 2014-19, the basis of calculation of quantity of consumptive water and computation of water charges at the time of truing-up of tariff in terms of the 2014 Tariff Regulations. In addition, the petitioner shall also confirm / clarify as to whether the water charges have been paid on the basis of contracted quantity or on the basis of allocation. 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
O&M Expenses as claimed	16000.00	17010.00	18080.00	19220.00	20430.00
O&M Expenses as allowed	16000.00	17010.00	18080.00	19220.00	20430.00
Water charges as claimed	2116.36	2250.75	2393.67	2545.67	2707.32
Water charges as allowed	2116.36	2116.36	2116.36	2116.36	2116.36
Total O&M Expenses as claimed (including Water charges)	18116.36	19260.75	20473.67	21765.67	23137.32
Total O&M Expenses as allowed(including Water charges)	18116.36	19126.36	20196.36	21336.36	22546.36

Capital spares

49. 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

50. 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

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

Normative Annual Plant Availability Factor (NAPAF)

52. 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.”

53. The petitioner has considered the target availability norm of 83% during 2014-19. The petitioner has submitted that the average PLF at NTPC Stations during the period 2009-10, 2010-11 was 90.81% and 88.29% respectively and during 2011-12, 2012-13 was lower at 85% and 83% respectively due to various factors. The petitioner has further submitted that Commission has prescribed lower/tighter operational norms based on the premise that Indian economy would recover and at Para 37.45 of the "Statement of Reasons" to the Tariff Regulations, 2014 has further stated that there will be improvement in the industrial growth in the country which will induce Discoms to give more schedules thereby enabling generating stations to achieve improved loading and PLF during the tariff period 2014-19 compared to the period 2011-13. The petitioner has further submitted that in the event power demand continues to remain low and the PLF remains at the lower levels, and accordingly has prayed to grant liberty to approach the Commission for seeking relaxation of Operating Norms as per the actual scenario and PLF during the period 1.4.2014 onwards.



54. The respondent, MPPMCL has submitted that the petitioner has claimed target availability of 83% which is gross violation of 2014 Tariff Regulations. In response, the petitioner has submitted that to mitigate the risk 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.

55. We have considered the submission of the parties. 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, 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)

56. The petitioner has claimed the Gross Station Heat Rate of 2375.00 kCal/kWh after considering heat rate for 500 MW units in the generating station.

57. The Gross Station Heat Rate considered by the petitioner for the generating station has been considered for computation of the energy charges for the 2014-19 tariff period.

Auxiliary Energy Consumption

58. The petitioner has claimed Auxiliary Energy Consumption at 5.75% during 2014-19 period as defined by Regulation 36(E)(a) of the 2014 Tariff Regulations and the same is allowed.

Specific Oil Consumption

59. 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

60. 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

61. The petitioner has claimed cost for fuel components in working capital based on “as fired” GCV of coal procured and secondary fuel oil burnt for the preceding three months i.e. January 2014 to March 2014 as mentioned below:

	<i>(₹ in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Coal for Stock for 15 days	4145.42	4156.78	4145.42	4145.42	4145.42
Cost of Coal for Generation for 30 days	8290.84	8313.55	8290.84	8290.84	8290.84
Cost of Main Secondary Fuel Oil for 2 months	318.39	319.26	318.39	318.39	318.39

62. 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 IS 436(Part1/Section1)-1964 which has been elaborated in the CPRI Report to PSERC.”

64. Further, the petitioner has claimed energy charge rate (ECR) of 147.971 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 required to furnish such information with effect from 1.4.2014 in terms of the regulation. 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 have been computed by provisionally considering the GCV of coal on as “billed basis” and allowing an adjustment for total moisture as per the formula given as under:



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

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 83% NAPAF for 2014-15, 2015-16 and 2016-17 and 85% NAPAF for 2017-18 and 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– 15 days	2883.36	2883.36	2883.36	2952.83	2952.83
Cost of Coal for generation– 30 days	5766.71	5766.71	5766.71	5905.67	5905.67
Cost of secondary fuel oil – two months	318.39	319.26	318.39	326.06	326.06

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

	Unit	2014-19
Capacity	MW	1000
Gross Station Heat Rate	kCal/kWh	2375.00
Aux. Energy Consumption	%	5.75%
Weighted average GCV of oil	kCal/Lt.	9617.33
Weighted average GCV of Coal (As Billed)	kCal/kg	4726.71
Adjustment on account of coal received at the generating station for equilibrated basis (Air dried) in the billed GCV Of Coal India		*
Weighted average price of oil	₹/KL	52548.03
Weighted average price of Coal	₹/MT	1924.39
Rate of energy charge ex-bus	₹/kWh	1.052

* 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.

68. 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
12015.12	12048.04	12015.12	12304.64	12304.64

Maintenance spares

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

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
3623.27	3852.15	4094.73	4353.13	4627.46

70. Regulation 28(1)(a)(iv) of the 2014 Tariff Regulations provides 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 6.2.2017 in Petition No. 343/GT/2014, 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
3623.27	3825.27	4039.27	4267.27	4509.27

Receivables

71. 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)	12015.12	12048.04	12015.12	12304.64	12304.64
Fixed Charges (two months)	12217.39	12319.73	12287.22	12263.60	12238.87
Total	24232.50	24367.76	24302.33	24568.24	24543.51

O&M Expenses

72. 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
1509.70	1605.06	1706.14	1813.81	1928.11

73. Based on the O&M expense norms specified by the Commission and in terms of the Commission's order dated 6.2.2017 in Petition No. 343/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
1509.70	1593.86	1683.03	1778.03	1878.86

Rate of interest on working capital

74. 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.”

75. 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 towards stock- 15 days	2883.36	2883.36	2883.36	2952.83	2952.83
Cost of coal towards generation- 30 days	5766.71	5766.71	5766.71	5905.67	5905.67
Cost of secondary fuel oil- 2 months	318.39	319.26	318.39	326.06	326.06
Maintenance Spares	3623.27	3825.27	4039.27	4267.27	4509.27
Receivables- 2 months	24232.50	24367.76	24302.33	24568.24	24543.51
O & M expenses- 1 Month	1509.70	1593.86	1683.03	1778.03	1878.86
Total Working Capital	38333.93	38756.22	38993.09	39798.11	40116.20
Rate of Interest	13.50	13.50	13.50	13.50	13.50
Interest on Working Capital	5175.08	5232.09	5264.07	5372.74	5415.69

76. 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	18607.73	18888.27	18917.89	18958.45	19012.05
Interest on Loan	10164.75	9006.56	7645.93	6168.49	4652.06
Return on Equity	21240.39	21665.07	21699.05	21745.57	21807.05
Interest on Working Capital	5175.08	5232.09	5264.07	5372.74	5415.69
O&M Expenses	18116.36	19126.36	20196.36	21336.36	22546.36
Compensation Allowance	0.00	0.00	0.00	100.00	200.00
Special allowance	0.00	0.00	0.00	0.00	0.00
Total	73304.31	73918.36	73723.30	73681.62	73633.21

Month to Month Energy Charges

77. 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

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

79. 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

80. 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 ₹44.00 lakh 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.

81. 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.

82. Petition No. 342/GT/2014 is disposed of in terms of the above.

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

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

Sd/-
(Shri Gireesh. B. Pradhan)
Chairperson

