

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 291/GT/2014

Coram:

**Shri A.S. Bakshi, Member
Dr. M. K. Iyer, Member**

Date of Hearing: 11.7.2016

Date of Order : 23.8.2016

In the matter of

Approval of tariff of Rihand Super Thermal Power Station Stage-I (2x500 MW) for the period from 1.4.2014 to 31.3.2019

And in the matter of

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

.....Petitioner

Vs

1. Uttar Pradesh Power Corp. Ltd. (UPPCL)
Shakti Bhawan
14, Ashok Marg
Lucknow – 226 001.

2. Jaipur Vidyut Vitran Nigam Ltd. (JVVN)
Vidyut Bhawan, Janpath,
Jaipur 302 005
Rajasthan

3. Ajmer Vidyut Vitran Nigam Ltd. (AVVN)
Old Power House, Hathi Bhata,
Jaipur Road, Ajmer-305001
Rajasthan

4. Jodhpur Vidyut Vitran Nigam Ltd. (JdVVN)
New Power House, Industrial Area,
Jodhpur, Rajasthan

5. Tata Power Delhi Distribution Ltd.
Grid Substation, Hudson Road
Kingsway Camp



Delhi-110009.

6. BSES Rajdhani Power Ltd.,
2nd floor, B-Block
BSES Bhawan, Nehru Place
New Delhi-110019.

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

8. Haryana Power Purchase Centre (HPPC)
Shakti Bhawan, Sector – VI,
Panchkula
Haryana – 134 109

9. Punjab State Power Corporation Ltd. (PSPCL)
The Mall
Patiala – 147 001

10. Himachal Pradesh State Electricity Board Ltd. (HPSEB)
Kumar Housing Complex Building-II
Vidyut Bhawan
Shimla – 171 004

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

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

13. Uttarakhand Power Corporation Ltd. (UPCL)
Urja Bhawan, Kanwali Road
Dehradun – 248 001
Uttarakhand

...Respondents

Parties present:

For Petitioner: Shri Vivek Kumar, NTPC
Shri Nishant Gupta, NTPC
Shri E.P. Rao, NTPC
Shri Ajay Dua, NTPC
Shri Rajeev Chaudhary, NTPC

For Respondents: Smt. Smriti Mishra, TPDDL
Shri Manoj Kumar Sharma, Advocate, Rajasthan Discoms
Shri Manish Garg, BYPL, UPPCL
Shri Sameer Singh, Advocate, BYPL



ORDER

This petition has been filed by the petitioner, NTPC for approval of tariff of Rihand Super Thermal Power Station, Stage-I (2 x 500 MW) (hereinafter referred to as “the generating station”) for the period 20014-19 in accordance with the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as “the 2014 Tariff Regulations”).

2. The generating station with a capacity of 1000 MW comprises of two units of 500 MW each and the said units were declared under commercial operation on 1.1.1990 and 1.1.1991 respectively.

3. The Commission vide order dated 29.7.2016 in Petition No. 317/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 2009Tariff Regulations, considering the capital cost of ₹242348.24 lakh as on 31.3.2014 on cash basis and after deduction of un-discharged liabilities of ₹611.48 lakh as on 31.3.2014. The annual fixed charges approved by the said order dated 29.7.2016 is as under:

(₹ in lakh)

| | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 |
|-----------------------------|------------------|------------------|------------------|-----------------|-----------------|
| Depreciation | 4652.73 | 4631.46 | 4626.80 | 4704.63 | 4737.52 |
| Interest on Loan | 28.56 | 0.00 | 0.00 | 0.00 | 0.00 |
| Return on Equity | 28077.74 | 27825.11 | 27577.19 | 27569.83 | 28211.87 |
| Interest on Working Capital | 4618.73 | 4657.20 | 4708.27 | 4747.69 | 4811.28 |
| O&M Expenses | 13000.00 | 13740.00 | 14530.00 | 15360.00 | 16240.00 |
| Secondary fuel oil cost | 1603.37 | 1603.37 | 1607.76 | 1603.37 | 1603.37 |
| Compensation Allowance | 350.00 | 500.00 | 650.00 | 650.00 | 650.00 |
| Total | 52,331.13 | 52,957.12 | 53,700.02 | 54635.51 | 56254.03 |

4. The petitioner vide affidavit dated on 20.4.2015 has filed this petition for 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 in this petition are as under:

Capital Cost

| | (₹ in lakh) | | | | |
|-------------------------------------|------------------|------------------|------------------|------------------|------------------|
| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| Opening Capital Cost | 243245.91 | 243317.91 | 251097.91 | 256937.91 | 258497.91 |
| Add: Additional capital expenditure | 72.00 | 7780.00 | 5840.00 | 1560.00 | 600.00 |
| Closing Capital Cost | 243317.91 | 251097.91 | 256937.91 | 258497.91 | 259097.91 |
| Average Capital Cost | 243281.91 | 247207.91 | 254017.91 | 257717.91 | 258797.91 |

Annual Fixed Charges

| | (₹ in lakh) | | | | |
|-----------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| Depreciation | 5338.95 | 8165.67 | 8170.42 | 2669.18 | 98.21 |
| Interest on Loan | 0.00 | 0.00 | 0.00 | 0.00 | 16.14 |
| Return on Equity | 24543.01 | 24783.03 | 25199.38 | 25425.56 | 25491.59 |
| Interest on Working Capital | 5514.34 | 5659.69 | 5727.10 | 5678.28 | 5698.08 |
| O&M Expenses | 16394.82 | 17429.89 | 18526.56 | 19694.91 | 20935.07 |
| Compensation Allowance | 1000.00 | 500.00 | 0.00 | 0.00 | 0.00 |
| Special Allowance | 0.00 | 3988.13 | 8482.74 | 9021.40 | 9594.25 |
| Total | 52791.12 | 60526.40 | 66106.18 | 62489.35 | 61833.34 |

5. In compliance with the directions of the Commission, the petitioner has filed additional information and has served copies on the respondents. The respondents UPPCL, JVVNL, BRPL and BYPL has filed their replies in capital expenditure and the petitioner has filed its rejoinder to the said replies. 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 are based on opening capital cost of ₹243245.91 lakh as on 1.4.2014 as against ₹242348.24 lakh as on 31.3.2014 as admitted by the Commission vide order dated 29.7.2016 in Petition No. 317/GT/2014. Further, out of the total liabilities amounting to ₹611.48 lakh, the liabilities for ₹377.62 lakh, corresponds to the approved capital cost of ₹242348.24 lakh (on cash basis) as on 31.3.2014. Accordingly, the opening capital cost to be considered as on 1.4.2014, after removal of un-discharged liabilities works out to ₹242348.24 lakh (on cash basis).

Actual/ Projected Additional Capital Expenditure during 2014-19

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 during 2014-19 is detailed as under:-

| (₹ in lakh) | | | | | | | | |
|-------------|--|-------------|---------|---------|---------|---------|---------|--------|
| Sl. No. | Head of Work /Equipment | Regulations | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | Total |
| I | Ash dyke raising & Strengthening works. | | | | | | | |
| (i) | 1st raising of Mathini Ash Dyke Lagoon-1 | 14(3)(iv) | 0.00 | 980.00 | 0.00 | 0.00 | 0.00 | 980.00 |
| (ii) | 2nd raising of Central Ash Dyke | 14(3)(iv) | 0.00 | 560.00 | 0.00 | 0.00 | 0.00 | 560.00 |



| Sl. No. | Head of Work /Equipment | Regulations | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | Total |
|-----------|--|-------------------|--------------|----------------|----------------|----------------|---------------|-----------------|
| | Lagoon-1 | | | | | | | |
| (iii) | 2nd raising of Central Ash Dyke Lagoon-2 | 14(3)(iv) | 0.00 | 0.00 | 0.00 | 560.00 | 0.00 | 560.00 |
| (iv) | 1st raising of Mathini Ash Dyke Lagoon-2 | 14(3)(iv) | 0.00 | 0.00 | 0.00 | 1000.00 | 0.00 | 1000.00 |
| (v) | 3rd raising of Mathini Ash Dyke Lagoon-2 | 14(3)(iv) | 0.00 | 0.00 | 0.00 | 0.00 | 600.00 | 600.00 |
| (vi) | Work related to Ash slurry pump House | 14(3)(iv) | 72.00 | 0.00 | 0.00 | 0.00 | 0.00 | 72.00 |
| | Sub Total | | 72.00 | 1540.00 | 0.00 | 1560.00 | 600.00 | 3772.00 |
| II | Works under Change of Law. | | | | | | | |
| (i) | Modification of ESP of Stage-I | 14 (3)(ii) | 0.00 | 5840.00 | 5840.00 | 0.00 | 0.00 | 11680.00 |
| (ii) | Fire detection & protection system in Stage- I (in CHP Area) | 14 (3) (ii)&(iii) | 0.00 | 400.00 | 0.00 | 0.00 | 0.00 | 400.00 |
| | Sub Total | | 0.00 | 6240.00 | 5840.00 | 0.00 | 0.00 | 12080.00 |
| | Total Asset capitalization | | 72.00 | 7780.00 | 5840.00 | 1560.00 | 600.00 | 15852.00 |
| 2 | De-capitalisation | | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | Total Additional Capitalisation Allowed | | 72.00 | 7780.00 | 5840.00 | 1560.00 | 600.00 | 15852.00 |

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

Ash Slurry Pump house

11. The petitioner has claimed projected additional capital expenditure of ₹72.00 lakh in 2014-15 towards installation of Ash slurry pump. The petitioner has submitted that the work is related to augmentation of Ash slurry pump house in order to pump Bottom ash slurry and fly ash slurry from common ash slurry sump to Central and Mathini Ash Dyke area for continuous disposal of ash slurry in order to ensure no overflow of Ash slurry from sump.



12. The respondents, UPPCL, BYPL and BRPL have submitted that the petitioner has not submitted the details of proposed life extension for the projected additional capital expenditure at the end/after of the useful life of the plant. The respondent, BRPL has also pointed out that the work related to augmentation of Ash slurry Pump House is not a deferred work related to ash or ash handling system and may be disallowed.

13. We have considered the submissions of the parties. In Regulation 27(7) of 2014 Tariff Regulations as under:

“27(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.”

14. The petitioner has claimed projected additional capital expenditure during the fag end of the completion of useful life of 25 years and has not provided any justification or proposal for life extension of the project. In terms of Regulation 16 of the 2014 Tariff Regulations, the petitioner has the liberty to approach the Commission with a comprehensive scheme of R&M for extension of life of the generating station. However, it is observed that the petitioner has opted for “Special Allowance” from the year 2015-16 in order to meet the requirement of expenses including R&M beyond the useful life of the generating station. In this background, we are not inclined to allow the projected additional capital expenditure of ₹72.00 lakh claimed in 2014-15. The petitioner shall meet the expenses from the “Special Allowance” permitted to the generating station for 2014-2015.

Ash dyke raising

15. The petitioner has claimed a projected capital expenditure of ₹980.00 lakh for 1st raising of Mathini Ash Dyke Lagoon-I and ₹560.00 lakh for 2nd raising of Central Ash Dyke Lagoon-I in 2015-16, ₹560.00 lakh for 2nd raising of Central Ash Dyke Lagoon-2 and 1000.00 lakh for 1st raising of Mathini Ash Dyke Lagoon-2 in 2017-18 and ₹600.00 lakh for 3rd raising of Central Ash Dyke Lagoon-



2 in 2018-19. In justification, the petitioner has submitted that these works have already been approved by the Commission vide order dated 15.5.2014 in Petition No. 176/GT/2013. It has also submitted that the work is required to be executed in order to have optimum utilization of land for land disposal, conservation of forest/cultivating land and compliance with the directions of Statutory bodies. It has further submitted that order dated 15.5.2014 in Petition No. 176/GT/2013, the Commission had approved the projected additional capital expenditure of ₹789.91 lakh, in 2012-13 for 1st raising of Mathini Ash Dyke Lagoon-land the Petition no. 317/GT/2014 no additional capital expenditure was incurred/claimed by the petitioner for the same. The petitioner has accordingly requested that the Commission may approve the expenditure claimed.

16. The respondents, UPPCL, BYPL and BRPL have submitted that since the plant is completing its useful life in 2015-16, the details of the proposed life extension of the generating station for the capital expenditure at the end/after of the useful life has not been submitted. The respondents have also pointed out that the petitioner has claimed "Special Allowance" from 2014-15 onwards in terms of the 2014 Tariff Regulations and hence the petitioner is not entitled for the projected additional capital expenditure.

17. We have examined the matter. As stated the generating station will be completing its useful life of 25 years during the year 2015-16. It is observed that the expenditure for Ash Dyke works are for facilitating the operation of plant after the useful life of 25 years and for extended period of operation. The petitioner is at liberty to approach the Commission with a comprehensive scheme of R&M for extension of life of the generating station. However, it is observed that the petitioner has opted for "Special Allowance" in order to meet the requirement of expenses including R&M beyond the useful life of the generating station. In this background, we are not inclined to allow the projected additional capital expenditure against the Ash Dyke work.



Change in law

Modification of ESP of Stage-I

18. The petitioner has claimed total projected additional capital expenditure of ₹5840.00 lakh in 2015-16 and ₹5840.00 lakh in 2016-17 towards modification of ESP of Stage-I in order to achieve the emission level of 100 mg/Nm³, specified by the Uttar Pradesh Pollution Control Board vide letter dated 17.2.2011. under Regulation 14 (3)(ii) of the 2014 Tariff Regulations. In previous order dated 7.6.2012 in Petition No. 261/2009 the amount of ₹13000 lakh for the was approved for the same. It has further submitted that it has not claimed any expenditure towards the ESP in Petition 176/GT/2013 and considering the timelines in the contract and the requirement of shutdowns, the capitalization of the expenditure would stretch beyond 2013-14 and would continue till the year 2015-16.

19. The respondent UPPCL, BYPL and BRPL have submitted that the petitioner has not submitted the details of the proposed life extension for the expenditure at the end/after of the useful life of the plant, and no documentary evidence related to “change in law” has been submitted by the petitioner in support of the claim. The respondents have also pointed out that the petitioner has claimed Special allowance from 2015-16 onwards in term of the 2014 Tariff Regulations and hence the petitioner is not entitled for the projected additional capital expenditure. In response, the petitioner has submitted that the modification ESP of Stage-1 is not in the nature of R&M as provided as per 2014 Tariff Regulation and the work is event based and is required to fulfil the statutory requirements..

20. We have considered the matter. In our considered view, the projected additional capital expenditure claimed for modification of ESP, after expiry of useful life of 25 years of the generating station, is in the nature of R&M. As stated, the petitioner has opted for Special Allowance for meeting the requirement of expenses including R&M beyond the useful life of the generating station during the period 2014-19. Since the petitioner is allowed Special Allowance in terms of



Regulation 16 of the 2014 Tariff Regulations for the period 2014-19 for meeting the requirement of expenses including R&M beyond the useful life of the generating station,,the projected additional capital expenditure of ₹11680.00 lakh (₹5840.00 lakh in 2015-16 and ₹5840.00 lakh in 2016-17) is disallowed. The petitioner may meet the expenses from the Special Allowance allowed to the generating station.

Fire detection & protection system in Stage- I

21. The petitioner has claimed projected additional capital expenditure of ₹400.00 lakh in 2014-15 towards the modification of Fire detection & Protection system in Stage- I, under Regulation 14(3)(ii) & 14(3)(iii) of the 2014 Tariff Regulations. The petitioner has submitted that as per the guidelines of Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electric Lines) Regulation, 2010 the major works such as (i) Installation of Medium Velocity Water Spray system for coal conveyers, crusher house, cable galleries ,stacker reclaimer of CHP;(ii)Installation of analogue addressable type fire detection and alarm system (iii) Installation of fire hydrants were identified and are essentially required to prevent fire break out. It has submitted that the augmentation of fire protection system of Stacker Reclaimer area and conveyers is essentially required to prevent any catastrophic damage in case fire breaks out in CHP as existence of coal in CHP area makes it vulnerable to fire hazard and mobile fire protection equipments may not be able to control the spread of fire. The petitioner has therefore prayed that the Commission may allow the capitalisation claim on account of augmentation of Fire protection system under Regulation 14(3)(iii) of the 2014 Tariff Regulations.

22. The respondents UPPCL, BYPL and BRPL have submitted that the petitioner has not submitted the details of proposed life extension for the expenditure at the end/after of the useful life. The respondent BRPL has stated as the Regulation12 (5) of the Central Electricity Authority Regulations, 2010 provide technical standards for construction of electrical plants.It has further



stated that as the generating station is already a constructed plant the said regulation is not applicable in this case.

23. We have examined the matter. It is noted that the projected additional capital expenditure claimed towards augmentation of Fire fighting system in CHP, Cable galleries, Conveyers etc. are based on the CEA Regulations, 2010. It is observed that the petitioner has not established that the augmentation of a fire fighting system is due to any change in law. In our view, a proper and well equipped fire fighting system was required in any thermal power generating station even prior to the notification of the CEA Regulation 2010, prescribing safety standards. Hence, it can not be contended that the change in law is on account of the CEA Regulation 2010. Even otherwise, the petitioner has not indicated as to how the safety standards under CEA Regulations is covered under the provisions of the change in law which prompted the expenditure under this head. In our concerned view the petitioner has not established the existence of any change in law justifying the expenditure towards augmentation of fire fighting system. Accordingly, we are not inclined to allow the projected additional capital expenditure of ₹400.00 lakh claimed under this head for 2015-16. In view of this, the expenditure under this head may be met from the Special Allowance granted to the generating station.

24. Based on the above discussions, no 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.

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

| | <i>(₹ in lakh)</i> | | | | |
|--|--------------------|----------------|----------------|----------------|----------------|
| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| Opening Capital Cost | 242348.24 | 242348.24 | 242348.24 | 242348.24 | 242348.24 |
| Add: Additional capital expenditure | 00.00 | 00.00 | 00.00 | 00.00 | 00.00 |
| Closing Capital Cost | 242348.24 | 242348.24 | 242348.24 | 242348.24 | 242348.24 |



Debt-Equity Ratio

26. 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.



27. Accordingly, the gross normative loan and equity amounting to ₹120155.78 lakh and ₹122192.46 lakh, respectively as on 31.3.2014 as considered in order dated 29.7.2016 in Petition No. 317/GT/2014, has been considered as gross normative loan and equity as on 1.4.2014. Hence, the normative debt equity ratio of 70:30 has been considered in the case of additional capital expenditure. This is subject to truing-up in terms of the 2014 Tariff Regulations.

Return on Equity

28. 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.

29. 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.

30. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate of 23.939%. The respondents UPPCL ,BRPL and BYPL has raised an issue on the computation of effective tax rate. This issue being not confined to a single petition and being generic in nature as the issue is applicable to all NTPC petitions uniformly need deliberation. We have examined the documents submitted and observed that the regulation prescribe computation of effective tax rate on the basis of tax paid, still we deem it proper to allow grossing up on MAT rate considering the fact that the matter is getting decided in the year 2016-17. Accordingly, the effective tax rate (MAT) of 20.961% has been considered for the year 2014-15 and 21.342% for the year 2015-16 onwards up to the year 2018-19 for the purpose of grossing up of base rate of 15.5%. Accordingly, the rate of Return on Equity works out to 19.610% for the year 2014-15 and 19.705%



for the year 2015-16 onwards. This is however, subject to true-up. Accordingly, return on equity has been worked out as under:

(₹ in lakh)

| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Notional Equity- Opening | 120155.78 | 120155.78 | 120155.78 | 120155.78 | 120155.78 |
| Addition of Equity due to additional capital expenditure | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Normative Equity-Closing | 120155.78 | 120155.78 | 120155.78 | 120155.78 | 120155.78 |
| Average Normative Equity | 120155.78 | 120155.78 | 120155.78 | 120155.78 | 120155.78 |
| 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 | 19.706 | 19.706 | 19.706 | 19.706 |
| Return on Equity(Pre Tax) annualised | 23563.03 | 23677.30 | 23677.30 | 23677.30 | 23677.30 |

Interest on Loan

31. 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.”

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

- (a) The gross normative loan of ₹122192.46 lakh as on 1.4.2014 has been considered.
- (b) Cumulative repayment of loan of ₹122192.46 lakh as on 31.3.2014 as considered in order dated 29.7.2016 in Petition No.317/GT/2014 has been considered as on 1.4.2014.
- (c) Accordingly, the net normative opening loan as on 1.4.2014 works out to “nil”.
- (d) Addition to normative loan on account of the admitted additional capital expenditure has been considered on year to year basis.
- (e) Depreciation allowed for the period has been considered as repayment of normative loan during the respective year for the period 2009-14.



(f) In line with the provisions of the regulation, the weighted average rate of interest has been calculated applying the actual loan portfolio existing as on 1.4.2014 along with subsequent additions during the period 2014-19, if any, for the generating station. In case of loans carrying floating rate of interest the rate of interest as provided by the petitioner has been considered for the purpose of tariff. The calculations for weighted average rate of interest on loan have been enclosed as Annexure-I to this order. 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 | 122192.46 | 122192.46 | 122192.46 | 122192.46 | 122192.46 |
| Cumulative repayment of loan upto previous year | 122192.46 | 122192.46 | 122192.46 | 122192.46 | 122192.46 |
| Net Loan Opening | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Addition due to additional capital expenditure | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Repayment of loan during the year | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Less: Repayment adjustment on account of de-capitalization | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Add: Repayment adjustment on account of discharges corresponding to un-discharged liabilities deducted as on 1.4.2009 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Net Repayment | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Net Loan Closing | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Average Loan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Weighted Average Rate of Interest of loan(%) | 4.3654 | 5.2726 | 7.3881 | 10.0300 | 10.0300 |
| Interest on Loan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Depreciation

33. 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.”

34. The cumulative depreciation amounting to ₹201682.07 lakh as on 31.3.2014 as considered in order dated 29.7.2016 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 ₹11358.22 lakh. Since the used life of the generating station as on 1.4.2014 exceed 12 years from the effective station COD, depreciation for the period 2014-19 has been calculated by spreading over the remaining depreciable value over the balance useful life of the generating station for respective years.

35. Accordingly, depreciation has been computed as follows:

| | (₹ in lakh) | | | | |
|--|----------------|----------------|----------------|-------------|-------------|
| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| Opening Capital Cost | 242348.24 | 242348.24 | 242348.24 | 242348.24 | 242348.24 |
| Add: Additional Capital Expenditure | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Closing Capital Cost | 242348.24 | 242348.24 | 242348.24 | 242348.24 | 242348.24 |
| Average Capital Cost | 242348.24 | 242348.24 | 242348.24 | 242348.24 | 242348.24 |
| Balance useful life at the beginning of the period | 2.25 | 1.25 | - | - | - |
| Depreciable value (excluding land)@ 90% | 213007.89 | 213007.89 | 213007.89 | 213007.89 | 213007.89 |
| Balance depreciable Value | 11325.82 | 6292.12 | 1258.42 | 0.00 | 0.00 |
| Depreciation (annualized) | 5033.70 | 5033.70 | 1258.42 | 0.00 | 0.00 |
| Cumulative depreciation at the end | 201682.07 | 206715.77 | 211749.46 | 213007.89 | 213007.89 |
| 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 to de-capitalization | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Cumulative depreciation (at the end of the period) | 206715.77 | 211749.46 | 213007.89 | 213007.89 | 213007.89 |



36. The petitioner vide affidavit dated 10.5.2016 has submitted that unrecovered depreciation of ₹179.12 lakh in 2012-13 is in line with the decisions of the Appellate Tribunal for Electricity in Appeal dated 13.6.2007. The submission of the petitioner is considered and the same is allowed and considered as part of fixed cost in 2016-17 after the completion of the useful life of the generating station.

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 |
| 1000.00 | 500.00 | 0.00 | 0.00 | 0.00 |

39. In terms of above regulations, both the units of the generating station are in commercial operation for more than 10 years from their respective date of CODs. Accordingly, compensation allowance claimed by the petitioner is allowed as under:



| Description | Unit-I | Unit-I |
|--------------------------------|--------|---------|
| Capacity in MW | 500 | 500 |
| Compensation Allowance Claimed | | |
| 2014-15 | 500.00 | 500.00 |
| 2015-16 | 0.00 | 500.00 |
| 2016-17 | 0.00 | 0.00 |
| 2017-18 | 0.00 | 0.00 |
| 2018-19 | 0.00 | 0.00 |
| Total | 500.00 | 1000.00 |

O&M Expenses

41. 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:

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

42. 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

43. 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”



44. 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.

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

| <i>(₹ in lakh)</i> | | | | |
|--------------------|----------------|----------------|----------------|----------------|
| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| 394.82 | 419.89 | 446.56 | 474.91 | 505.07 |

46. In order to examine the trend of the actual water consumption and rate of water charges, the petitioner was directed vide ROP dated 9.6.2016 to furnish the details of the actual water consumption along with the rate of water charges for the last five years (i.e. 2009-10 to 2013-14) along with relevant notification in support of the same. The details in respect of water charges such as type of cooling water system, water consumption, rate of water charges as applicable for 2013-14 have been furnished by the petitioner as under:

| Description | Remarks |
|--|----------------------|
| Type of Plant | Coal |
| Type of cooling water system | Once through cooling |
| Total water charges in 2013-14 | ₹394.82 lakh* |
| <i>*water charges paid as per allocated water quantity</i> | |

47. In compliance with the above, the petitioner vide affidavit dated 30.6.2016 has furnished the copy of agreement dated 3.4.1998 entered into between the State Govt of U.P.(UPJVNL) and the petitioner wherein the principles for calculation of water consumptive charges for this generating station and Rihand STPS required to be adopted in future are have been indicated as under:

- (i) Water level may be taken on theoretical basis i.e. minimum of 830 feet and maximum of 880 feet.



(ii) T&D losses will be taken @ 12% (twelve percent)

(iii) Aux. Power Consumption of UPSEB Hydro station viz. Rihand & Obra will be taken as 0.5%

(iv) The energy loss will be calculated taking into consideration the actual availability of Rihand hydro station of UPSEB for the year 1998.

(v) Water charges will be payable from the date of synchronization of the units.

(vi) The per kilowatt hour charges will be payable from the date of synchronization of the units.

(vii) The per Kilowatt hour charges to be applied will be the highest average annual rate during 1998 amongst Northern Region coal based stations of NTPC and will be applicable w.e.f. 1.1.1999 for next five years and this will be revised upwards by 10% every five years.

(viii) To provide for generation loss on account of spillover of water, the charges for consumptive use will be worked out on the basis of 3.0 (Three) times of the above rate in place of 2 (two) times as earlier proposed. No separate payments towards spillover water will be admissible.

(viii) Water charges will be a pass through in the tariff.

48. Accordingly, the details of water consumption and water charges for last 5 years furnished by the petitioner vide affidavit dated 30.6.2016 are as under:-

| No of days | Quantity of CW | Capacity | Final Qty CW | Annual Generation loss | PAF | Annual Generation loss | Rate | Amount |
|--|----------------|----------|--------------|------------------------|--------|------------------------|-----------|-------------------------|
| | cusec/MW | MW | cusec | kwh/cusecs | % | kwh | Paise/Kwh | Rs. Lakh |
| A | B | C | D | E | F | G | H | I |
| | | | (B*C) | | | (D*E*F) | | (G*H*3)/10 ⁷ |
| 2009-10 | 0.037188306 | 1000 | 37.188306 | 163509.544 | 86.48% | 5258540.03 | 244.2506 | 385.32 |
| 2010-11 | 0.037188306 | 1000 | 37.188306 | 163509.544 | 86.48% | 5258540.03 | 244.2506 | 385.32 |
| 2011-12 | 0.037188306 | 1000 | 37.188306 | 163509.544 | 86.48% | 5258540.03 | 244.2506 | 385.32 |
| 2012-13 | 0.037188306 | 1000 | 37.188306 | 163509.544 | 86.48% | 5258540.03 | 244.2506 | 385.32 |
| 2013-14 (April, 2013 to December '2013) | 0.037188306 | 1000 | 37.188306 | 163509.544 | 86.48% | 3961913.72 | 244.2506 | 290.31 |
| 2013-14 (January, 2014 to March '2014) | 0.037188306 | 1000 | 37.188306 | 163509.544 | 86.48% | 1296626.31 | 268.67566 | 104.51 |



49. As per provisions of Regulation 29(2) of the 2014 Tariff Regulations, Water charges are to be allowed separately. It was observed from the above table that the petitioner has claimed water charges for the year 2014-15 considering the actual water charges for the year 2013-14 and escalating the same @ of 6.35% on year to year for the period 2014-19. However, the petitioner has not furnished the basis of calculation of quantity of Consumptive Water (CW) of 0.037188 cusecs/MW during the year 2014-15 to 2018-19 and reason of calculating final water charges by multiplying by factor “3”. In this backdrop, the actual water charges paid during 2013-14 is allowed as projected water charges for the period 2014-19 without any escalation and without multiplication by factor “3”.. Based on this, water charges allowed for the period 2014-19 are as under:

| Year | Water charges allowed |
|-------------|------------------------------|
| 2014-15 | 131.61 |
| 2015-16 | 131.61 |
| 2016-17 | 131.61 |
| 2017-18 | 131.61 |
| 2018-19 | 131.61 |

50. 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 CW 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.

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

| | 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 | 394.82 | 419.89 | 446.56 | 474.91 | 505.07 |
| Water charges as allowed | 131.61 | 131.61 | 131.61 | 131.61 | 131.61 |



| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| Total O&M Expenses as claimed (including Water charges) | 16394.82 | 17429.89 | 18526.56 | 19694.91 | 20935.07 |
| Total O&M Expenses as allowed(including Water charges) | 16131.61 | 17141.61 | 18211.61 | 19351.61 | 20561.61 |

Capital spares

52. 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

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

| | |
|------------------------------------|---------|
| Target Availability (%) | 83.00 |
| Heat Rate (kcal/kWh) | 2335.00 |
| Auxiliary Energy Consumption (%) | 7.75 |
| Specific Oil Consumption (ml/ kWh) | 0.50 |

54. 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)

55. 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.

56. The petitioner has considered the target availability norm of 83% during 2014-19. The petitioner vide affidavit dated 30.6.2016 has submitted that as per Regulation 36(A)(a) of Tariff Regulation 2014, in view of shortage of coal and uncertainty of assured coal supply on sustained



basis the fixed charges are recovered at availability of 83% .The petitioner has also submitted the month wise details of coal linkage and coal availability by NCL against the linkage for 2014-16. In view of the above submissions, 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)

57. Regulation 36(C)(a) of the 2014 Tariff Regulations, provides Gross Station Heat Rate of 2335 kCal/kWh for existing coal based thermal generating stations of 500 MW sets whose CODs were before 1.4.2009. The COD of the generating station was in 1990. Hence, the heat rate considered by the petitioner is as per norms and is allowed.

Auxiliary Energy Consumption

58. The petitioner has claimed Auxiliary Energy Consumption at 7.75% during 2014-19 period as defined by Regulation 36(E)(a) of the Tariff Regulations, 2014 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 burnt for the preceding three months of January, 2014, February, 2014 and March, 2014 and secondary fuel oil for the preceding three months of January, 2014, February, 2014 and March, 2014, as under:

| (₹ in lakh) | | | | | | |
|-------------|--|---------|---------|---------|---------|---------|
| Sl. No. | | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| 1A | Cost of Coal for Stock for 15 days | 3846.30 | 3856.84 | 3846.30 | 3846.30 | 3846.30 |
| 1B | Cost of Coal for Generation for 30 days | 7692.61 | 7713.68 | 7692.61 | 7692.61 | 7692.61 |
| 2 | Cost of Main Secondary Fuel Oil for 2 months | 322.84 | 323.73 | 322.84 | 322.84 | 322.84 |

62. The Commission vide ROP of the hearing dated 9.6.2016 directed the petitioner to submit the GCV of coal on “as received” basis. In response, the petitioner vide affidavit dated 30.6.2016 has submitted that from Aug 2014, onwards sampling for measurement of 'as received' GCV is being taken from secondary crusher.

63. 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.

64. 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.”

65. Further, the petitioner has claimed energy charge rate (ECR) of 140.516 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 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 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:

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

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

66. In view of the above, the cost for fuel components in working capital have been computed at 83% NAPAF for 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 | 2639.09 | 2646.32 | 2639.09 | 2702.68 | 2702.68 |
| Cost of Coal for generation– 30 days | 5278.18 | 5292.64 | 5278.18 | 5405.37 | 5405.37 |
| Cost of secondary fuel oil – two months | 322.84 | 323.73 | 322.84 | 330.62 | 330.62 |

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

| | Unit | 2014-19 |
|---|-----------|-----------|
| Capacity | MW | 1000 |
| Gross Station Heat Rate | kCal/kWh | 2335.00 |
| Aux. Energy Consumption | % | 7.75% |
| Weighted average GCV of oil (As fired) | kCal/lit. | 10,440 |
| Weighted average GCV of Coal (As Billed) | kCal/kg | 4782.82 |
| 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 | Rs./KL | 53,283.15 |
| Weighted average price of Coal | Rs./MT | 1788.35 |
| Rate of energy charge ex-bus | Paise/kWh | 97.320 |

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

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



68. 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

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

| <i>(₹ in lakh)</i> | | | | |
|--------------------|---------|---------|---------|---------|
| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| 3278.96 | 3485.98 | 3705.31 | 3938.98 | 4187.01 |

70. Regulation 28(1)(a)(iv) of the 2014 Tariff Regulations provide for Maintenance spares @ 20% of the operation & maintenance expenses as specified in Regulation 29. As specified in Regulation 29 (2) of the 2014 Tariff Regulations and as allowed by the Commission in order dated 6.10.2015 in Petition No. 186/GT/2014 (Sugen Power Plant), the maintenance spares @ 20 %of the operation & maintenance expenses including water charges, allowed are as under:

| <i>(₹ in lakh)</i> | | | | |
|--------------------|---------|---------|---------|---------|
| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| 3226.32 | 3428.32 | 3642.32 | 3870.32 | 4112.32 |

Receivables

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

| <i>(₹ in lakh)</i> | | | | | |
|-------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| Variable Charges (two months) | 10879.21 | 10909.01 | 10879.21 | 11141.36 | 11141.36 |
| Fixed Charges (two months) | 8171.61 | 9035.78 | 9329.40 | 9417.02 | 9726.70 |
| Total | 19050.81 | 19944.79 | 20208.60 | 20558.38 | 20868.05 |



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 |
| 1366.24 | 1452.49 | 1543.88 | 1641.24 | 1744.59 |

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

| (₹ in lakh) | | | | |
|-------------|---------|---------|---------|---------|
| 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| 1344.30 | 1428.47 | 1517.63 | 1612.63 | 1713.47 |

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 | 2639.09 | 2646.32 | 2639.09 | 2702.68 | 2702.68 |
| Cost of coal towards generation- 30 days | 5278.18 | 5292.64 | 5278.18 | 5405.37 | 5405.37 |
| Cost of secondary fuel oil-2 months | 322.84 | 323.73 | 322.84 | 330.62 | 330.62 |
| Maintenance Spares | 3226.32 | 3428.32 | 3642.32 | 3870.32 | 4112.32 |
| Receivables- 2 months | 19050.81 | 19280.10 | 18794.81 | 19054.81 | 19269.01 |
| O & M expenses- 1 Month | 1344.30 | 1428.47 | 1517.63 | 1612.63 | 1713.47 |
| Total Working Capital | 31861.55 | 32399.58 | 32194.89 | 32976.44 | 33533.47 |
| Rate of Interest | 13.50 | 13.50 | 13.50 | 13.50 | 13.50 |



| | | | | | |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Interest on Working Capital | 4301.31 | 4373.94 | 4346.31 | 4451.82 | 4527.02 |
|------------------------------------|----------------|----------------|----------------|----------------|----------------|

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 | 5033.70 | 5033.70 | 1258.42 | 0.00 | 0.00 |
| Interest on Loan | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Return on Equity | 23563.03 | 23677.30 | 23677.30 | 23677.30 | 23677.30 |
| Interest on Working Capital | 4301.31 | 4373.94 | 4346.31 | 4451.82 | 4527.02 |
| O&M Expenses | 16131.61 | 17141.61 | 18211.61 | 19351.61 | 20561.61 |
| Compensation Allowance | 1000.00 | 500.00 | 0.00 | 0.00 | 0.00 |
| Special allowance | 0.00 | 3988.13 | 8482.74 | 9021.40 | 9594.25 |
| Total | 50029.64 | 54714.67 | 55976.38 | 56502.12 | 58360.18 |
| Unrecovered Depreciation | - | - | 179.12 | - | - |
| Final AFC approved | 50029.64 | 54714.67 | 56155.50 | 56502.12 | 58360.18 |

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 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.

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 ₹4.93 lakhs 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. 291/GT/2014 is disposed of in terms of the above.

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

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



DETAILS OF LOAN BASED ON ACTUAL LOAN PORTFOLIO (2014-19)

(₹ in lakh)

| Particulars | Interest Rate | Loan deployed as on 1.4.2014 | Additions during the tariff period | Total |
|-------------|----------------|------------------------------|------------------------------------|---------|
| | 2014-19 | | | |
| KFW Dr 2 | 1.0000% | 204.95 | 0.00 | 204.95 |
| KFW Dr 3 | 1.0000% | 159.68 | 0.00 | 159.68 |
| KFW Dr 4 | 1.0000% | 174.39 | 0.00 | 174.39 |
| KFW Dr 5 | 1.0000% | 131.13 | 0.00 | 131.13 |
| KFW Dr 6 | 1.0000% | 253.69 | 0.00 | 253.69 |
| KFW Dr 8 | 1.0000% | 117.80 | 0.00 | 117.80 |
| KFW Dr 9 | 1.0000% | 224.94 | 0.00 | 224.94 |
| PFC V D-32 | 10.0300% | 656.25 | 0.00 | 656.25 |
| Total | | 1922.83 | 0.00 | 1922.83 |

WEIGHTED AVERAGE RATE OF INTEREST ON LOAN DURING 2014-19 TARIFF PERIOD

(₹ in lakh)

| Particulars | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
|---|---------|---------|---------|---------|---------|
| Net loan – Opening | 1922.83 | 1442.30 | 961.77 | 481.25 | 422.92 |
| Additions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Repayments of Loans during the year | 480.53 | 480.53 | 480.52 | 58.33 | 58.33 |
| Net loan – Closing | 1442.30 | 961.77 | 481.25 | 422.92 | 364.59 |
| Average Net Loan | 1682.57 | 1202.04 | 721.51 | 452.09 | 393.76 |
| Rate of Interest on Loan with monthly rests | 4.365% | 5.273% | 7.388% | 10.030% | 10.030% |
| Interest on loan | 73.45 | 63.38 | 53.31 | 45.34 | 39.49 |

