

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 316/GT/2014**

**Coram:**

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

**Date of Order : 10.03.2017**

**In the matter of**

Determination of tariff for Farakka Super Thermal Power Station, Stage-I & II (1600 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. West Bengal State Electricity Distribution Company Limited  
Vidyut Bhawan, Block-DJ,  
Sector-II, Salt Lake City  
Kolkata – 700 091
2. Bihar State Power Holding Company Limited  
(erstwhile Bihar State Electricity Board)  
Vidyut Bhawan, Bailey Road  
Patna – 800 001
3. Jharkhand State Electricity Board,  
Engineering Building,  
HEC, Dhurwa, Ranchi – 834004
4. GRIDCO Limited  
24, Janpath,  
Bhubaneswar – 751007
5. Haryana Power Purchase Centre (HPPC)  
Shakti Bhawan,  
Sector-6, Panchukla, Haryana - 134109



6. Power Department  
Govt. of Sikkim, Kazi Road,  
Gangtok, Sikkim-737101
7. Tamil Nadu Generation and Distribution Corporation Limited  
NPKRP Maaligail  
800, Anna Salai  
Chennai – 600002
8. Punjab State Power Corporation Limited, The Mall,  
Patiala -147001
9. Uttar Pradesh Power Corp. Limited  
Shakti Bhawan, Ashok Marg  
Lucknow – 226001
10. Power Development Department (J&K)  
Govt. of J&K Secretariat,  
Srinagar
11. Assam Power Distribution Company Limited  
Bijulee Bhawan, Paltan Bazar,  
Guwahati - 782001
12. BSES Rajdhani Power Ltd.  
BSES Bhawan, Nehru Place  
New Delhi-110019
13. BSES Yamuna Power Ltd.  
Shakti Kiran Bldg., Karkardooma  
Delhi
14. Tata Power Delhi Distribution Co. Ltd.  
NDPL House  
Hudson Lane, Kingsway Camp  
Delhi-110009
15. Jaipur Vidyut Vitran Nigam Ltd  
400 kV GSS Building (Ground Floor), Ajmer Road,  
Heerapura, Jaipur.
16. Ajmer Vidyut Vitran Nigam Ltd  
400 kV GSS Building (Ground Floor), Ajmer Road,  
Heerapura, Jaipur
17. Jodhpur Vidyut Vitran Nigam Ltd  
400 kV GSS Building (Ground Floor), Ajmer Road,  
Heerapura, Jaipur

**...Respondents**



**Parties present:**

For Petitioner: Shri Ajay Dua, NTPC  
Shri Manoj Kumar Sharma, NTPC  
Shri Nishant Gupta, NTPC  
Shri Bhupinder Kumar, NTPC  
Shri T. Vinodh Kumar, NTPC  
Shri Rajeev Chaudhary, NTPC

For Respondents: Shri Manoj Kumar Sharma, Advocate, Rajasthan Discom  
Shri Pradeep Mishra, Advocate, Rajasthan Discom  
Shri Vasudha Sen, Advocate, TPDDL  
Shri Pushkar Tamini, Advocate, TPDDL  
Shri R. B. Sharma, Advocate, GRIDCO, BRPL & BSPHCL  
Shri S. R. Sarangi, GRIDCO  
Shri Madhusudan Sahoo, GRIDCO  
Shri S Vallinayagam, Advocate TANGEDCO  
Shri Sameer Singh, BYPL  
Shri Shekhar Saklani, BYPL  
Shri Kanishk, BRPL  
Shri Manish Garg, UPPCL

**ORDER**

This petition has been filed by the petitioner, NTPC for approval of tariff of Farakka Super Thermal Power Station, Stage-I & II (1600 MW) (hereinafter referred to as “the generating station”) for the period 2014-19 in accordance with the provisions of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 (hereinafter referred to as “the 2014 Tariff Regulations”).

2. The generating station with a capacity of 1600 MW comprises of three units of 200 MW each and two units of 500 MW each. The dates of commercial operation (COD) of the different units of the generating station are as under:

<b>Unit</b>	<b>COD</b>
Unit-I	1.11.1986
Unit-II	1.10.1987
Unit-III	1.9.1988
Unit-IV	1.7.1996
Unit-V	1.4.1995

3. The Commission vide order dated 6.2.2017 in Petition No. 274/GT/2014 had revised the tariff of the generating station for the period 2009-14 after truing-up exercise in terms of Regulation



6 (1) of the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 considering the capital cost of ₹319679.86 lakh as on 31.3.2014 on cash basis and after deduction of un-discharged liabilities of ₹1277.09 lakh as on 31.3.2014. The annual fixed charge approved by the said order was as under:

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	7127.32	7629.14	7987.70	7958.22	7918.90
Interest on Loan	154.48	16.07	0.00	0.00	0.00
Return on Equity	36349.29	36257.06	35998.04	35999.42	36812.13
Interest on Working Capital	11176.41	11260.90	11368.65	11453.87	11585.77
O&M Expenses	23920.00	25284.00	26734.00	28266.00	29884.00
Secondary fuel oil cost	2300.68	2300.68	2306.98	2300.68	2300.68
Compensation Allowance	540.00	640.00	640.00	610.00	480.00
Special Allowance	0.00	0.00	0.00	1181.60	2498.38
<b>Total</b>	<b>81568.18</b>	<b>83387.85</b>	<b>85035.37</b>	<b>87769.78</b>	<b>91479.86</b>

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

#### Capital Cost

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	323781.26	330435.82	335709.57	346927.57	355799.57
Add: Additional capital expenditure	6654.56	5273.75	11218.00	8872.00	0.00
Closing Capital Cost	330435.82	335709.57	346927.57	355799.57	355799.57
Average Capital Cost	327108.54	333072.69	341318.57	351363.57	355799.57

#### Annual Fixed Charges

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	9042.78	10607.72	13661.75	19983.78	18501.88
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	32382.70	32747.32	33251.44	33865.54	34136.74
Interest on Working Capital	15751.28	15952.81	16129.01	16426.50	16545.14
O&M Expenses	31144.73	33105.83	35190.18	37407.98	39765.44
Compensation Allowance	500.00	750.00	750.00	1000.00	1000.00
Special allowance	4157.03	4421.00	4701.73	5000.29	5317.81
<b>Total</b>	<b>92978.52</b>	<b>97584.69</b>	<b>103684.11</b>	<b>113684.09</b>	<b>115267.01</b>



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, GRIDCO, BRPL, TANGEDCO and BYPL have submitted their replies 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 true up by excluding liability, if any, as on 1.4.2014;*
- (b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with Regulation 14; and*
- (c) expenditure on account of renovation and modernisation as admitted by this Commission in accordance with Regulation 15.”*

7. The petitioner vide affidavit dated 13.8.2014 has claimed the annual fixed charges based on the opening capital cost of ₹323781.26 lakh as on 1.4.2014. The Commission in the final true up order dated in Petition No. 274/GT/2014 has admitted a closing capital cost of ₹319679.86 lakh (on cash basis) as on 31.3.2014. The un-discharged liabilities corresponding to admitted capital cost are ₹1277.09 lakh as on 31.3.2014. Accordingly, admitted closing capital cost of ₹319679.86 lakh as on 31.3.2014 has been considered as opening capital cost as on 1.4.2014 for tariff purpose.

### **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:



Sl. No.	Head of Work /Equipment	Regulation	2014-15	2015-16	2016-17	2017-18	Total
1	4th raising of Nishindra Ash dyke I & II	14(3)(iv)	1058.00	-	-	-	<b>1058.00</b>
2	Starter dyke of Nishindra Lagoon - III		-	-	-	4447.00	<b>4447.00</b>
3	Inert gas fire extinguishing system	14(3)(ii)	654.66	72.75	-	-	<b>727.41</b>
4	Dry Ash extraction system for St-I & II		-	2550.00	5345.00	1824.00	<b>9719.00</b>
5	Renovation of ESP Retrofit Stage-I		-	1951.00	5202.00	2601.00	<b>9754.00</b>
6	Replacement of Wooden and Cast Iron Sleepers of MGR in line with the recommendation of Lok Sabha Standing Committee on Railways	14(3)(ii) & (iii)	4941.90	-	-	-	<b>4941.90</b>
7	Augmentation of fire protection system		-	700.00	671.00	-	<b>1371.00</b>
8	<b>Total Additional Capitalisation</b>		<b>6654.56</b>	<b>5273.75</b>	<b>11218.00</b>	<b>8872.00</b>	<b>32018.31</b>

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

**“16. Special Allowance for Coal-based/Lignite fired Thermal Generating station:**

(1) In case of coal-based/lignite fired thermal generating station, the generating company, instead of availing R&M may opt to avail a „special allowance” in accordance with the norms specified in this regulation, as compensation for meeting the requirement of expenses including renovation and modernisation beyond the useful life of the generating station or a unit thereof, and in such an event, revision of the capital cost shall not be allowed and the applicable operational norms shall not be relaxed but the special allowance shall be included in the annual fixed cost:

Provided that such option shall not be available for a generating station or unit for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational and performance norms.

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

11. Regulation 27(7) of 2014 Tariff Regulations provides as under:

“27(7): The generating company or the transmission license, as the case may be, shall submit the details of proposed capital expenditure during the fag end of the project (five years before the useful life) along with justification and proposed life extension. The Commission based on prudence check of such submissions shall approve the depreciation on capital expenditure during the fag end of the project.”





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

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

#### **Inert gas fire extinguishing system**

13. The petitioner has claimed total projected capital expenditure of ₹727.41 lakh (₹654.66 lakh in 2014-15 and ₹72.75 lakh in 2016-17) for Inert gas fire extinguishing system. In justification of the claim, towards Inert gas fire extinguishing system, the petitioner has submitted that Halon fire protection system is provided for permanent fire fighting system and uses substances which are Ozone depleting in nature. It has submitted that as per the Environment (Protection) Act 1986, the Central Government laid down rules for Ozone Depleting Substances (Regulation and Control) Rules, 2000) and as per the Montreal Protocol on substances that deplete the Ozone layer, plants using Ozone depleting substances must phase out these systems and adopt systems which use substances that do not deplete the Ozone layer, Accordingly, the petitioner has submitted that the replacement of Halon gas fire protection system with alternate inert gas shall be taken up in line with Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electric Lines) Regulation, 2010. Accordingly the petitioner has prayed that the Commission may allow capitalization of Inert gas fire extinguishing system under Regulation 14(3)(ii) of the 2014 Tariff Regulations.

14. As regards the expenditure claim towards Inert gas fire extinguishing system, the respondents UPPCL, GRIDCO, BRPL, BYPL and TANGEDCO have submitted that the petitioner has claimed 'Inert gas fire extinguishing system' in place of the existing Halon fire protection system and no document in support of this claim has been filed. The respondent has stated that, it is also not clear as to how the Halon fire protection system, if it contains Ozone depleting substance, in being continued by its manufacturers. They have further submitted that the documents filed by the petitioner including the Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric lines) Regulations, 2010 do not support the claim for augmentation of





Halon fire protection system with Inert gas fire extinguishing system and thus the claim is not considered.

15. We have examined the matter. It is observed that Units I, II & III of the generating station have completed useful life of 25 years. However, Unit IV & V have remaining life of 4 and 3 years respectively. It is noticed that expense as claimed by the petitioner in respect of Inert gas fire extinguishing system. The petitioner has claimed special allowance as per Regulation 16 of the 2014 Tariff Regulations towards the Renovation and Modernization of plant. The petitioner has also availed a Compensation Allowance in terms of Regulation 17 of the 2014 Tariff Regulations in order to meet the expenses on new assets of capital nature including minor assets of the nature of operational expenses. The petitioner shall meet this expenditure from compensation/special allowance allowed by the Commission. Therefore, there is no reason to capitalize the projected additional capital expenditure claimed by the petitioner in respect of Inert gas fire extinguishing system under Regulation 14(3)(ii) of the 2014 Tariff Regulations.

### **Dry Ash Extraction System**

16. The petitioner has claimed ₹9719.00 lakh (₹2550.00 lakh in 2015-16, ₹5345.00 lakh in 2016-17 and ₹1824.00 lakh in 2017-18) towards Dry ash extraction system for Stage-I & II. As regards expenditure claim towards Dry Ash Evacuation System for Stage-I & II the petitioner has submitted that the work was approved by the Commission for the year 2013-14 vide order dated 14.6.2012. It has submitted that the NIT for the work was initiated on 15.3.2011 and after evaluation of prequalification of the parties, 4 parties were prequalified. It has stated that against bids received from the 4 prequalified parties, 2 parties did not meet the technical specifications and were rejected and only two other offers were found to be as per technical requirements of NIT. It has also stated, after loading of various additional charges including power cost, the lower bid was no longer L1 and the case had to be retendered and fresh NIT was issued on 18.10.2013 and the work has been awarded to M/S Mac Nally Bharat on 3.1.2014. The petitioner has stated that the work is in progress and shall be completed in a phased manner matching with approved overhauling plan of units



during the period 2014-19. Accordingly, the petitioner has prayed that the Commission may allow capitalisation of this work to meet target of 100 % ash utilization as per MOE&F guidelines.

17. As regards Dry Ash Extraction System for stage-I & II the respondents, GRIDCO, BRPL, UPPCL and BYPL have submitted that Compensation Allowance is admissible for some of the units of the generating station under Regulation 17 of the 2014 Tariff Regulations, for meeting the expenses on new assets of capital nature. The respondents have further submitted that the petitioner has also claimed 'Special Allowance' for most of the units under Regulation 16 of the 2014 Tariff Regulations, as compensation for meeting the requirement of expenses including renovation and modernization beyond the useful life of the generating station or a unit. The respondents have further submitted that the petitioner has opted for the 'Special Allowance' and since additional capitalization and 'Special Allowance' is inter-related, both cannot be claimed as it would constitute double benefit. The respondents have submitted that as regards change in law, no documentary evidence indicating the change in law or compliance with the existing law has been submitted in justification of this claim such expenses under Regulation 3(9) of the 2014 Tariff Regulations and hence the prayer of the petitioner is liable to be rejected.

18. We have examined the matter. It is observed that Units I, II & III of the generating station have completed useful life of 25 years. However, Unit IV & V have remaining life of 4 and 3 years respectively. It is noticed that expense as claimed by the petitioner in respect of Dry Ash Extraction System is of the nature of operational expenses. The petitioner has also availed a Compensation Allowance in terms of Regulation 17 of the 2014 Tariff Regulations in order to meet the expenses on new assets of capital nature including minor assets of the nature of operational expenses. The petitioner shall meet this expenditure from compensation allowance allowed by the Commission. Therefore, there is no reason to capitalize the projected additional capital expenditure claimed by the petitioner in respect of Dry Ash Extraction System under Regulation 14(3)(ii) of the 2014 Tariff Regulations.



## **Renovation of ESP**

19. The petitioner has claimed and ₹9754.00 lakh (₹1951.00 lakh in 2015-16, ₹5202.00 lakh in 2016-17 and ₹2601.00 lakh in 2017-18) for Renovation of ESP retrofit Stage-I. As regards expenditure claimed towards renovation of ESP retrofit Stage-I, the petitioner has submitted that Electro-Static Precipitators (ESP) of Units I, II & III were designed way back in 1980 and taken into service during the period from 1.1.1986 to 6.8.1987. It has stated that these ESPs were designed for Suspended Particulate Matter (SPM) Emission level of 550 mg/Nm<sup>3</sup> and no SPM emission norms were in force at the time of designing these ESPs. It has further submitted that subsequently, after enactment of Environment (Protection) Act, 1986, maximum allowed SPM emission norms and the ESPs of Unit I, II & III were operating at SPM emission of 300-350 mg/Nm<sup>3</sup> for 200 MW units was 350 mg/Nm<sup>3</sup> even though these were designed for 550 mg/Nm<sup>3</sup> and there was no need for renovation of ESP to meet the new SPM emission norms. It has stated that West Bengal Pollution Control Board (WBPCB) vide consent letter dated 16.2.2004 has reduced SPM emission limit to 150 mg/Nm<sup>3</sup>. It has stated that Ammonia Flue Gas Conditioning System (AFGC) was commissioned in 2006-07 to comply with the modified SPM emission level but Central Pollution Control Board (CPCB) vide letter dated 10.11.2008 has suggested that AFGC is only a short term solution and the petitioner should come out with an action plan proposing long term option such as augmentation/retrofitting of ESP. The petitioner has submitted that various studies were carried out to decide the mode and location of area augmentation for redesigning the ESP for 150 mg/Nm<sup>3</sup> as area augmentation and retrofitting in existing space is a tricky work and requires shifting and relocation of various equipments like ID/FD fan, ESP switchgear etc. It has also submitted that since the work of renovation of ESP is in line with suggestion of CPCB, the projected expenditure for Renovation of ESPs as per directions of CPCB may be allowed.

20. As regards Renovation of ESP retrofit Stage-I the respondents, GRIDCO, BRPL, UPPCL and BYPL have submitted that the petitioner has claimed 'Special Allowance' for most of the units under Regulation 16 of the 2014 Tariff Regulations. The respondents have further submitted that the



petitioner has opted for the 'Special Allowance' and since additional capitalization and 'Special Allowance' is inter-related, both cannot be claimed as it would constitute double benefit. The respondents have submitted that as regards change in law, no documentary evidence indicating the change in law or compliance with the existing law has been submitted in justification of this claim such expenses under Regulation 3(9) of the 2014 Tariff Regulations and hence the prayer of the petitioner is liable to be rejected.

21. We have examined the matter. It is observed that Units I, II & III of the generating station have completed useful life of 25 years. However, Unit IV & V have remaining life of 4 and 3 years respectively. It is noticed that expense as claimed by the petitioner in respect of renovation of ESP retrofit. The petitioner has claimed special allowance as per Regulation 16 of the 2014 Tariff Regulations towards the Renovation and Modernization of plant. The petitioner has also availed a Compensation Allowance in terms of Regulation 17 of the 2014 Tariff Regulations in order to meet the expenses on new assets of capital nature including minor assets of the nature of operational expenses. The petitioner shall meet this expenditure from compensation/special allowance allowed by the Commission. Therefore, there is no reason to capitalize the projected additional capital expenditure claimed by the petitioner in respect of renovation of ESP retrofit under Regulation 14(3)(ii) of the 2014 Tariff Regulations.

#### **Regulation 14(3)(ii) & 14(3)(iii) - Change in law and Safety & Security**

#### **Replacement of wooden and cast iron sleepers of MGR**

22. The petitioner has claimed ₹4941.90 lakh towards Replacement of wooden and cast iron sleepers of MGR in line with the recommendations of the Lok Sabha Standing Committee on Railways under Regulation 14(3)(ii) & 14(3)(iii) of 2014 Tariff Regulations. As regards replacement of wooden and cast iron sleepers of MGR, the petitioner has submitted that the generating station has longest MGR track among the petitioner's stations (84.5 Km) passing through difficult terrain with substantial gradient and consequently higher risk of accidents. It has also submitted that cast iron CST-9 and wooden sleepers have been used for supporting this track. After enhancement of



target availability from 62.8% to 85% and after commissioning of Farakka STPS-III, the utilization of this track has considerably increased and wear & tear of sleepers has increased beyond acceptable limits. The petitioner has stated that Various committees and task forces formed after derailment/accident of trains have recommended for replacement of CST-9 and wooden sleepers with PSC sleepers in track as well as Points & Crossings, replacement of bridge timbers with steel Channel Sleepers at all steel Girder Bridges and replacement of all scabbed Rails and the Ministry of Railways, GOI has also been insisting to replace old wooden/cast iron/steel sleepers with concrete sleepers and Indian Railways is also replacing such obsolete wooden and cast iron sleepers with concrete sleepers for better functioning of its vast railway network. The petitioner has stated that the Standing Committee on Railways in its eighth report (August 2010) on Protection and Security of Railway Property and Passengers has also observed on the replacement of majority of wooden/cast iron/steel sleepers with sturdier concrete sleepers to check derailment of trains. The petitioner has further submitted that since the Sleeper CST-9 is more than 20 years age and Wooden Sleepers are above 8 to 10 years age, it is essential to replace the sleepers for safe and reliable operation of the MGR track. Accordingly, the petitioner has prayed that the Commission may allow the projected expenditure under Regulation 14(3)(ii) and 14(3) (iii) of 2014 Tariff Regulations.

23. As regard expenditure towards replacement of Wooden and Cast iron sleepers of MGR the respondents, GRIDCO, UPPCL, BYPL, BRPL and TANGEDCO have submitted that it is based on the South Eastern Railways Circular No. 148 dated 20.10.1998. The recommendations of the Lok Sabha Standing Committee on Railways do not fall under the scope of Regulation 14(3)(ii) & (iii) of the 2014 Tariff Regulations. They have also submitted that the petitioner may be directed to meet the expenses either under 'Compensation Allowance' or under 'Special Allowance' granted to the generating station. Accordingly, the respondents have prayed that the claim of the petitioner may be rejected. In response, the petitioner has reiterated that the additional capitalization claimed in accordance with the provisions of Regulation 14 of the 2014 Tariff Regulations. It has pointed out that only 3 units of 200 MW of Farakka Stage-I is availing Special Allowance and the other units are not entitled for the Special Allowance.



24. We have considered the submissions of the parties. It is observed that the petitioner has claimed projected additional capital expenditure during the fag end of the completion of useful life of 25 years of the generating station. Stage-I has completed its useful life, However, Unit IV & V have remaining life of 4 and 3 years respectively. The petitioner has claimed special allowance as per Regulation 16 of the 2014 Tariff Regulations towards the Renovation and Modernization of plant. The petitioner has also availed a Compensation Allowance in terms of Regulation 17 of the 2014 Tariff Regulations in order to meet the expenses on new assets of capital nature including minor assets of the nature of operational expenses. The petitioner shall meet this expenditure from compensation/special allowance allowed by the Commission. Therefore, there is no reason to capitalize the projected additional capital expenditure claimed by the petitioner in respect of Replacement of wooden and cast iron sleepers of MGR under Regulation 14(3)(ii) of the 2014 Tariff Regulations.

#### **Augmentation of Fire protection**

25. The petitioner has claimed ₹1371.00 lakh (₹700.00 lakh in 2015-16 and ₹671.00 lakh in 2016-17) for Augmentation of Fire protection system under Regulation 14(3)(ii) & 14(3)(iii) of 2014 Tariff Regulations. As regards the expenditure claim towards Augmentation of Fire protection, the petitioner has submitted that assessment of availability, reliability and design adequacy of Fire detection and Protection system of all coal based thermal stations of the petitioner, was carried out in line with regulation 12(5) of Central Electricity Authority (Technical Standards for construction of Electrical Plants and Electric Lines) Regulations, 2010. It has further submitted that major works were identified in order to comply the said regulation for fire detection and protection system by Installation of MVW ( Medium Velocity Water) spray system for the various coal conveyers and Transfer Points of Stage-I and Stage-II CHP and crusher house of CHP Stage-I, installation of MVW spray system for the various cable galleries of Stage-I & II, installation of MVW spray system for Stacker Reclaimers of CHP Stage-I & II, installation of Analogue addressable type fire detection and alarm system for various areas of CHP Stage-I & II and cable galleries and installation of Fire



hydrant for inclined conveyer galleries. It has further stated that Augmentation of fire protection system of Coal Handling Plant (CHP) and Stacker Reclaimer area in line with CEA Regulation 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 equipment may not be able to control the spread of fire. Accordingly, the petitioner has prayed that the Commission may allow the projected additional capital expenditure under Regulation 14(3)(ii) and 14(3) (iii) of 2014 Tariff Regulation.

26. We have examined the matter. It is observed that similar claim of the petitioner under Regulations 14(3)(ii) and 14(3)(iii) of the 2014 Tariff Regulations for Augmentation of Fire fighting system was considered by the Commission in Petition No. 270/GT/2014 (tariff of Simhadri STPS for 2014-19) and the Commission by order dated 27.6.2016 had rejected the claim of the petitioner. On a review filed by the petitioner (in Petition No.36/RP/2016), the Commission by order dated 27.1.2017 allowed the prayer of the petitioner under Regulation 14(3)(iii) of the 2014 Tariff Regulations. The petitioner in this petition has claimed the expenditure due to Change in law/compliance with existing law under Regulation 14(3)(ii) and for Safety and security of the plant under Regulation 14(3)(iii) of the 2014 Tariff Regulations in terms of the CEA Regulations 2010 and 2011. Though the prayer of the petitioner in the review petition was not allowed under Regulation 14(3)(ii) of the 2014 Tariff Regulations, the Commission is of the view that the matter needs to be examined in the larger perspective i.e whether the CEA Regulations 2010 and 2011 are applicable to the existing generating stations and if so, whether the implementation of the augmentation of fire fighting system should be considered as Change in law and is required for Safety and security of the plant in terms of Regulation 14(3)(ii) and (iii) of the 2014 Tariff Regulations. Accordingly, the Commission has decided to consult the CEA in this regard. Therefore, the Staff of the Commission is directed to refer the matter to CEA for necessary clarification. Pending clarification in the matter, the claim of the petitioner has not been decided in this order. If on the basis of the report of the CEA, the Commission comes to a decision to allow the expenditure for augmentation of fire fighting/protection system under Change in law and for Safety and security of the plant, and in that





event, the claim of the petitioner shall be considered at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations. The petitioner shall also place on record the confirmation that the expenditure on augmentation of fire fighting system/protection system is in compliance with the TAC guidelines and the discount, if any, received from the Insurance companies at the time of truing-up.

**Ash dyke works 14(3)(iv)**

27. The petitioner has claimed projected additional capital expenditure ₹1058.00 lakh in 2014-15 for 4<sup>th</sup> raising of Nishindra ash dyke I & II and ₹4447.00 lakh for Starter dyke of Nishindra Lagoon- III in 2017-18. In justification, the petitioner has submitted that the works was envisaged in the original scope of work of Stage-II and was approved by the Commission in 2012-13 vide order dated 14.6.2012 in Petition No. 233/GT/2013. It has also submitted that the same work could not be completed during the period 2009-14 because the award of contract got delayed in respect of poor response from parties and the bid opening date had to be extended to ensure participation of sufficient number of parties. Accordingly, the petitioner has submitted that the projected capital expenditure towards raising of Ash dyke I was deferred to in the year 2013-14 and was claimed in Petition No. 233/GT/2013. It has further submitted that the work of raising of dyke I has been completed but could not be capitalised in books of accounts. It has further submitted that the raising of dyke II is expected to be completed by November 2014 and entire amount shall be capitalised in the year 2014-15. Accordingly, the petitioner has prayed that the Commission may allow the capitalization of expenditure towards 4th raising of Nishindra Ash dyke I & II in 2014-15 under Regulation 14(3)(iv) of 2014 Tariff Regulations.

28. The respondent, TANGEDCO has submitted that the claim of the petitioner is unjustified and will result in higher capacity charges. It has also submitted that the petitioner has not furnished the revised capital estimate / Management certificate or necessary approvals for incurring the expenditure in the period 2014-19 and the claim made by the petitioner towards Ash Dyke raising works will unduly enrich the generator at the cost of the respondents. In response, the petitioner has



reiterated that only 3 units of 200 MW of the generating station is availing Special Allowance and 2 units 500 MW units are not entitled to get Special Allowance. It has stated that Nishindra Ash Dyke is being used for disposal of ash generated in Farakka STPS Stage-II (2x500 MW) units and none of these units have completed their useful life.

29. 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. However, it is observed that the petitioner has claimed the expenditure to meet the requirement of expenses including R&M beyond the useful life of the generating station. The petitioner has not clarified about the extension of the project. In this background, we are not inclined to allow the projected additional capital expenditure of ₹1058.00 lakh in 2014-15 for 4<sup>th</sup> raising of Nishindra ash dyke I & II and ₹4447.00 lakh for Starter dyke of Nishindra Lagoon- III in 2017-18.

30. 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

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

<i>(₹ in lakh)</i>								
Sl. No.	Head of Work / Equipment	Regulation	2014-15	2015-16	2016-17	2017-18	2018-19	Total
1	4th raising of Nishindra Ash dyke I & II	14(3)(iv)	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
2	Starter dyke of Nishindra Lagoon # III		0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
3	Inert gas fire extinguishing system	14(3)(ii)	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
4	Dry Ash extraction system for St-I & II		0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
5	Renovation of ESP Retrofit- St-I		0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
6	Replacement of Wooden and Cast Iron Sleepers of MGR	14(3)(ii) & (iii)	0.00	0.00	0.00	0.00	0.00	<b>0.00</b>



Sl. No.	Head of Work / Equipment	Regulation	2014-15	2015-16	2016-17	2017-18	2018-19	Total
	in line with the recommendation of Lok Sabha Standing Committee on Railways							
7	Augmentation of fire protection system		0.00	0.00	0.00	0.00	0.00	<b>0.00</b>
8	<b>Total Additional Capitalisation</b>		0.00	0.00	0.00	0.00	0.00	<b>0.00</b>

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

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	319679.86	322768.54	322768.54	322768.54	322768.54
Add: Additional capital expenditure	0.00	0.00	0.00	0.00	0.00
<b>Closing Capital Cost</b>	<b>319679.86</b>	<b>319679.86</b>	<b>319679.86</b>	<b>319679.86</b>	<b>319679.86</b>

### Debt-Equity Ratio

33. 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.*

34. Accordingly, the gross normative loan and equity amounting to ₹163002.15 lakh and ₹156677.70 lakh, respectively as on 31.3.2014 as considered in order dated 6.2.2017 in Petition No. 274/GT/2014, has been considered as gross normative loan and equity as on 1.4.2014. Further, 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**

35. 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.*

36. 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.*

37. The petitioner has claimed return on equity considering base rate of 15.50% and effective tax rate of 23.9394% from 2014-15 to 2018-19. The respondents, GRIDCO, UPPCL, BYPL and BRPL has submitted that the petitioner has considered effective tax rate of 23.9394% in form 3 for each year of tariff period for which no details have been furnished. It has requested that the effective tax rate be computed in accordance with Regulation 25 of the Tariff Regulations, 2014. This issue



being not confined to a single petition and being generic in nature as the issue is applicable to all NTPC petitions uniformly need deliberation. On this issue against specific query through ROP, the petitioner vide its affidavit dated 8.1.2016 in Petition no. 280/GT/2014 (Farakka STPS, Stage-III) has filed Auditor's Certificate regarding deposit of advance tax on generation business for the year 2014-15 as well as Income Tax return for the financial year 2014-15 (Assessment Year 2015-16). We have examined the documents submitted and observed that the regulation prescribe computation of effective tax rate on the basis of tax paid, still we deem it proper to allow grossing up on MAT rate considering the fact that the matter is getting decided in the year 2016-17. Accordingly, the effective tax rate (MAT) of 20.961% has been considered for the year 2014-15 and 21.342% for the year 2015-16 onwards up to the year 2018-19 for the purpose of grossing up of base rate of 15.5%. Accordingly, the rate of Return on Equity works out to 19.610% for the year 2014-15 and 19.705% for the year 2015-16 onwards. This is however, subject to true-up. Accordingly, return on equity has been worked out as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Notional Equity- Opening	156677.70	156677.70	156677.70	156677.70	156677.70
Addition of Equity due to additional capital expenditure	0.00	0.00	0.00	0.00	0.00
Normative Equity-Closing	156677.70	156677.70	156677.70	156677.70	156677.70
Average Normative Equity	156677.70	156677.70	156677.70	156677.70	156677.70
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
<b>Return on Equity(Pre Tax) annualised</b>	<b>30724.50</b>	<b>30873.34</b>	<b>30873.34</b>	<b>30873.34</b>	<b>30873.34</b>

### Interest on Loan

38. 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."*

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

(a) The gross normative loan of ₹ 163002.15 lakh as on 1.4.2014 has been considered.

(b) Cumulative repayment of loan of ₹163002.15 lakh 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 2014-19.

(e) In line with the provisions of the regulations, 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.

40. 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	163002.15	163002.15	163002.15	163002.15	163002.15
Cumulative repayment of loan upto previous year	163002.15	163002.15	163002.15	163002.15	163002.15
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
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 (%)	6.507	6.693	7.308	8.850	1.000
<b>Interest on Loan</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

## Depreciation

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

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



42. The cumulative depreciation amounting to ₹251812.02 lakh as on 31.3.2014 as considered in order dated 6.2.2017 in Petition No. 274/GT/2014 has been considered for the purpose of tariff. Accordingly, the balance depreciable value (before providing depreciation) for the year 2014-15 works out to ₹35177.75 lakh. Accordingly, depreciation has been computed as follows:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	319679.86	319679.86	319679.86	319679.86	319679.86
Add: Additional Capital Expenditure	0.00	0.00	0.00	0.00	0.00
Closing Capital Cost	319679.86	319679.86	319679.86	319679.86	319679.86
Average Capital Cost	319679.86	319679.86	319679.86	319679.86	319679.86
Balance useful life at the beginning of the period	4.43	3.43	2.43	1.43	1.00
Depreciable value (excluding land) @ 90%	286989.76	286989.76	286989.76	286989.76	286989.76
Balance depreciable Value	35177.75	27236.95	19296.15	11355.35	3414.54
<b>Depreciation (annualized)</b>	<b>7940.80</b>	<b>7940.80</b>	<b>7940.80</b>	<b>7940.80</b>	<b>3414.54</b>
Cumulative depreciation up to previous year	251812.02	259752.82	267693.62	275634.42	283575.22
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
<b>Cumulative depreciation (at the end of the period)</b>	<b>259752.82</b>	<b>267693.62</b>	<b>275634.42</b>	<b>283575.22</b>	<b>286989.76</b>

### Compensation Allowance

43. 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

44. 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
500.00	750.00	750.00	1000.00	1000.00

45. Units I to III have completed 25 years of useful life upto 2013-14. Accordingly the compensation allowance claimed by the petitioner is allowed as under:

Description	Unit V	Unit VI
Capacity in MW	500	500
Compensation Allowance Claimed		
2014-15	250.00	250.00
2015-16	250.00	500.00
2016-17	250.00	500.00
2017-18	500.00	500.00
2018-19	500.00	500.00
<b>Total</b>	<b>1750.00</b>	<b>2250.00</b>

### Special Allowance

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

*“ (1) In case of coal-based/lignite fired thermal generating station, the generating company, instead of availing R&M may opt to avail a „special allowance“ in accordance with the norms specified in this regulation, as compensation for meeting the requirement of expenses including renovation and modernization beyond the useful life of the generating station or a unit thereof, and in such an event, revision of the capital cost shall not be allowed and the applicable operational norms shall not be relaxed but the special allowance shall be included in the annual fixed cost:*

*Provided that such option shall not be available for a generating station or unit for which renovation and modernization has been undertaken and the expenditure has been admitted by the Commission before commencement of these regulations, or for a generating station or unit which is in a depleted condition or operating under relaxed operational and performance norms.*

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



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

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

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

47. The Special Allowance claimed by the petitioner is as follows:-

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
4157.03	4421.00	4701.73	5000.29	5317.81

48. Accordingly, the Special Allowance for Stage-I and Stage-II of the generating station have been worked out and allowed in terms of regulation 16(2) of 2014 Tariff Regulations, as under:-

(₹ in lakh)								
Units	Capacity in MW	Date of Commercial operation	Year of completion of Useful life	2014-15	2015-16	2016-17	2017-18	2018-19
I	200	1.11.1986	2011-12	1328.51	1412.87	1502.59	1598.00	1699.47
II	200	1.10.1987	2012-13	1328.51	1412.87	1502.59	1598.00	1699.47
III	200	1.9.1988	2013-14	1500.00	1595.25	1696.55	1804.28	1918.85
IV	500	1.7.1996	2020-21	0.00	0.00	0.00	0.00	0.00
V	500	1.4.1995	2021-22	0.00	0.00	0.00	0.00	0.00
<b>Total Allowed</b>				<b>4157.03</b>	<b>4421.00</b>	<b>4701.73</b>	<b>5000.29</b>	<b>5317.81</b>

49. It is noticed that in order dated 6.2. 2017 in Petition No. 274/GT/2014 the Commission has allowed a total amount of ₹3679.98 lakh as Special Allowance for the generating station during the period 2009-14. In this order, a total amount of ₹23597.86 lakh has been allowed as Special Allowance for the generating station during the period 2014-19. Accordingly, we direct the petitioner shall maintain the details of expenditure incurred or utilized from Special Allowance separately for



the period 2009-14 and 2014-19 and shall make the details available to the Commission at the time of truing up in terms of the Regulation 8 of the 2014 Tariff Regulations. The petitioner is also directed to furnish the plan of action for utilization of the balance amount of Special Allowance recovered/ expected to be recovered at the time of truing up of the generating station.

## O&M Expenses

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

Unit Size (MW)	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
200	23.90	25.40	27.00	28.70	30.51
500	16.00	17.01	18.08	19.22	20.43

51. Proviso to the Regulation 29 (1) (a) of the 2014 Tariff Regulations states as under:

*“Provided that the above norms shall be multiplied by the following factors for arriving at norms of O&M expenses for additional units in respective sizes for the units whose COD occurs on or after 1.4.2014 in the same station:*

200/210/250 MW	Additional 5 <sup>th</sup> & 6 <sup>th</sup> units	0.90
	Additional 7 <sup>th</sup> & more units	0.85
300/330/350 MW	Additional 4 <sup>th</sup> & 5 <sup>th</sup> units	0.90
	Additional 6 <sup>th</sup> & more units	0.85
500 MW and above	Additional 3 <sup>rd</sup> & 4 <sup>th</sup> units	0.90
	Additional 5 <sup>th</sup> & above units	0.85

52. Accordingly, the petitioner has claimed O&M expenses for 2014-19 as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
30340.00	32250.00	34280.00	36440.00	38736.00

53. As the generating station has 3 units of 200 MW capacity in Stage-I and 2 units of 500 MW capacity in Stage-II and all these units have achieved COD prior to the period 2009-14, the multiplication factors as per proviso to Regulation 19 (a) of the 2009 Tariff regulations and proviso to Regulation 29 (1) (a) of the 2014 tariff regulations are not applicable in this case. Accordingly, the multiplication factor has not been considered while determining the O&M expenses for generating



station for the period 2014-19. Consequently, the normative O&M expenses claimed by the petitioner in terms of the 2014 Tariff Regulations are allowed.

## Water Charges

54. 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”*

55. The petitioner vide affidavit dated 14.7.2016 has submitted actual water consumption and water charges paid for the period 2009-14 tariff period as follows:-

SI No.	Year	Water Consumption (m <sup>3</sup> )	Rate (₹per 5000 cubic feet)	Amount (in ₹ Lakh)
1.	2009-10	2246057247.27	5.50	24.71
2	2010-11	2429514916.36	5.50	26.72
3	2011-12	2250516916.36	5.50/162.00*	153.25
4.	2012-13	2217374952.73	162.00	718.23
5.	2013-14	2484447530.91	162.00	804.73

\*- Rate changed from February-2012

56. The petitioner has claimed water charges for the period 2014-19 tariff period as follows:-

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
804.73	855.83	910.18	967.98	1029.44

57. The respondents BYPL and UPPCL have submitted that the claim for water charges is governed by Regulation 29(2) and water charges shall be allowed only after considering various factors. They have submitted that water consumption needs to be determined on normative basis





based on designated capacity less reduction on account of various water conservation measures. The respondents have stated that the rate may be on actual basis as notified by various State Governments and it may be ensured that the water consumption is within the designated capacity. The respondents have further submitted that the petitioner has not provided the details of the consumption of water as the petitioner has submitted water charges as a whole and it is not clear as to whether the same is for housing colonies or used for any other purpose other than the generating station. In response, the petitioner has submitted that it has claimed projected water charges based on O&M norms as specified in 2014 Tariff Regulations.

58. We have examined the matter. In terms of the above regulations, water charges are to be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check of the details furnished by the petitioner. The water consumption has been considered as per the actual consumption of 2013-14 as submitted by the petitioner and the water charges has been considered as per the notification of Ministry of Water Resources, Government of India towards the petitioner for Farakka Barrage Project. The petitioner has claimed the water charges during the year 2014-15 and has escalated the same @ 6.35% as per the escalation rate in O&M norms specified by the Commission for the tariff period 2014-19. The water supply agreement signed with Department of water resources did not specify any year to year escalation rate. Accordingly, water charges have been allowed without the annual escalation for the period 2014-19 as under:-

	2014-15	2015-16	2016-17	2017-18	2018-19
Water consumption projected for Stage I & II (m <sup>3</sup> )	2484447530.91	2484447530.91	2484447530.91	2484447530.91	2484447530.91
Rate or Water Charges (in ₹/ 5000 m <sup>3</sup> )	162.00	162.00	162.00	162.00	162.00
<b>Water charges allowed (in ₹ lakh)</b>	804.73	804.73	804.73	804.73	804.73



59. The petitioner is however granted liberty to approach the Commission to claim water consumption charges at the time of truing-up of tariff for the period 2014-19, based on the actual amount billed for the same.

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

	<i>(₹ in lakh)</i>				
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
O&M Expenses as claimed	30340.00	32250.00	34280.00	36440.00	38736.00
O&M Expenses as allowed	30340.00	32250.00	34280.00	36440.00	38736.00
Water charges as claimed	804.73	855.83	910.18	967.98	1029.44
Water charges as allowed	804.73	804.73	804.73	804.73	804.73
Total O&M Expenses as claimed (including Water charges)	31144.73	33105.83	35190.18	37407.98	39765.44
<b>Total O&amp;M Expenses as allowed(including Water charges)</b>	<b>31144.73</b>	<b>33054.73</b>	<b>35084.73</b>	<b>37244.73</b>	<b>39540.73</b>

### Capital spares

61. 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

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

Target Availability (%)	85.00
Heat Rate (kcal/kWh)	2403.13
Auxiliary Energy Consumption (%)	6.47
Specific Oil Consumption (ml/ kWh)	0.50

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

### Normative Annual Plant Availability Factor (NAPAF)

64. 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.*

65. The respondents, GRIDCO, UPPCL, BYPL and BRPL have submitted that the petitioner in Form 3 while furnishing the normative parameters considered for tariff computations has assumed the Target Availability as 83% as against the prescribed Normative Annual Plant Availability Factor (NAPAF) of 85%. The respondents has further submitted that NAPAF, however, in the event of shortage of coal and uncertainty of assured coal supply on sustained basis can be fixed at 83% to mitigate the risk of recovery of fixed charges by the generators as per proviso to Regulation 36(A) of The Tariff Regulations, 2014. Coal auctions hold promise and eventually ensure more coal output to meet the needs of both existing and upcoming thermal power plants. Evidently there is no shortage of coal at this generating station and even the Petitioner has not claimed reduction of NAPAF on account of shortage of coal and uncertainty of assured coal supply on sustained basis in his petition. The Petitioner has only claimed low schedule from the Discoms to this power station. GRIDCO, BYPL and BRPL further submits that the Petitioner needs to undertake reality check about its high cost generation and if this tendency continues, they might feel more problems and it is in their own interest to reduce the cost of generation. The high cost generation by the Petitioner is neither in his own interest nor is it in the interest of overall economy. In response the Petitioner has submitted that as per Regulation 36(A)(a) of Tariff Regulation, 2014 NAPAF for recovery of fixed charges shall be 83%. Therefore, assumptions of 83% NAPAF till 2016-17 is as per Tariff Regulations, 2014. BYPL and UPPCL has submitted that PLF of station has been low in 2011-12, 2012-13 on account of 'various factors'. Hence tariff should be determined as per the Tariff Regulations, 2014. In response the petitioner has submitted that it has not prayed any relaxations in PLF norms.



66. We have considered the matter. The petitioner has considered the Target Availability norm of 85% during the period 2014-19. In terms of the above Regulations, Target Availability of 83% is considered for the period 2014-15 to 2016-17 and 85% for the period 2017-18 and 2018-19.

### **Heat Rate (kCal/kWh)**

67. The petitioner has claimed the heat rate as 2403.13 kCal/kWh. Regulation 36(C)(a) of the 2014 Tariff Regulations, provides Gross Station Heat Rate of 2450 kCal/kWh for existing coal based thermal generating stations of 200 MW sets and 2375 kCal/kWh for existing coal based thermal generating stations of 500 MW sets. Hence, the heat rate considered by the petitioner is as per norms and is allowed.

### **Auxiliary Energy Consumption**

68. The petitioner has claimed Auxiliary Energy Consumption at 6.47% during the period 2014-19 period. Regulation 36(E)(a) of Tariff Regulations, 2014 provides Auxiliary Energy Consumption of 5.25% for coal based generating stations of 500 MW sets and 8.5% for coal based generating stations of 200 MW sets with steam driven boiler feed pump.

69. The respondents GRIDCO, UPPCL, BYPL and BRPL has submitted that the petitioner has not detailed out the energy consumed for supply of power to housing colony and other facilities at the generating station. Accordingly, they have submitted that the petitioner may be directed to file all such information including the power generation allocated at the generating station for use by housing colony and other facilities to the Commission and the respondents. In response, the petitioner has submitted that the energy rate for the purpose of calculation of interest on working capital is to be determined based on the normative auxiliary power consumption as per 2014 Tariff Regulations, and the colony consumption has no effect on tariff of the generating station.

70. In view of the above, the Auxiliary Energy Consumption allowed based on weighted average of auxiliary consumptions, as under:



No of Units	MW	Auxiliary Consumption as per Regulation		Weighted average Auxiliary Consumptions Allowed
<b>A</b>	<b>b</b>	<b>c</b>	<b>d=a*b*c</b>	
3	200	8.50%	51.00	(51.00+52.50)/1600* =6.47%
2	500	5.25%	52.50	

### Specific Oil Consumption

71. 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

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

*“28. Interest on Working Capital:*

*(1) The working capital shall cover*

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

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

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

*(iii) Cost of secondary fuel oil for two months for generation corresponding to the normative annual plant availability factor, and in case of use of more than one secondary fuel oil, cost of fuel oil stock for the main secondary fuel oil;*

*(iv) Maintenance spares @ 20% of operation and maintenance expenses specified in regulation 29;*

*(v) Receivables equivalent to two months of capacity charges and energy charges for sale of electricity calculated on the normative annual plant availability factor; and*

*(vi) Operation and maintenance expenses for one month.*



## Fuel Components and Energy Charges in working capital

73. The petitioner has claimed cost for fuel components in working capital based on “as fired” GCV of coal (weighted average of 3438.00 kCal/ Kg) 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	13167.28	13203.35	13167.28	13167.28	13167.28
1B	Cost of Coal for Generation for 30 days	26334.56	26406.71	26334.56	26334.56	26334.56
2	Cost of Main Secondary Fuel Oil for 2 months	480.28	481.60	480.28	480.28	480.28

74. The respondents, GRIDCO, UPPCL, BYPL and BRPL has submitted that the petitioner has not submitted GCV of coal 'as received' and not yet made any arrangement for measurement of GCV on 'as received' basis. Further the respondents, GRIDCO, UPPCL, BYPL and BRPL have submitted that there is huge gap between the weighted average GCV of coal as billed and as fired basis for the month of January 2014, February 2014 and March 2014. In response, the petitioner has submitted that it has made detailed submissions on the issue of GCV of coal in Petition No. 283/GT/2014 in pursuance of the order dated 7.9.2015 passed by Hon'ble High court of Delhi in Writ Petition (C) no. 1641 of 2014.

75. The issue of “as received” GCV for computation of energy charges was challenged by NTPC and other generating companies through writ petition in the 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.

76. 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.”*

77. Further, the petitioner has claimed Energy Charge Rate (ECR) of ₹295.560 paise/kWh based on the weighted average price, GCV of coal (as fired basis) & oil procured and burnt for the preceding three months. It is observed that the petitioner has not placed on record the GCV of coal on “as received” basis though the petitioner was statutorily required to furnish such information with effect from 1.4.2014. In compliance with the direction of the Hon’ble High Court of Delhi, the Commission in its order dated 25.1.2016 in Petition No. 283/GT/2014 has clarified that the measurement of GCV of coal on as received basis shall be taken from the loaded wagons at the unloading point either manually or through the Hydraulic Augur. The petitioner has not submitted the required data regarding measurement of GCV of coal in compliance with the directions contained in the said order dated 25.1.2016. The present petition cannot be kept pending till the petitioner submits the required information. Hence, the Commission has decided to compute fuel components and the energy charges in the working capital by provisionally taking the GCV of coal on as “billed basis” 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





78. In view of the above, the cost for fuel components in working capital have been computed at 85% NAPAF for the years 2017-18 and 2018-19 based on “as billed” GCV (weighted average of 5054.77 kCal/ Kg) )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	8833.04	8833.04	8833.04	9045.88	9045.88
Cost of Coal for generation– 30 days	17666.07	17666.07	17666.07	18091.76	18091.76
Cost of secondary fuel oil – two months	480.28	481.60	480.28	491.86	491.86

79. Similarly, the Energy Charge Rate (ECR) based on operational norms specified under the 2014 Tariff Regulations and on “as billed” GCV of coal for preceding 3 months i.e. March to January 2014 is worked out as under:

	Unit	2014-19
Capacity	MW	1600.00
Gross Station Heat Rate	kCal/kWh	2403.13
Aux. Energy Consumption	%	6.47%
Weighted average GCV of oil (As fired)	kCal/lt.	9613.33
Weighted average GCV of Coal (As Billed)	kCal/kg	5054.77
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	49542.41
Weighted average price of Coal	₹/MT	3894.07
Rate of energy charge ex-bus	₹/kWh	2.002**

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

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

80. 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

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



(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
6228.95	6621.17	7038.04	7481.60	7953.09

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

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
6228.95	6610.95	7016.95	7448.95	7908.15

### Receivables

83. 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)	36305.44	36404.91	36305.44	37180.27	37180.27
Fixed Charges (two months)	13562.62	13928.44	14285.48	14702.95	14337.66
<b>Total</b>	<b>49868.06</b>	<b>50333.35</b>	<b>50590.92</b>	<b>51883.22</b>	<b>51517.93</b>

### O&M Expenses

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

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
2595.39	2754.56	2923.73	3103.73	3295.06

### Rate of interest on working capital

85. 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.”

86. In terms of the above regulations, SBI PLR of 13.50% (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	8833.04	8833.04	8833.04	9045.88	9045.88
Cost of coal towards generation- 30 days	17666.07	17666.07	17666.07	18091.76	18091.76
Cost of secondary fuel oil- 2 months	480.28	481.60	480.28	491.86	491.86
Maintenance Spares	6228.95	6610.95	7016.95	7448.95	7908.15
Receivables- 2 months	49868.06	50333.35	50590.92	51883.22	51517.93
O & M expenses- 1 Month	2595.39	2754.56	2923.73	3103.73	3295.06
<b>Total Working Capital</b>	<b>85671.80</b>	<b>86679.56</b>	<b>87510.98</b>	<b>90065.39</b>	<b>90350.64</b>
Rate of Interest (%)	13.50	13.50	13.50	13.50	13.50
<b>Interest on Working Capital</b>	<b>11565.69</b>	<b>11701.74</b>	<b>11813.98</b>	<b>12158.83</b>	<b>12197.34</b>

87. 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	7940.80	7940.80	7940.80	7940.80	3414.54
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	30724.50	30873.34	30873.34	30873.34	30873.34
Interest on Working Capital	11565.69	11701.74	11813.98	12158.83	12197.34
O&M Expenses	31144.73	33054.73	35084.73	37244.73	39540.73
Compensation Allowance	500.00	750.00	750.00	1000.00	1000.00
Special allowance	4157.03	4421.00	4701.73	5000.29	5317.81
<b>Total</b>	<b>86032.75</b>	<b>88741.62</b>	<b>91164.59</b>	<b>94218.00</b>	<b>92343.77</b>

### Month to Month Energy Charges

88. 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 formulae:



(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 = (a) Weighted Average Gross calorific value of coal as received, in kCal per kg, for coal based stations. (b)... (c) In case of blending of fuel from different sources, the weighted average Gross calorific value of primary fuel shall be arrived in proportion to blending ratio.

CVSF = Calorific value of secondary fuel, in kCal per ml.

ECR = Energy charge rate, in Rupees per kWh sent out.

GHR = Gross station heat rate, in kCal per kWh.

LC = Normative limestone consumption in kg per kWh.

LPL = Weighted average landed price of limestone in Rupees per kg.

LPPF = Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable, during the month. (In case of blending of fuel from different sources, the weighted average landed price of primary fuel shall be arrived in proportion to blending ratio)

SFC = Normative Specific fuel oil consumption, in ml per kWh.

LPSFi=Weighted Average Landed Price of Secondary Fuel in ₹/ml during the month.”

89. 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.

90. 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**

91. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices for application of tariff for the period 2014-19. The petitioner has deposited the filing fees for the period 2014-15 in terms of the provisions of the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, we direct that the petitioner shall be entitled to recover pro rata, the filing fees and the expenses incurred on publication of notices for the period 2014-15 directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered pro rata after deposit of the same and production of documentary proof.

92. 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.

93. Petition No. 316/GT/2014 is disposed of in terms of the above.

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

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

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

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

