

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 286/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 Hearing: 08.10.2015**

**Date of Order: 31.05.2016**

**In the matter of**

Approval of tariff of Faridabad Gas Power Station (431.586 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**

Haryana Power Purchase Centre  
Shakti Bhawan, Sector-IV,  
Panchkula, Haryana-134109

**...Respondent**

**Parties present:**

Shri Ajay Dua, NTPC  
Shri S.K Jain, NTPC  
Shri T. Vinodh Kumar, NTPC  
Shri Rajeev Choudhary, NTPC

**ORDER**

This petition has been filed by the petitioner, NTPC Ltd for approval of the tariff of Faridabad Gas Power Station (431.586 MW) ('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 ('the 2014 Tariff Regulations').



2. The generating station with a capacity of 431.586 MW comprises of two Gas Turbine (GT) units of 140.827 MW each and one Steam Turbine (ST) unit of 149.932 MW. The dates of commercial operation of the different units of the generating station are as under:

	<b>Date of commercial operation (COD)</b>
Unit-I (GT)	1.9.1999
Unit-II (GT)	1.1.2000
Unit-III (ST)	1.1.2001

3. The Commission by order dated 14.9.2012 in Petition No. 280/2009 had determined the tariff of the generating station for the period 2009-14 considering the opening capital cost of ₹94234.09 lakh (after removing un-discharged liabilities of Rs 5154.31 lakh as on 1.4.2009). Thereafter, the petitioner filed Petition No. 253/GT/2013 and Petition No.333/GT/2014 for truing-up of tariff of the generating station for the period 2009-14 in accordance with Regulation 6 of the 2009 Tariff Regulations and the Commission by a common order dated 18.9.2015 had approved the annual fixed charges of the generating station as under:

	<i>(₹ in lakh)</i>				
	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>	<b>2013-14</b>
Depreciation	4633.50	4759.13	4784.79	2415.35	2416.42
Interest on Loan	2099.28	1762.25	1344.23	1000.30	764.66
Return on Equity	10892.82	10912.69	10798.60	10811.19	11063.93
Interest on Working Capital	2505.53	2526.77	2547.29	2514.54	2544.61
O&M Expenses	6387.47	6754.32	7138.43	7548.44	7980.03
<b>Total</b>	<b>26518.60</b>	<b>26715.16</b>	<b>26613.34</b>	<b>24289.82</b>	<b>24769.64</b>

4. The capital cost and the annual fixed charges claimed by the petitioner for the period 2014-19 vide affidavit dated 31.10.2014 are as under:

#### **Capital Cost**

	<i>(₹ in lakh)</i>				
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Opening Capital Cost	98585.54	99110.41	99130.41	99130.41	99130.41
Add: Additional capital expenditure	524.87	20.00	0.00	0.00	0.00
<b>Closing Capital Cost</b>	<b>99110.41</b>	<b>99130.41</b>	<b>99130.41</b>	<b>99130.41</b>	<b>99130.41</b>
Average Capital Cost	98847.98	99120.41	99130.41	99130.41	99130.41

#### **Annual Fixed Charges**

	<i>(₹ in lakh)</i>				
	<b>2014-15</b>	<b>2015-16</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
Depreciation	2445.44	2469.98	2470.99	2470.99	2470.99
Interest on Loan	580.15	360.81	123.90	2.77	0.00
Return on Equity	9661.02	9677.67	9678.28	9678.28	9678.28
Interest on Working Capital	4215.93	4250.76	4269.81	4301.73	4338.70
O&M Expenses	6442.97	6847.11	7277.60	7734.47	8222.05
<b>Total</b>	<b>23345.51</b>	<b>23606.34</b>	<b>23820.58</b>	<b>24188.23</b>	<b>24710.02</b>



5. In compliance with the directions of the Commission, the petitioner has filed additional information with copy to the respondent. Accordingly, the petition was heard on 8.10.2015 and the Commission reserved its orders after directing the petitioner to file certain additional information. In response, the petitioner vide affidavit dated 6.11.2015 has filed the said information with copy to the respondent. The respondent has not filed its reply in the matter. We now proceed to examine the claim of the petitioner, on prudence check, based on the submissions and the documents available on record, as stated in the subsequent paragraphs.

### **Capital Cost**

6. Clause (1) of Regulation 9 of the 2014 Tariff Regulations provides that the capital cost as determined by the Commission after prudence check, in accordance with this regulation shall form the basis of determination of tariff for existing and new projects. Clause (3) of Regulation 9 provides as under:

*"9(3) 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 tried 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. Clause (6) of Regulation 9 of the 2014 Tariff Regulations provides as under:

*"9(6) The following shall be excluded or removed from the capital cost of the existing and new project:*

*(a) The assets forming part of the project, but not in use;*

*(b) De-capitalization of Asset;*

*(c) xxxxxx; and*

*(d) The proportionate cost of land which is being used for generating power from generating station based on renewable energy:*

*Provided that any grant received from the Central or State Government or any statutory body or authority for the execution of the project which does not carry any liability of repayment shall be excluded from the Capital Cost for the purpose of computation of interest on loan, return on equity and depreciation;"*

8. The opening capital cost as on 1.4.2014 claimed by the petitioner is as under:



	(₹ in lakh)
Capital cost as on 31.3.2014 as per order dated 14.9.2012 in Petition No. 280/2009	98547.52
Adjustments	38.02
Capital cost as on 1.4.2014	98585.54

9. The closing capital cost as on 31.3.2014 as admitted by the Commission vide order dated 18.9.2015 in the Petition No. 253/GT/2013 and Petition No. 333/GT/2014 is ₹98343.52 lakh. Accordingly, the closing capital cost of ₹98343.52 lakh is considered as the opening capital cost as on 1.4.2014 for the determination of tariff. However, in terms of Regulation 9(6)(d), the proportionate cost of land which is used for generating solar power is required to be excluded from the capital cost of this generating station. The petitioner has submitted that the cost of land used for solar generation is ₹539.14 lakh. Accordingly, the said amount has been excluded from the capital cost of the generating station. Based on this, the Capital cost, after exclusion of the land cost, works out to ₹97804.38 lakh and the same is approved as the opening capital cost as on 1.4.2014.

#### **Additional Capital Expenditure for 2014-19**

10. Clause (3) of Regulation 7 of the 2014 Tariff Regulations provides that the application for determination of tariff shall be based on admitted capital cost including any additional capital expenditure already admitted upto 31.3.2014 (either based on actual or projected additional capital expenditure) and estimated additional capital expenditure for the respective years of the tariff period 2014-15 to 2018-19. Clause (3) of Regulation 14 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."

11. The petitioner has not claimed any additional capital expenditure for the period from 2016-17 to 2018-19. However, the petitioner has claimed projected additional capital expenditure for the years 2014-15 and 2015-16 as detailed under;

Head of work / Equipment	Regulation	₹ in lakh	
		2014-15	2015-16
Inert Gas Fire extinguishing system	14(3)(ii)	45.49	0.00
Replacement of GT Generator Cooler-Gas Turbine	14(3)(vii)	57.53	0.00
Supply, Erection & Commissioning of Spare Transformer For Steam Turbine Generator –Pooled with Anta GPS	14(3)(vii)	421.85	0.00
Acoustic enclosure for Black Start DG Set	14(3)(ii)	0.00	20.00
<b>Total</b>		<b>524.87</b>	<b>20.00</b>



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

**A. Regulation 14(3)(ii)-Change-in-Law or Compliance of any existing law**

**Inert Gas Fire Extinguishing System**

13. The petitioner has claimed projected additional capital expenditure of ₹45.49 lakh in 2014-15 towards Inert Gas Fire extinguishing system under Regulation 14(3)(ii) of the 2014 Tariff Regulations. The Commission vide order dated 14.9.2012 in Petition No.280/2009 had disallowed the projected additional capital expenditure on this count observing as under:

*“27. The petitioner has not demonstrated the need for this expenditure based on compliance with the provisions of any statute and further stated that the generating station would be eligible for R&M after the period 2009-14 and the petitioner can undertake the said work during that time.”*

14. The petitioner vide affidavit dated 14.8.2014 has pointed out that the Commission in order dated 14.9.2012 while disallowing the expenditure had made the above observations and has prayed that the expenditure may be allowed. The Commission vide Record of the Proceedings of the hearing dated 8.10.2015 directed the petitioner to furnish documentary evidence justifying the claim for projected additional capital expenditure under Regulation 14(3)(ii). In response, the petitioner vide affidavit dated 5.11.2015 has submitted that initially there was no fixed fire protection system in control room and therefore, fixed fire protection system with inert gas agent as per National Fire Protection Association Standard-2001 and Bureau of Indian Standard IS 15493:2004 has been provided in unit control room, control equipment room and UPS room. It has also submitted that this standard contains requirements for total flooding and local application of clean agent fire extinguishing system. The petitioner has further submitted that based on phase wise completion, the work has been capitalised in 2013-14 and 2014-15. It has also stated that actual capitalisation in 2014-15 has been taken under exclusion as disallowed item in Petition No.333/GT/2014 based on the Commission's order dated 14.9.2012. The petitioner has submitted that the amount has been capitalised in 2014-15 on projection basis under Regulation 14(3)(ii) and alternatively, the Commission may consider allowing the expenditure under Regulation 14(3) (vii) of the 2014 Tariff Regulations.



15. The matter has been examined. The Commission vide order dated 14.9.2012 in Petition No. 280/2009 had observed as under:

*“27. The petitioner has not demonstrated the need for this expenditure based on compliance with the provisions of any statute. It is observed that pursuant to the Montreal protocol ratified in 1992, the petitioner has sought the capitalization of the expenditure during 2013-14, based on the CEA approval on 18.2.2008. It is not clear as to why the petitioner has delayed the capitalization of the expenditure on this count after much efflux of time, and has sought the capitalization of this expenditure during 2013-14 long after the approval of CEA. No reason has been submitted by the petitioner. In case of necessity due to fire hazard, steps could have been taken by the petitioner for capitalization of the same, immediately after approval of CEA. It appears that the said expenditure is required for installation of fire fighting system above the false floor in the central control room and in the two local control rooms where there is no fixed fire fighting system. In the above background, we are not inclined to allow the capitalization of the said expenditure for 2013-14. Even otherwise, the generating station would be eligible for R&M after the period 2009-14 and the petitioner can undertake the said work during that time. Accordingly, the claim of the petitioner during 2013-14 for expenditure under this head is not allowed.”*

16. As stated above, the Commission in order dated 14.9.2012 while disallowing the prayer of the petitioner for capitalization of the said work/asset in 2013-14 had observed that the generating station would be eligible for R&M after 2009-14 and that the petitioner can undertake the said work during that time. However, petitioner has not come up with any R&M proposal. In line with the said observations of the Commission, we are not inclined to allow the additional capitalization of the said work. Accordingly, the projected additional capital expenditure of ₹45.49 lakh claimed in 2014-15 is not allowed at present.

17. Alternatively, the petitioner has prayed for considering the said expenditure under Regulation 14(3)(vii) of the 2014 Tariff Regulations, quoted above. The matter has been examined. In our considered view, the expenditure claimed for Inert Gas fire extinguishing system do not in any way contribute to the efficient operation of the generating station. Therefore there is no reason to permit the additional capitalisation of the expenditure. Accordingly, the claim of the petitioner for projected additional capital expenditure of ₹45.49 lakh in 2014-15 is not allowed.



### **Acoustic Enclosure for Black Start DG Set**

18. The petitioner has claimed projected additional capital expenditure of ₹20.00 lakh in 2015-16 for Acoustic Enclosure for Black Start DG Set under Regulation 14(3)(ii) of the 2014 Tariff Regulations. In justification of the same, the petitioner vide affidavit dated 14.8.2014 has submitted that there is one black start DG set at the generating station. It has also submitted that as per consent issued by HSPCB vide letter dated 20.5.2014 regarding grant of consent for emission of air under Section 21/22 of the Air Prevention and Control of Pollution Act, 1981 from 1.4.2014 to 31.3.2015 it is essential to provide acoustic chamber on DG sets to control noise pollution and ensure noise level is within permissible limits. A copy of the said letter has been enclosed by the petitioner vide affidavit dated 31.10.2014.

19. The submission of the petitioner has been considered. It is noticed from the letter dated 20.5.2014 of the HSPCB that the grant of consent for emission of Air under the Air (Prevention & Control of Pollution) Act, 1981 in respect of the generating station for the period from 1.4.2014 to 31.3.2015 is also subject to the condition that the industry shall provide acoustic chambers on DG sets to control noise pollution and to ensure noise level within permissible limits. In this background, we are inclined to allow the projected additional capital expenditure of ₹20.00 lakh in 2015-16 claimed by the petitioner. This is however subject to the petitioner furnishing the grant of consent for emission of Air from HSPCB for the period from 1.4.2015 to 31.3.2016 in respect of this generating station at the time truing up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

### **B, Regulation 14(3)(vii)**

#### **Replacement of GT Generator cooler – Gas Turbine**

20. The petitioner has claimed projected additional capital expenditure of ₹57.53 lakh in 2014-15 towards Replacement of GT Generator cooler – Gas Turbine under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification, the petitioner vide affidavit dated 14.8.2014 has submitted that generators of the Gas Turbine are air cooled and the air in turn is cooled by the DM water in closed cycle and therefore the same DM water has to be cooled with 12 no of fans.





It has also submitted that as cooling effectiveness of the Generators cooler had deteriorated resulting in high temperature up to 110 deg C, the running of generators at high temperature may result in damage of stator winding insulation. Therefore, the petitioner has submitted that it is essential to replace the Generators cooler for efficient and successful operation of the machines and has prayed to allow the said expenditure. We have examined the matter. In consideration of the submissions of the petitioner and as the asset is necessary for successful & efficient operation of the generating station, the projected additional capital expenditure for ₹57.53 lakh for replacement of GT generator cooler, is allowed in 2014-15 under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

**Supply, erection & commissioning of Spare transformer for Steam Turbine Generator–pooled with Anta**

21. The petitioner has claimed projected additional capital expenditure of ₹421.85 lakh in 2014-15 for Supply, Erection & Commissioning of Spare Transformer for Steam Turbine Generator – pooled with Anta Gas Power Station of the petitioner under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification, the petitioner vide affidavit dated 14.8.2014 has submitted that Transformer for Steam Turbine is being procured to meet any contingency in case of failure of installed transformer of Steam Turbine, the lead time of which is already very high. It has also submitted that the spare transformer shall be pooled between Anta GPS & Faridabad GPS. Generator Transformer is a major component in the working of the generating station, the failure of which would lead to substantial loss in generation. Accordingly, it has submitted that the said asset is essential for efficient and successful operation of the plant and prayed for allowing the expenditure.

22. We have examined the matter. The COD of generating station is 1.1.2001 and the cut-off date of the generating station has expired long back. Since capitalization of spares are not permissible after the cut-off date of the generating station in terms of the 2014 Tariff Regulations, the additional capital expenditure of ₹421.85 lakh claimed for capitalization on projected basis in the year 2014-15 is not allowed. However, the petitioner is at liberty to approach the Commission after it is utilized and Commission may consider it appropriately after prudence.



23. Based on the above discussions, the projected additional capital expenditure allowed for the purpose of tariff for 2014-19 is summarized as under:

(₹ in lakh)		
Head of work / Equipment	2014-15	2015-16
Inert Gas Fire Extinguishing System	0.00	-
Replacement of GT Generator Cooler-Gas Turbine	57.53	-
Supply, Erection & Commissioning of Spare Transformer for Steam Turbine Generator –pooled with Anta GPS	0.00	-
Acoustic Enclosure for Black start DG set		20.00
<b>Total projected additional capital expenditure allowed</b>	<b>57.53</b>	<b>20.00</b>

### Capital Cost for 2014-19

24. No liabilities have been discharged during the period 2014-19. Accordingly, the capital cost approved for the generating station for the period 2014-19 is as under:

(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	97804.38	97861.91	97881.91	97881.91	97881.91
Add: Additional Capital Expenditure	57.53	20.00	0.00	0.00	0.00
<b>Closing Capital Cost</b>	<b>97861.91</b>	<b>97881.91</b>	<b>97881.91</b>	<b>97881.91</b>	<b>97881.91</b>
<b>Average Capital Cost</b>	<b>97833.15</b>	<b>97871.91</b>	<b>97881.91</b>	<b>97881.91</b>	<b>97881.91</b>

### Debt–Equity Ratio

25. 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 utilization 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 the 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.

26. The gross loan and equity amounting to ₹51222.73 lakh and ₹47120.79 lakh respectively approved as on 31.3.2014 vide Commission's order dated 18.9.2015 in Petition No. 253/GT/2013 with 333/GT/2014 has been considered as gross loan and equity as on 1.4.2014. However, the cost of land used for Renewable energy amounting to ₹539.14 lakh and deducted from the capital cost as on 1.4.2014 as per Regulation 9(6)(d) of the 2014 Tariff Regulations, has been adjusted in the debt equity ratio of 70:30. After adjustment, the gross normative loan and equity as on 1.4.2014 works out to ₹50845.33 lakh and ₹46959.05 lakh respectively. Further the additional expenditure approved above has been allocated in debt-equity ratio of 70:30.

### **Return on Equity**

27. 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.

28. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate of 23.939%. However, it is observed that in response to the directions of the Commission in Petition No. 290/GT/2014 (tariff of Singrauli STPS for 2014-19), the petitioner vide affidavit dated 23.9.2015 has worked out the effective tax rate as 22.584% based on the actual profit and tax paid for the year 2014-15. During the hearing of NTPC petitions, beneficiaries had raised an issue on the computation of effective tax rate. This Issue being not confined to a single petition and being generic in nature as the issue is applicable to all NTPC petitions uniformly need deliberation. On this issue against specific query through ROP, the petitioner vide its affidavit dated 08.01.2016 in petition number 280/GT/2014 pertaining to Farakka STPS Stage-III has filed Auditor's Certificate regarding deposit of advance tax on generation business for FY 2014-15 as well as Income Tax return (in a sealed envelope to the Commission) for the FY 2014-15 (AY 2015-16). We have perused both the documents submitted. Though 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 FY 2016-17. Accordingly, for the present, the effective tax rate (MAT) of 20.961% has been considered for the FY 2014-15 & 21.342% for FY 2015-16 onwards up to 2018-19 for the purpose of grossing up of the base rate of 15.5%. Based on the above, the rate of ROE works out to 19.610% for FY 2014-15 and 19.705% for FY 2015-16 onwards. This is however, subject to truing up. Accordingly, return on equity has been worked out as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Notional Equity- Opening	46,959.05	46,976.31	46,982.31	46,982.31	46,982.31
Addition of equity due to additional capital expenditure	17.26	6.00	0.00	0.00	0.00
Normative Equity - Closing	46,976.31	46,982.31	46,982.31	46,982.31	46,982.31
Average Normative Equity	46,967.68	46,979.31	46,982.31	46,982.31	46,982.31
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%



Tax Rate for respective years	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)- (annualized)</b>	<b>9,210.36</b>	<b>9,257.27</b>	<b>9,257.86</b>	<b>9,257.86</b>	<b>9,257.86</b>

## Interest on Loan

29. Regulation 26 of the 2014 Tariff Regulations provides as under:

**“26. Interest on loan capital:** (1) *The loans arrived at in the manner indicated in regulation 19 shall be considered as gross normative loan for calculation of interest on loan.*

(2) *The normative loan outstanding as on 1.4.2014 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2014 from the gross normative loan.*

(3) *The repayment for each of the year of the tariff period 2014-19 shall be deemed to be equal to the depreciation allowed for the corresponding year/period. In case of de-capitalization of assets, the repayment shall be adjusted by taking into account cumulative repayment on a pro rata basis and the adjustment should not exceed cumulative depreciation recovered upto the date of de-capitalization of such asset.*

(4) *Notwithstanding any moratorium period availed by the generating company or the transmission licensee, as the case may be, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the depreciation allowed for the year or part of the year.*

(5) *The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio after providing appropriate accounting adjustment for interest capitalized:*

*Provided that if there is no actual loan for a particular year but normative loan is still outstanding, the last available weighted average rate of interest shall be considered:*

*Provided further that if the generating station or the transmission system, as the case may be, does not have actual loan, then the weighted average rate of interest of the generating company or the transmission licensee as a whole shall be considered.*

(6) *The interest on loan shall be calculated on the normative average loan of the year by applying the weighted average rate of interest.*

(7) *The generating company or the transmission licensee, as the case may be, shall make every effort to re-finance the loan as long as it results in net savings on interest and in that event the costs associated with such re-financing shall be borne by the beneficiaries and the net savings shall be shared between the beneficiaries and the generating company or the transmission licensee, as the case may be, in the ratio of 2:1.*

(8) *The changes to the terms and conditions of the loans shall be reflected from the date of such re-financing.*

(9) *In case of dispute, any of the parties may make an application in accordance with the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999, as amended from time to time, including statutory re-enactment thereof for settlement of the dispute:*

*Provided that the beneficiaries or the long term transmission customers /DICs shall not withhold any payment on account of the interest claimed by the generating company or the transmission licensee during the pendency of any dispute arising out of re-financing of loan.”*



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

- i) The gross normative loan amounting to ₹50845.33 lakh has been considered as on 1.4.2014.
- ii) Cumulative repayment amounting to ₹44508.56 lakh as on 31.3.2014 as considered in order dated 18.9.2015 in Petition Nos.253/GT/2013 and 333/GT/2014 has been adjusted on account of exclusion of land cost of ₹539.14 used for Solar generation and after adjustments, the same is worked out as ₹44180.63 as on 1.4.2014.
- iii) After adjustments on account of cost of land, the net normative opening loan as on 1.4.2014 works out to ₹6664.70 lakh.
- iv) Addition to normative loan on account of additional capital expenditure approved above has been considered.
- v) Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2014-19. Further proportionate adjustment has been made to the repayments corresponding to discharges and reversals of liabilities considered during the respective years on account of cumulative repayment adjusted as on 1.4.2014.
- vi) In line with the provisions of the above regulation, the weighted average rate of interest has been calculated by applying the actual loan portfolio existing as on 1.4.2014 along with subsequent additions during the period 2014-19, if any, for the generating station. In case of loans carrying floating rate of interest the rate of interest as provided by the petitioner has been considered for the purpose of tariff. The calculations for weighted average rate of interest on loan have been enclosed as Annexure-I to this order.

31. Accordingly, Interest on loan has been worked out as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross Normative loan	50845.33	50885.60	50899.60	50899.60	50899.60
Cumulative repayment upto previous year	44180.63	46596.43	49015.71	50899.60	50899.60
Net loan-opening	6664.70	4289.18	1883.89	0.00	0.00
Additions due to additional capital expenditure	40.27	14.00	0.00	0.00	0.00
Repayment during the year	2415.80	2419.29	1883.89	0.00	0.00
Net Repayment	2415.80	2419.29	1883.89	0.00	0.00
Net loan-closing	4289.18	1883.89	0.00	0.00	0.00
Average Loan	5476.94	3086.53	941.94	0.00	0.00
Weighted Average Rate of Interest on loan	9.6310%	9.6043%	9.5800%	9.5800%	0.0000%
<b>Interest on loan</b>	<b>527.48</b>	<b>296.44</b>	<b>90.24</b>	<b>0.00</b>	<b>0.00</b>

## Depreciation

32. 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.”

33. The cumulative depreciation in order dated 18.9.2015 in Petition Nos. 253/GT/2013 with 333/GT/2014 is ₹54670.45 lakh as on 31.3.2014. Further, the value of freehold land of ₹7588.65



lakh (after adjustment of land cost of ₹539.14 lakh for renewable energy generation) has been considered for calculating the depreciable value. The balance depreciable value before providing depreciation for 2014-15 works out to ₹26549.59 lakh. Depreciation has been calculated by spreading over the balance depreciable value. The balance useful life as on 1.4.2014 as per order dated 18.9.2015 is 10.99 years and the same has been considered for calculation of depreciation. Accordingly, depreciation has been computed as under:

	(₹ In lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	97804.38	97861.91	97881.91	97881.91	97881.91
Additional capital expenditure	57.53	20.00	0.00	0.00	0.00
<b>Closing Capital Cost</b>	<b>97861.91</b>	<b>97881.91</b>	<b>97881.91</b>	<b>97881.91</b>	<b>97881.91</b>
<b>Average Capital Cost</b>	<b>97833.15</b>	<b>97871.91</b>	<b>97881.91</b>	<b>97881.91</b>	<b>97881.91</b>
Value of freehold land	7588.65	7588.65	7588.65	7588.65	7588.65
Balance useful life of the assets	10.99	9.99	8.99	7.99	6.99
Balance depreciable value	26549.59	24168.69	21758.40	19338.11	16917.82
<b>Depreciation (annualized)</b>	<b>2415.80</b>	<b>2419.29</b>	<b>2420.29</b>	<b>2420.29</b>	<b>2420.29</b>
Cumulative depreciation at the end	57086.25	59505.54	61925.83	64346.11	66766.40
<b>Cumulative depreciation (at the end of the period)</b>	<b>57086.25</b>	<b>59505.54</b>	<b>61925.83</b>	<b>64346.11</b>	<b>66766.40</b>

34. The petitioner is directed to furnish the details regarding the un-recovered depreciation in respect of this generating station at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

### O&M Expenses

35. 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/MW)				
2014-15	2015-16	2016-17	2017-18	2018-19
14.67	15.59	16.57	17.61	18.72

36. 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
6331.37	6728.43	7151.38	7600.23	8079.29





## Operational Norms

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

Target Availability for recovery of Fixed Charges	85
Gross Station Heat Rate (kcal/kwh) Combined cycle	1975
Auxiliary Energy Consumption (Combined cycle) %	2.5

38. The operational norms claimed by the petitioner are in accordance with Regulation 36 (vi) of the 2014 Tariff Regulations and hence in order and allowed.

## Water Charges

39. The petitioner has submitted that Water charges and capital spares consumed for the thermal generating stations are to be allowed separately. It has submitted that the details in respect of the water charges as applicable for 2013-14 have been furnished. Accordingly, the petitioner has prayed that water charges may be allowed based on actual of 2013-14. The petitioner has submitted that in accordance with the regulations, the petitioner shall be furnishing the details of actual for the relevant year at the time of truing-up and the same shall be subject to retrospective adjustment.

40. The matter has been examined. 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 capitalization or consumption of stores and spares and renovation and modernization.”*

41. In terms of above regulation, Water charges shall be allowed based on water consumption, depending upon type of plant, type of cooling water system etc., subject to prudence check. In this regard, the details furnished by the petitioner are as under:

Description	Remarks
Type of Plant	Gas
Type of cooling water system	Closed cycle
Total water charges in 2013-14	₹111.60 lakh



42. In order to observe the trend of actual water consumption and the rate of water charges, the petitioner was directed vide ROP of the proceedings dated 8.10.2015 to furnish the details of the actual water consumption and water charges during 2009-14. In response, the petitioner vide affidavit dated 5.11.2015 has furnished the details of Water consumption and Water charges for the last 5 years as detailed below:

Year	Water Consumption [Cu.ft.]	Rate ₹/ cu ft.	Water charges (in ₹)	Unused water disposal charges paid to UP irrigation (in ₹)	Total Water charges [in ₹]	Remark
2009-10	167163200.00	0.1	16716320.00	153000.00	16869320.00	Rate Rs. 250/- per 2500 cu ft. as per Haryana Govt notification dated 6.7.2007
2010-11	150000000.00	0.1	15000000.00	153000.00	15153000.00	
2011-12						
(upto 31.7.2011)	136000000.00	0.1	15540000.00	166000.00	15706000.00	
(w.e.f 1.8.2011)		0.12				
2012-13	121000000.00	0.12	14520000.00	156666.00	14676666.00	Rate Rs. 300/- per 2500 cu ft. as per Haryana govt. Notification dated 8.7.2011
2013-14	93000000.00	0.12	11160000.00	72794.00	11232794.00	
<b>Total</b>	<b>667163200.00</b>		<b>72936320.00</b>	<b>701460.00</b>	<b>73637780.00</b>	

43. It is noticed that the petitioner has claimed projected Water charges for the period 2014-19 considering the actual water charges for the year 2013-14 (for 2014-15) and further applied escalation @ 6.35% on year to year basis in terms of the 2014 Tariff Regulations, as under:

(₹ In lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
111.60	118.69	126.22	134.24	142.76

44. It is observed that the actual water consumption and water charges paid were less during the year 2013-14. The petitioner has considered the Water charges paid in the year 2013-14 as the projected charges for the year 2014-15 and has escalated the same @ 6.35% every year from 2015-16 to 2018-19. However, the water charges are unlikely to change unless there is change in rate of water charges and as such water charges of 111.60 lakh is allowed for all the years of tariff period. This is however subject to prudence check at the time of truing up of tariff of the generating station. The petitioner is directed to furnish the details such as the water



requirement for full load operation of the generating station, the water allocation by the Govt. of Haryana, the year-wise actual consumption and the PLF achieved by the generating station, at the time of truing up of tariff of the generating station in terms of Regulation 8 of the 2014 Tariff Regulations.

45. Based on the above discussions, the total O&M expenses, including water charges, as claimed by the petitioner vis-à-vis those allowed by the Commission for the purpose tariff for the period 2014-19 is as under:

		(₹ In lakh)				
Sl. No		2014-15	2015-16	2016-17	2017-18	2018-19
1	O&M Expenses claimed	6331.37	6728.43	7151.38	7600.23	8079.29
2	O&M Expenses allowed	6331.37	6728.43	7151.38	7600.23	8079.29
3	Water Charges claimed	111.60	118.69	126.22	134.24	142.76
4	Water Charges allowed	111.60	111.60	111.60	111.60	111.60
5	Total O&M expenses claimed (1 + 3)	<b>6442.97</b>	<b>6847.11</b>	<b>7277.60</b>	<b>7734.47</b>	<b>8222.05</b>
	<b>O&amp;M Expenses allowed (2 + 4)</b>	<b>6442.97</b>	<b>6840.03</b>	<b>7262.98</b>	<b>7711.83</b>	<b>8190.89</b>

#### **Enhancement of O&M Expenses**

46. The petitioner has submitted that the Salary / wage revision of the employees of the petitioner will be due with effect from 1.1.2017. It has also submitted that the O&M expenses claimed is based on 2014 Tariff Regulations and the escalation of 6.35% provided in the O&M expenses would not cover the enhanced employee cost w.e.f 1.1.2017. The petitioner, has therefore prayed for grant of liberty by the Commission to seek enhancement in the O&M expenses with effect from 1.1.2017 towards increased salary on account of salary revision due from 1.1.2017, based on the actual payments whenever paid by it under Regulation 55 & 56 of the 2014 Tariff Regulations. .

47. The matter has been examined. On this issue, the Commission in the Statement of Reasons to the 2014 Tariff Regulations has observed as under:

*"29.26 Some of the generating stations have suggested that the impact of pay revision should be allowed on the basis of actual share of pay revision instead of normative 40% and one generating company suggested that the same should be considered as 60%. In the draft Regulations, the Commission had provided for a normative percentage of employee cost to total O&M expenses for different type of generating stations with an intention to provide a ceiling limit so that it does not lead to any exorbitant increase in the O&M expenses resulting in spike in tariff. The Commission would however, like to review the same considering the macro economics involved as these norms are*



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

48. Accordingly, the prayer of the petitioner for enhancement of O&M expenses if any, due to pay revision may be examined by the Commission, on a case to case basis, subject to the implementation of pay revision as per DPE guidelines and the filing of an appropriate application by the petitioner in this regard.

### **Capital spares**

49. The petitioner has not claimed capital spares on projection basis during the period 2014-19. Accordingly, the same has not been considered in this order. The claim of the petitioner, if any, at the time of truing-up of tariff, shall be considered on merits after prudence check.

### **Interest on Working Capital**

50. 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 Cost and Energy Charges**

51. The petitioner has claimed the cost for fuel component in working capital based on price and GCV of APM gas, RLNG and Naphtha for preceding three months from January, 2014 to March,



2014 and the mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during the year 2013-14 which is 83.61%, 1.51% and 14.88% respectively. However, the petitioner vide affidavit dated 31.10.2014 has submitted that the mode of operation based on consumption of different fuel during 2013-14 has erroneously been submitted as that of the year 2008-09 and accordingly, the revised mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during the year 2013-14 which is 99.81%, 0.19% and 0.00% respectively has been furnished. The petitioner has further submitted that though the generation on Naphtha is zero during 2013-14, the petitioner has to maintain the Naphtha stock in view of the requirement of beneficiaries for Naphtha based generation. In view of this, the stock of Naphtha has to be maintained and therefore the cost of Naphtha stock actually maintained in the generating station may be considered while calculating the requirement for working capital. Based on the price and GCV of APM gas, RLNG and Naphtha for preceding three months from January, 2014 to March, 2014 and the mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during 2013-14 (which is 99.81%, 0.19% and 0.00%), the petitioner has claimed fuel cost 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>
Cost of Fuel (Gas) – 30 days	7252.25	7272.12	7252.25	7252.25	7252.25
Cost of liquid for 15 days	3111.64	3111.64	3111.64	3111.64	3111.64

52. The matter has been examined. Regulation 28(1)(b) of the 2014 Tariff Regulations provides as under:

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

*“(ii) Liquid fuel stock for 15 days corresponding to the normative annual plant 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;”*

53. The petitioner has not used any liquid fuel during 2013-14 i.e. during the preceding three months from January, 2014 to March, 2014 and from 1.4.2014. Accordingly, the petitioner is not entitled for liquid fuel stock in the working capital. The fuel components based on the price and GCV of APM gas, RLNG and Naphtha for the preceding three months from January, 2014 to March, 2014 and the revised mode of operation between APM gas, RLNG and Naphtha achieved



by the generating station during the year 2013-14 (i.e 99.81%, 0.19% and 0.00% respectively) as computed below has been considered for the purpose of tariff period 2014-19.

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Fuel (Gas) for 1 month	7152.91	7152.91	7152.91	7152.91	7152.91
Cost of liquid for 15 days	0.00	0.00	0.00	0.00	0.00

### Maintenance Spares

54. The petitioner has claimed Maintenance spares in the working capital as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
1,932.89	2,052.01	2,178.89	2,313.55	2,457.27

55. Regulation 28(1)(a)(iv) of the 2014 Tariff Regulations provide for maintenance spares @ 30% of the operation & maintenance expenses as specified in Regulation 29. Accordingly, the maintenance spares claimed by the petitioner is allowed.

### Receivables

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

(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19
Variable Charges -2 months	14,504.50	14,544.24	14,504.50	14,504.50	14,504.50
Fixed Charges - 2 months	3,726.14	3,767.45	3,807.50	3,872.60	3,958.51
	<b>18,230.64</b>	<b>18,311.69</b>	<b>18,312.00</b>	<b>18,377.11</b>	<b>18,463.02</b>

### O & M Expenses (1 month)

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

(Rs. in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
536.91	570.56	606.47	644.54	685.17

58. The O&M expenses for 1 month has been worked out and allowed as under:

(Rs. in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
536.91	570.00	605.25	642.65	682.57

### Rate of interest on working capital

59. 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.”*

60. In terms of the above regulations, SBI PLR of 13.50% 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
Fuel Cost (APM & RLNG) - 30 days	7,152.91	7,152.91	7,152.91	7,152.91	7,152.91
Liquid Fuel (Naphtha) Cost - 15 days	0.00	0.00	0.00	0.00	0.00
Maintenance Spares	1,932.89	2,052.01	2,178.89	2,313.55	2,457.27
O & M expenses - 1 months	536.91	570.00	605.25	642.65	682.57
Receivables - 2 months	18,230.64	18,311.69	18,312.00	18,377.11	18,463.02
<b>Total Working Capital</b>	<b>27,853.35</b>	<b>28,086.61</b>	<b>28,249.05</b>	<b>28,486.21</b>	<b>28,755.76</b>
Rate of interest	13.5000%	13.5000%	13.5000%	13.5000%	13.5000%
<b>Interest on Working Capital</b>	<b>3,760.20</b>	<b>3,791.69</b>	<b>3,813.62</b>	<b>3,845.64</b>	<b>3,882.03</b>

61. 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	2,415.80	2,419.29	2,420.29	2,420.29	2,420.29
Interest on Loan	527.48	296.44	90.24	0.00	0.00
Return on Equity	9,210.36	9,257.27	9,257.86	9,257.86	9,257.86
Interest on Working Capital	3,760.20	3,791.69	3,813.62	3,845.64	3,882.03
O&M Expenses	6,442.97	6,840.03	7,262.98	7,711.83	8,190.89
<b>Total</b>	<b>22,356.81</b>	<b>22,604.72</b>	<b>22,844.99</b>	<b>23,235.62</b>	<b>23,751.07</b>

### Energy/Variable Charges

62. Clause 6 sub-clause (b) 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:*

*(b) For gas and liquid fuel based stations*

$$ECR = GHR \times LPPF \times 100 / \{CVPF \times (100 - AUX) \}$$

Where,

*AUX = Normative auxiliary energy consumption in percentage.*

*CVPF = Gross calorific value of primary fuel as fired, in kCal per kg, per litre or per standard cubic metre, as applicable.*

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



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

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

LC = Normative limestone consumption in kg per kWh.

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

LPPF = Weighted average landed price of primary fuel, in Rupees per kg, per

63. The petitioner has claimed Energy Charge Rate (ECR) based on the price and GCV of APM gas, RLNG and Naphtha for preceding three months from January, 2014 to March, 2014 and the mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during 2013-14 (which is 99.81%, 0.19% and 0.00%) as under:

	Unit	2014-15, 2016-17, 2017-18 & 2018-19	2015-16
Capacity	MW	431.586	431.586
Fuel		APM+ RLNG+ Naphtha	
Normative Heat-Rate	kcal/kWh	1975	1975
Aux. Power Consumption	%	2.5	2.5
Weighted average price of Gas	/1000SCM	12557.97	12557.97
Weighted average price of LNG	/1000SCM	36838.16	36838.16
Weighted average price of Naphtha	/1000SCM	43478.03	43478.03
Weighted average GCV of Gas	Kcal/SCM	9192.03	9192.03
Weighted average GCV of LNG	Kcal/SCM	9206.67	9206.67
Weighted average GCV of Naphtha	Kcal/SCM	8258.97	8258.97
Revised Mode of Operation		99.81 %	
Gas		0.19 %	
LNG		0.00 %	
Naphtha			
<b>Rate of Energy Charge (ex-bus)</b>	<b>Paisa/ kWh</b>	<b>277.753</b>	<b>277.753</b>

64. Based on the operational norms, the weighted average price and GCV of APM gas, RLNG and Naphtha used for operation of the plant during preceding three months i.e. January, 2014, February-2014 and March, 2014 and the mode of operation, the Energy charges as computed below is allowed for the purpose of tariff for 2014-19.

	Unit	2014-15, 2016-17, 2017-18 & 2018-19	2015-16
Capacity	MW	431.586	431.586
Fuel		APM+ RLNG+ Naphtha	
Normative Heat-Rate	kcal/kWh	1975	1975
Aux. Power Consumption	%	2.5	2.5
Weighted average price of Gas	/1000 SCM	12557.97	12557.97
Weighted average price of LNG	/1000 SCM	36838.16	36838.16
Weighted average price of Naphtha	/1000 SCM	43478.03	43478.03
Weighted average GCV of Gas	Kcal/ SCM	9192.03	9192.03
Weighted average GCV of LNG	Kcal/ SCM	9206.67	9206.67
Weighted average GCV of Naphtha	Kcal/ SCM	8258.97	8258.97





Revised Mode of Operation		99.81 %	
Gas		0.19 %	
LNG		0.00 %	
Naphtha			
<b>Rate of Energy charge (ex-bus)</b>	<b>Rs /kWh</b>	<b>2.778</b>	<b>2.778</b>

65. Energy Charge rate in ₹/kWh on ex-power plant basis as claimed by the petitioner based on the revised mode of operation is in order and is allowed. Also, Energy Charge rate in ₹/kWh on ex-power plant on month to month basis, shall be calculated up to three decimal places in accordance with the formulae quoted above.

### **Application Fee and Publication Expenses**

66. 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 ₹1898978/- 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.

67. 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.

68. Petition No.286/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**



Calculation of Weighted Average Rate of Interest on Loan

Sl. no.	Name of loan	Particulars	2014-15	2015-16	2016-17	2017-18	2018-19
1	SBI-IV (T1,D4)	Net opening loan	485.71	242.86	-	-	-
		Add: Addition during the period					
		Less: Repayment during the period	242.86	242.86			
		Net Closing Loan	242.86	-	-	-	-
		Average Loan	364.29	121.43	-	-	-
		Rate of Interest	11.0000%	11.0000%	0.0000%	0.0000%	0.0000%
		<b>Interest</b>	<b>40.07</b>	<b>13.36</b>	-	-	-
2	Bond series XIII A	Net opening loan	11,173.60	8,380.20	5,586.80	2,793.40	-
		Add: Addition during the period				-	
		Less: Repayment during the period	2,793.40	2,793.40	2,793.40	2,793.40	
		Net Closing Loan	8,380.20	5,586.80	2,793.40	-	-
		Average Loan	9,776.90	6,983.50	4,190.10	1,396.70	-
		Rate of Interest	9.5800%	9.5800%	9.5800%	9.5800%	9.5800%
		<b>Interest</b>	<b>936.63</b>	<b>669.02</b>	<b>401.41</b>	<b>133.80</b>	-
3	<b>Gross Total</b>	Net opening loan	11659.31	8623.06	5586.80	2793.40	0.00
		Add: Addition during the period	0.00	0.00	0.00	0.00	0.00
		Less: Repayment during the period	3036.26	3036.26	2793.40	2793.40	0.00
		Net Closing Loan	8623.06	5586.80	2793.40	0.00	0.00
		Average Loan	10141.19	7104.93	4190.10	1396.70	0.00
		<b>Rate of Interest</b>	<b>9.6310%</b>	<b>9.6043%</b>	<b>9.5800%</b>	<b>9.5800%</b>	<b>0.0000%</b>
		<b>Interest</b>	<b>976.70</b>	<b>682.38</b>	<b>401.41</b>	<b>133.80</b>	<b>0.00</b>

