

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 269/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: 27th October, 2016

In the matter of

Determination of tariff for Rajiv Gandhi Combined Cycle Power Project, Kayamkulam (359.58 MW) for the period 2014-19

In the matter of

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

...Petitioner

Vs

Kerala State Electricity Board Limited
Vaidyuthi Bhavanam, Pattom
Thiruvananthapuram – 695004

...Respondent

Parties present:

Shri Ajay Dua, NTPC
Shri Rohit Chhabra
Shri B. S. Rajput, NTPC
Shri Bhupinder Kumar, NTPC
Shri T. Vinodh Kumar, NTPC
Ms. Suparna Srivastava, Advocate, KSEB

ORDER

This petition has been filed by the petitioner, NTPC for approval of tariff of Rajiv Gandhi Combined Cycle Power Project, Kayamkulam, Stage-I (359.58 MW) ('the generating station') for the period from 1.4.2014 to 31.3.2019 based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 ('the 2014 Tariff Regulations')



2. The generating station with a capacity of 359.58 MW comprises of two Gas Turbine units of 116.60 MW each and one Steam Turbine unit of 126.38 MW. The dates of commercial operation of the different units of the generating station are as under:

	Date of Commercial operation (COD)
Unit-I (GT)	1.1.1999
Unit-II (GT)	1.5.1999
Unit-III (ST) / Generating station	1.3.2000

3. The Commission by order dated 7.9.2012 in Petition No. 281/2009 had determined the annual fixed charges of the generating station for the period 2009-14. Thereafter, by Commission's order dated 24.6.2015 in Petition Nos. 242/GT/2013 and 218/GT/2014, the annual fixed charges of the generating station was revised after truing-up of the additional capital expenditure for 2009-14 in terms of Regulation 6(1) of the 2009 Tariff Regulations. Accordingly, the capital cost and the annual fixed charges approved by order dated 24.6.2015 are as under:

Capital Cost

	<i>(₹ in lakh)</i>				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Capital Cost	124916.25	124941.65	124984.73	124943.74	124986.97
Add: Additional Capital Expenditure	25.40	43.08	(-) 40.99	43.23	54.57
Closing Capital Cost	124941.65	124984.73	124943.74	124986.97	125041.54
Average Capital Cost	124928.95	124963.19	124964.23	124965.36	125014.25

Annual Fixed Charges

	<i>(₹ in lakh)</i>				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	6177.02	6193.52	6205.91	1917.68	1926.58
Interest on Loan	899.15	516.33	287.64	94.97	31.97
Return on Equity	8702.31	8604.26	8505.72	8505.80	8708.32
Interest on Working Capital	4812.71	4824.05	4850.79	4769.61	4797.43
O&M Expenses	5321.78	5627.43	5947.45	6289.05	6648.63
Total	25912.98	25765.59	25797.51	21577.12	22112.94

4. The petitioner vide affidavit dated 13.8.2014 has filed this petition and has sought 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	126950.87	127186.87	127186.87	127186.87	127356.87
Add: Additional capital expenditure	236.00	0.00	0.00	170.00	3000.00
Closing capital cost	127186.87	127186.87	127186.87	127356.87	130356.87
Average capital cost	127068.87	127186.87	127186.87	127271.87	128856.87

Annual Fixed Charges

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	2042.24	2053.71	2053.71	2064.25	2292.13
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	7683.31	7690.52	7690.52	7695.72	7792.62
Interest on Working Capital	14076.65	14139.09	14129.03	14157.82	14195.65
O&M Expenses	5280.04	5611.17	5963.90	6338.22	6737.73
Total	29082.25	29494.50	29837.16	30256.01	31018.13

5. The petitioner has filed the additional information in compliance with the directions of the Commission and has served copies on the respondent. Reply has been filed by the respondent, KSEB and the petitioner has filed its rejoinder to the said reply. 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 as on 1.4.2014

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

Clause (3) of Regulation 9 of the 2014 Tariff Regulations provides as under:

“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 trued up by excluding liability, if any, as on 1.4.2014;



(b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with Regulation 14; and

(c) expenditure on account of renovation and modernisation as admitted by this Commission in accordance with Regulation 15.

7. The petitioner has claimed opening capital cost of ₹126950.87 lakh as on 1.4.2014 as detailed under:

<i>(₹ in lakh)</i>	
Capital cost as on 31.3.2014 as per Commission's order dated 7.9.2012 in Petition No. 281/2009	126976.58
Adjustment	(-) 25.71
Capital cost claimed as on 1.4.2014	126950.87

8. The Commission in order dated 24.6.2016 in Petition No. 242/GT/2013 and Petition No. 218/GT/2014 had approved the closing capital cost of ₹125041.54 lakh as on 31.3.2014. However, the petitioner has claimed opening capital cost of ₹126950.87 lakh after adjustment of (-) ₹25.71 lakh as on 1.4.2014. It is noticed that the opening capital cost of ₹125041.54 lakh as on 1.4.2014 approved in order dated 24.6.2015 is less than the opening capital cost of ₹126950.87 lakh as on 1.4.2014 claimed by the petitioner. Accordingly, the opening capital cost of ₹125041.54 lakh as on 1.4.2014 has been considered for determination of tariff for the period 2014-19.

Additional Capital Expenditure

9. 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 or 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.”

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

(₹ in lakh)						
	Regulation	2014-15	2015-16	2016-17	2017-18	2018-19
Replacement of Freon based HVAC system with vapor absorption system	14(3)(ii)	75.00	0.00	0.00	0.00	0.00
Inert gas fire -fighting system for control room	14(3)(ii)	161.00	0.00	0.00	0.00	0.00
Seal Steam Modification	14(3)(vii)	0.00	0.00	0.00	170.00	0.00
Multi fuel firing facility for GT's	14(3)(vii)	0.00	0.00	0.00	0.00	3000.00
Total		236.00	0.00	0.00	170.00	3000.00

11. The petitioner has submitted that in terms of the provisions of the 2014 Tariff Regulations, the formats in regard to the estimated capital expenditure for the tariff years 2014-15 to 2018-19 has been filed and the projected additional capital expenditure claimed is based on provisions of Regulation 14 of the 2014 Tariff Regulations. It has further submitted that the Commission in its various tariff orders for the period 2009-14 had allowed additional capital expenditure in respect of certain works and tendering/execution etc. for these works have been taken up consequent upon the said approval granted by the Commission. The petitioner has further stated that some of these approved works are likely to be capitalized during the period 2014-19. Accordingly, the petitioner has prayed that capitalization of these approved works which were taken up based on approval of the Commission may please be allowed. In this background, the petitioner's claim for projected additional capital expenditure for 2014-19 has been examined in terms of the provisions of Regulation 14 (3) of the 2014 Tariff Regulations as discussed in the succeeding paragraphs.

Replacement of Freon based HVAC system with Vapor absorption system

12. The petitioner has claimed projected additional capital expenditure of ₹75.00 lakh in 2014-15 for replacement of Freon based HVAC system with Vapor absorption system. In justification of the same, the petitioner has submitted that the work was already admitted by



the Commission vide order dated 7.9.2012 in Petition No. 281/2009. It has further submitted that the replacement of the item is required in order to reduce the production and consumption of Ozone Depleting Substances (ODS), which is to be phased out as per the schedule specified under the Montreal protocol ratified by the Govt. of India. It has also submitted that the Ministry of Environment & Forests, Govt. of India has notified the Capital Ozone Depleting Substances (Regulation & Control) Rules, 2000. The petitioner has also clarified that freezing of technical specifications and technical terms took long time to negotiate and the price bid was opened in April, 2013 and work was awarded in August, 2013.

13. The respondent, KSEBL has submitted that the capitalization of this asset was allowed in 2011-12 for ₹75.46 lakh based on the submission of the petitioner that the asset is required in terms of the GOI notification dated 17.7.2000. The respondent has stated that the petitioner has not executed the work even after 12 years from the date of notification and has projected the same for the tariff period 2014-19. The respondent has further submitted that the projected expenditure of ₹75.00 lakh claimed for this asset in 2014-15 may be disallowed and the petitioner may be directed to account such expenditure, if any, in the O&M cost. In response, the petitioner has clarified that since the Commission had admitted the replacement of the asset during the period 2009-14 by orders dated 7.9.2012 and 24.6.2015, the same may be allowed for the period 2014-19.

14. The matter has been examined. It is observed that the Commission vide order dated 7.9.2012 in Petition No.281/2009 had allowed the projected additional capital expenditure of ₹75.46 lakh in 2011-12 for replacement of Freon based HVAC system with Vapor absorption system. However in Petition No. 242/GT/2013 & 218/GT/2014, the petitioner had submitted that the procurement process had started in 2011-12, but due to some clarification from the vendors the work was extended three times and finally the bid was opened in May, 2012. It



had further submitted that the said work would be capitalized in the next tariff period (2014-19) and no expenditure has been claimed towards the replacement of Freon based HVAC system with vapor absorption system during 2009-14. However, the Commission by order dated 24.6.2015 had not considered the capitalization of the expenditure for 2009-14, but had observed that the claim of this asset, if any, for the period 2014-19 will be governed by the provisions of the 2014-19 Tariff Regulations. The relevant portion of the order is extracted as under:

“16. Considering the fact that the petitioner has not claimed the capitalization of expenditure for the work of replacement of HVAC system with vapor absorption system, no additional capital expenditure has been allowed during the tariff 2009-14. However, the claim of the petitioner for capitalization of the said work, if any, during the tariff period 2014-19 will be governed by the provisions of the 2014 Tariff Regulations.”

15. In terms of the submission of the petitioner and considering the fact that the asset is required for compliance with the existing law, namely, the MOE&F, GOI notification dated 17.7.2000, we allow the additional capital expenditure of ₹75.00 lakh claimed by the petitioner for the year 2014-15.

Inert gas fire-fighting system for control room

16. The petitioner has claimed projected additional capital expenditure of ₹161.00 lakh in 2014-15 towards Inert gas firefighting system for control room. In justification of the same, the petitioner has submitted that as per the Montreal Protocol Treaty dated 16.9.1987, the production and consumption of Ozone Depleting Substances (ODS) is to be phased out as per the schedule specified in the protocol. Accordingly, it has submitted that MOEF, GOI has notified the Capital ODS (Regulation & Control) Rule 2000. The petitioner has further submitted that till 1991 all its generating stations were built with halon fire protection system and after Montreal Protocol, as a stop gap arrangement CO₂ extinguishers were deployed in control room as proper substitute for halon as the same was not available at that point of time of execution of project at Kayamkulam. The petitioner has further submitted that for safety of working personnel, the petitioner has proposed to install the inert gas fire extinguisher



system as per the National Fire Protection Association Standard on clean agent fire extinguisher system (NFPA-2001) in the Unit Control Room, Control Equipment Rooms & UPS rooms etc. It has also stated that for executing the works, Investment approval was accorded by the Board of the Petitioner company for various stations in the meeting held on 9.1.2008. Accordingly, the petitioner has stated that the work was awarded and executed and the inert gas system was commissioned in the current fiscal year.

17. The respondent, KSEBL has submitted that the claim of the petitioner may not be allowed as the petitioner has proposed to install the inert gas firefighting system citing the Montreal Protocol treaty signed on 16.9.1987 and Capital ODS rule, 2000, which cannot be treated as change in law. The respondent has further submitted that the projected expenditure claimed for this asset in 2014-15 may be disallowed and the petitioner may be directed to account such expenditure, if any, in the O&M cost. In response, the petitioner has submitted that the action for replacement of CO₂ system with inert gas fire extinguishing system was taken by the petitioner after ascertaining availability of proper substitute of halon in the market and the works projected are completed and are in use since 2014-15.

18. The Commission vide Record of the Proceedings of the hearing dated 24.5.2016 had directed the petitioner to furnish documentary evidence justifying the claim for projected additional capital expenditure of this asset under Regulation 14(3)(ii) of the 2014 Tariff Regulations. In response, the petitioner vide affidavit dated 28.6.2016 has submitted that after phase out of halon based fire-fighting system, inert gas based fire-fighting system came into practice and according for the safety of the working personnel in control room, NTPC proceeded to install the gas based fire extinguisher system as CO₂ system was not suitable from control room due to human presence. The petitioner has stated that thereafter, the work was awarded and executed and the inert gas system for control room at Kayamkulam was commissioned in the current financial year. It has also submitted that Regulation 12(f) (v) of



the CEA (Technical standards for construction of Electrical plants and Electrical lines) Regulations, 2010 provides for installing inert gas fire protection systems at unit control rooms, control equipment rooms and false ceiling of these rooms. As Regulation 14(3)(ii) provide for allowing additional capital expenditure on schemes on account of change-in-law as well as compliance with existing law, the claim of the petitioner may be allowed.

19. We have examined the matter. It is observed that the petitioner has not clearly 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 capitalization of the expenditure during 2014-15, based on the CEA (Technical standards for construction of Electrical plants and Electrical lines) Regulations, 2010. It is not known as to why the petitioner has sought the capitalization of this expenditure during 2014-15 after much efflux of time and long after the ratification of Montreal Protocol and after the regulations were specified by CEA. Further CEA regulation is applicable from the date of its notification which is 20.8.2012 and has no specific stipulation that existing station as on date of notification has to comply with provisions of CEA Regulation 2010. In this light CEA Regulation 2010 cannot be construed as change of law. Further, as per submissions of the petitioner, they had gone for CO₂ system in this generating station to avoid Halon system which is based on ozone depleting substance. It is pertinent to mention that the Commission in its order dated 31.5.2016 in Petition No. 286/GT/2014 (tariff of Faridabad GPS for 2009-14) had disallowed the capitalization of this item and 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 ceiling 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."

20. In the above background, the prayer of the petitioner for projected additional capital expenditure of ₹161.00 lakh towards inert gas fire-fighting system in 2014-15 is not allowed.

Seal Steam Modification

21. The petitioner has claimed projected additional capital expenditure of ₹170.00 lakh in 2017-18 towards Seal Steam Modification under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that presently seal steam for Steam turbine is tapped from LP steam header and during cold startups it takes 2.5 to 3 hrs after synchronization of GT to achieve the required parameters of (4-5 bar and 180-200 deg C) for seal steam charging and further startup of steam turbine. It has also submitted that this modification will lead to tapping from HP Steam headers which will save the startup time for cold startup and will result in machine to run more on combined cycle mode thereby benefitting the beneficiary in terms of availability of more power in combined cycle mode which is cheaper than open cycle mode.

22. The respondent, KSEBL has submitted that the claim of the petitioner may not be allowed as the petitioner is in the process of converting the fuel of the plant from Naphtha to LNG and also there is a proposal to enhance the installed capacity of the generating station from 359.58 MW to 1050 MW.

23. The petitioner was directed to submit a brief note on the proposed enhancement of installed capacity from 359.58 MW to 1050 MW along with the justification of additional capital expenditure of seal steam modification in the light of enhancement of capacity of the generating station. In response, the petitioner has submitted that test results will be obtained only after execution of the modification works in the year 2017-18 and the details will be submitted thereafter. The petitioner has further submitted that the work of seal



steam modification has no linkage with multi fuel firing conversion as the modification works are to be carried out in the steam turbine.

24. The matter has been examined. Considering the technical requirement of this asset and the fact that the modification will result in efficient operation of the generating station, as stated by the petitioner, we are inclined to allow the projected additional capital expenditure of ₹170.00 lakh in 2017-18 towards Seal Steam modification under Regulations 14(3)(vii) of the 2014 Tariff Regulations. This is however subject to the petitioner submitted the details such as test results of reduction in cold startup time after the completion of seal steam modification works, at the time of truing up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations.

Multi fuel firing facility for GT's

25. The petitioner has claimed projected additional capital expenditure of ₹3000.00 lakh in 2018-19 towards Multi fuel firing facility for GT's under Regulation 14 (3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that originally the generating station was envisaged to be based on Naphtha as fuel, but subsequently, a supplementary PPA was signed with the respondent, KSEB L in February, 2013 extending the validity of PPA for balance life of plant with a provision for technological conversion of generating station from Naphtha firing to Multi fuel (RLNG/ Natural/ Liquid) firing.

26. The respondent, KSEBL has submitted that the Commission may consider the claim of the petitioner only after detailed prudence check as the petitioner has not furnished the details of the claim duly substantiated with technical justification and documentary evidence as required under Regulation 14(3)(vii) of the 2014 Tariff Regulations.



27. In response to the directions of the Commission, the petitioner vide affidavit dated 28.6.2016 has submitted that the COD of the generating station is March, 2000 and the useful life of the gas/liquid based thermal generating station is 25 years. Accordingly, it has submitted that as per the supplementary PPA signed with respondent, the balance life of the generating station after the year 2018-19 shall be 6 years up to March, 2025. It has also submitted that while signing the supplementary PPA both parties have considered it prudent that cost of power will be optimum with multi fuel firing facility.

28. The Commission vide Record of the Proceedings of the hearing dated 12.7.2016 directed the petitioner to furnish brief note on the latest status of gas transportation pipeline work to bring gas from Kochi LNG terminal to generating station and also detailed breakup of the projected expenditure of ₹30 crore on Multi fuel firing system. In response, the petitioner vide affidavit dated 5.8.2016 had submitted as under:

“The petitioner is making all efforts for arranging RLNG for Kayamkulam Station. The following options have been discussed with GAIL, IOCL and BPCL for supply and transportation of LNG/RLNG from Kochi terminal to Kayamkulam station.

- *Laying of sub-sea pipelines*
- *Laying of underground pipelines*
- *Through Barges/ Inland Waterways*
- *Floating Storage Re-gassification Unit (FSRU)*

The supplementary PPA dated 15.02.2013 signed with KSEB provides that Gas Transportation Agreement (GTA) & Gas Supply Agreement (GSA), shall be signed with prior approval of KSEB. Accordingly, presentation has been made to KSEB in this regard. KSEB however, is yet to accept any of the above options due to various concerns relating to costs, environmental issues etc. The transportation of LNG/RLNG to Kayamkulam remains an issue as the permission to lay sub-sea/underground pipeline is yet to be received from Govt. of Kerala.

The detailed break-up of projected expenditure of Rs 30.00 Cr on multifuel firing system is as below:-

Sl. No.	Break-up of Projected Expenditure	Amount (₹ in crore)
1.	Supply package. which mainly include Gas Valve Module, Fuel Nozzles, Fire Protection System, Gas Conditioning Skid, Control/ Ball valves, Drain Tank, PLC, Software's, Spares and other miscellaneous items.	26.00
2.	Erection Package. Site services for installation and commissioning.	3.20
3.	Civil Works	0.80
4.	TOTAL	30.00



29. We have examined the matter. It is observed from the submissions of the petitioner that the respondent is yet to accept any of the 4 (four) options relating to supply and transportation of LNG/RLNG from Kochi terminal to Kayamkulam (place of generating station). It is further noticed that the State Govt. of Kerala has not yet given its approval/permission till date to lay sub-sea/ underground pipeline. In the backdrop of Gas Transportation Agreement (GTA) & Gas Supply Agreement (GSA) not been approved by the respondent, KSEB and the permission of the State Govt. of Kerala Govt. for laying the underground / sub-sea pipeline not been received till date, we find no reason to allow the expenditure claimed on a scheme with so many uncertainties and where the balance life of the generating station, as on the year projected additional capitalization shall be six years. Accordingly, the projected additional capital expenditure of ₹3000.00 lakh claimed in 2018-19 is not allowed.

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

<i>(₹ in lakh)</i>						
Sl. No.	Package Name	2014-15	2015-16	2016-17	2017-18	2018-19
1	Replacement of Freon based HVAC system with vapor absorption system	75.00	0.00	0.00	0.00	0.00
2	Inert gas fire-fighting system for control room	0.00	0.00	0.00	0.00	0.00
3	Seal Steam Modification	0.00	0.00	0.00	170.00	0.00
4	Multi fuel firing facility for GT's	0.00	0.00	0.00	0.00	0.00
	Total	75.00	0.00	0.00	170.00	0.00

31. Accordingly, the capital cost allowed for the purpose of tariff for 2014-19 is as under:

<i>(₹ in lakh)</i>					
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital cost	125041.54	125116.54	125116.54	125116.54	125286.54
Add: Additional Capital Expenditure	75.00	0.00	0.00	170.00	0.00
Closing Capital cost	125116.54	125116.54	125116.54	125286.54	125286.54
Average Capital cost	125079.04	125116.54	125116.54	125201.54	125286.54



Debt-Equity Ratio

32. 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.*

(1) 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.

(2) 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.

(3) 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.

(4) 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.”

33. Accordingly, gross loan and equity of ₹87946.70 lakh and ₹37094.84 lakh respectively as on 31.3.2014 as allowed in order dated 24.6.2015 in Petition No. 242/GT/2013 and 218/GT/2014 has been considered as on 1.4.2014. Further, the



admitted actual/ projected additional expenditure has been allocated between debt and equity in the ratio of 70:30.

Return on Equity

33. 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% has been 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.

34. 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:

$$\text{Rate of pre-tax return on equity} = \text{Base rate} / (1-t)$$

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.

(3) The generating company or the transmission licensee, as the case may be, shall true up the grossed up rate of return on equity at the end of every financial year based on actual tax paid together with any additional tax demand including interest thereon, duly adjusted for any refund of tax including interest received from the income tax authorities pertaining to the tariff period 2014-15 to 2018-19 on actual gross income of any financial year. However, penalty, if any, arising on account of delay in deposit or short deposit of tax amount shall not be claimed by the generating company or the transmission licensee as the case may be. Any under-recovery or over-recovery of grossed up rate on return on equity after truing up, shall be recovered or refunded to beneficiaries or the long term transmission customers/DICs as the case may be on year to year basis.

35. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate of 23.939%. However, in response to the directions of the Commission in order dated 27.6.2016 in Petition No. 270/GT/2014 (pertaining to Simhadri STPS, Stage-I of the petitioner company) it is noticed that 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%. Based on the above, the rate of ROE works out to 19.610% for the year 2014-15 and 19.705% for the year 2015-16 onwards. This is subject to truing up. Accordingly, Return on Equity has been computed as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Notional Equity- Opening	37094.84	37117.34	37117.34	37117.34	37168.34
Addition of equity due to additional capital expenditure	22.50	0.00	0.00	51.00	0.00
Normative Equity-Closing	37117.34	37117.34	37117.34	37168.34	37168.34
Average Normative Equity	37106.09	37117.34	37117.34	37142.84	37168.34
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%
Return on Equity(Pre Tax)- Annualised	7276.50	7313.97	7313.97	7319.00	7324.02



Interest on loan

36. 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 Decapitalization 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 up to 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.

37. Interest on loan has been worked out as mentioned below:

(a) The gross normative loan amounting to ₹87946.70 lakh has been considered as on 1.4.2014.

(b) Cumulative repayment of ₹87946.70 lakh as on 31.3.2014 has been considered as on 1.4.2014.

(c) Accordingly, the net normative opening loan as on 1.4.2014 works out as 'Nil'.

(d) Addition to normative loan on account of approved additional capital expenditure has been considered.

(e) Depreciation allowed for the period has been considered as repayment of normative loan during the respective years.

(f) In line with the provisions of the regulation, the weighted average rate of interest has been calculated applying the actual loan portfolio existing as on 1.4.2014 along with subsequent additions during the period 2014-19, if any, for the generating station. In case of loans carrying floating rate of interest the rate of interest as provided by the petitioner has been considered for the purpose of tariff, subject to truing up.

38. Necessary calculations for the interest on loan are as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross opening loan	87946.70	87999.20	87999.20	87999.20	88118.20
Cumulative repayment of loan up to previous year	87946.70	87999.20	87999.20	87999.20	88118.20
Net Loan Opening	0.00	0.00	0.00	0.00	0.00
Addition due to Additional capitalisation	52.50	0.00	0.00	119.00	0.00
Repayment of loan during the year	52.50	0.00	0.00	119.00	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 on Loan	9.8076%	8.8051%	6.5710%	6.5710%	6.5710%
Interest on Loan	0.00	0.00	0.00	0.00	0.00

Depreciation

39. 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 up to 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.”

40. The cumulative depreciation as on 31.3.2014 vide order dated 24.6.2015 in Petition No. 224/GT/2013 and 218/GT/2014 is ₹88946.84 lakh. Further, the value of freehold land included in the average capital cost has been adjusted while calculating depreciable value for the purpose of tariff. Accordingly, the balance depreciable value (before providing depreciation) for the year 2014-15 works out to ₹108784.31 lakh. The balance useful life as on 1.4.2014, as per the said order dated 24.6.2015 works out to 14.73 years, which is more than 12 years from the effective station COD of 8.7.1999. Depreciation shall be calculated by spreading over of the remaining depreciable value over the balance useful



life for the respective years. The petitioner has also claimed depreciation after spreading of the remaining depreciable value over the balance useful life. Necessary calculations in support of depreciation are as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Average Capital Cost	125079.04	125116.54	125116.54	125201.54	125286.54
Freehold land included above	4207.58	4207.58	4207.58	4207.58	4207.58
Depreciable value @ 90%	108784.31	108818.06	108818.06	108894.56	108971.06
Remaining useful life at the beginning of the year	10.27	9.27	8.27	7.27	6.27
Balance depreciable value	19837.48	17939.28	16003.69	14144.61	12274.99
Depreciation (annualized)	1931.95	1935.59	1935.59	1946.11	1958.32
Cumulative depreciation at the end	90878.78	92814.37	94749.96	96696.07	98654.39

O&M Expenses

41. Regulation 29(1) (c) of the 2014 Tariff Regulations provides the following O&M expense norms for combined cycle generating stations.

(₹ in Lakh/MW)				
2014-15	2015-16	2016-17	2017-18	2018-19
14.67	15.59	16.57	17.61	18.72

42. The petitioner has claimed the following O&M expenses for the generating station for 2014-19.:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
5275.04	5605.85	5958.24	6332.20	6731.34

43. The normative O&M expenses claimed by the petitioner are in terms of the 2014 Tariff Regulations and hence allowed.

Water Charges

44. 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

45. In terms of the above regulation, water charges are to be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check of the details furnished by the petitioner.

46. The petitioner has claimed water charges for the period 2014-19 as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
5.00	5.32	5.66	6.01	6.40

47. The details in respect of water charges such as type of cooling water system, water consumption, rate of water charges as applicable for the year 2013-14 as submitted by the petitioner is as under:

Description	Remarks
Type of Plant	Naphtha/ Gas
Type of cooling water system	Closed circuit cooling system with induced draft cooling tower
Consumption of water	1783891 KL
Rate of water charges	₹1 / KL
Total water charges	₹5.00 lakh

48. In response to the directions of the Commission, the petitioner vide affidavit dated 28.6.2016 has submitted the details of the actual water consumption, rate of water charges for the last 5 years i.e. 2010-11 to 2014-15 along with relevant documents in support of the claim as under:

	Water Consumption (KL)	Actual water charges paid (Rs in lakh)	PLF (%)
2010-11	2693390	5.0	60.41
2011-12	1194440	5.0	22.37
2012-13	2578678	5.0	49.17
2013-14	1783891	5.0	30.74
2014-15	1350257	5.0	26.01



49. It is observed that irrespective of the variation in water consumption during the last 5 years, the petitioner has paid water charges at a flat rate of ₹5.00 lakh each year during the period from 2010-11 to 2014-15. (i.e. in the tariff period 2009-14 and also in the 1st year of the tariff period 2014-19). In justification of the same, the petitioner has submitted that as per the minutes of meeting held with the officials of the various departments of the State Govt. of Kerala on 6.11.1996 and 30.3.1999, the rate of water charges are ₹1.0/ KL and the maximum amount payable by the petitioner is ₹5.00 lakh per annum. In view of this, the water charges of ₹5.00 lakh paid by the petitioner during the last 5 years (2010-15) including the year 2014-15, is allowed for the period 2014-19. The annual allocated water quantity for the generating station is 10.5 Cusec. The petitioner had submitted that year on year water consumption depends upon generation in a particular year and the reason for variation is due to different PLF in that particular year.

50. It is further observed that Water charges claimed for the year 2014-15 is ₹5.00 lakh/KL and the same has been escalated @ ₹6.35 lakh/KL by the petitioner for consecutive years from 2014-15 till 2018-19. However, based on the information submitted by the petitioner, the maximum water charges applicable for the generating station is ₹5.00 lakh per annum and there is no such agreement/notification for escalation of water charges during the period from 2014-15 to 2018-19. In view of this, water charges of ₹5.00 lakh per annum, presently be paid by the petitioner has only been allowed for the period 2014-19. The water charges allowed as above is subject to truing-up at the end of the tariff period for which the petitioner is directed to place on record all relevant information. Accordingly, the total O&M expenses, including water charges, as claimed by the petitioner and allowed for the purpose of tariff for 2014-19 is as under:

	<i>(₹ in lakh)</i>				
	2014-15	2015-16	2016-17	2017-18	2018-19
O&M Expenses allowed	5275.04	5605.85	5958.24	6332.20	6731.34
Water Charges allowed	5.00	5.00	5.00	5.00	5.00
Total O&M Expenses allowed	5280.04	5610.85	5963.24	6337.20	6736.34



Enhancement of O&M expenses

51. The petitioner has submitted that the salary / wage revision of the employees of the petitioner will be due with effect from 1.1.2017. The O&M expenses in the instant petition have been claimed by the petitioner based on the 2014 Tariff Regulations. The escalation of 6.35% provided in the O&M would not cover the enhanced employee cost w.e.f 1.1.2017. The petitioner has prayed to seek enhancement in the O&M expenses with effect from 1.1.2017 towards the increased salary on account of salary revision due from 1.1.2017, based on the actual payments whenever paid by it.

52. The matter has been examined. 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 macroeconomics 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”

53. 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

54. 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.



Operational Norms

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

Target Availability (%)	85.00
Heat Rate (kcal/kwh)	2000.00
Auxiliary Energy Consumption (%)	2.50

56. The operational norms claimed by the petitioner are discussed as under.

Normative Annual Plant Availability Factor

57. Regulation 36 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.

58. The petitioner has considered the Target Availability of 85% for the period 2014-19. Accordingly, in terms of the Regulation 36(A) of the 2014 Tariff Regulations, the Target Availability of 85% is considered for the period 2014-19.

Heat Rate (kcal/kwh)

59. Regulation 36(C)(a) (iv) of the 2014 Tariff Regulations provides the Gross Station Heat Rate of 2000 kCal/kWh for the generating station. Accordingly, the station heat rate of 2000kCal/kWh as considered by the petitioner is in order and is allowed.

Auxiliary Power Consumption

60. Regulation 36(E)(c) of the 2014 Tariff Regulations provides Auxiliary Power Consumption of 2.50% for the combined cycle generating station. Accordingly, the Auxiliary Energy Consumption considered by the petitioner is in order and is allowed.



Interest on Working Capital

61. Sub-section (b) 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) 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;*
- (iii) Maintenance spares @ 30% of operation and maintenance expenses specified in Regulation 29;*
- (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; and*
- (v) Operation and maintenance expenses for one month.*

Fuel Components in working capital

62. Regulation 28(1)(b) regarding fuel cost for gas based generating stations 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;”

63. The petitioner has claimed fuel (Naphtha) cost for one (1) month corresponding to the normative annual plant availability factor, duly taking into account mode of operation of the generating station on Naphtha fuel as 100% as under:

<i>(₹ in lakh)</i>				
2014-15	2015-16	2016-17	2017-18	2018-19
27828.64	27904.88	27828.64	27828.64	27828.64



64. It is observed that there is variation in the fuel cost claimed by the petitioner on account of the fact that the petitioner has computed the fuel cost for one month. In terms of Regulation 28(1)(b) of the 2014 Tariff Regulations, the fuel cost for 30 days corresponding to the normative annual plant factor is to be considered. Accordingly, the fuel cost for 30 days as worked out based on the above norms is allowed as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
27447.432	27447.432	27447.432	27447.432	27447.432

Energy Charge Rate (ECR)

65. The petitioner has claimed Energy Charge Rate (ECR) based on the weighted average GCV and price of Naphtha for the preceding three months i.e. January 2014, February 2014 and March 2014, normative heat rate and auxiliary power consumption and mode of operation as under:

	Unit	2014-15	2015-16	2016-17	2017-18	2018-19
Capacity	MW	359.58	359.58	359.58	359.58	359.58
Fuel		Naphtha	Naphtha	Naphtha	Naphtha	Naphtha
Normative Heat-Rate	kCal/kWh	2000	2000	2000	2000	2000
Aux. Power Consumption	%	2.50	2.50	2.50	2.50	2.50
Weighted average rate of fuel	/MT	70948.40	70948.40	70948.40	70948.40	70948.40
Weighted average GCV of fuel	Kcal/kg	11376.74	11376.74	11376.74	11376.74	11376.74
Rate of energy charge ex-bus	Paisa/kWh	1279.23	1279.23	1279.23	1279.23	1279.23

66. Based on the norms of operation, weighted average price and GCV of Naphtha used for operation of the plant during preceding three months i.e. January 2014, February 2014 and March 2014 and mode of operation, the ECR for the period 2014-19 is worked out and allowed as under:



	Unit	2014-15	2015-16	2016-17	2017-18	2018-19
Capacity	MW	359.58	359.58	359.58	359.58	359.58
Fuel		Naphtha	Naphtha	Naphtha	Naphtha	Naphtha
Normative Heat Rate	kCal/kWh	2000	2000	2000	2000	2000
Auxiliary Power Consumption	%	2.50	2.50	2.50	2.50	2.50
Weighted average rate of fuel	/MT	70948.40	70968.58	70968.58	70968.58	70968.58
Weighted average GCV of fuel	Kcal/kg	11376.74	11376.74	11376.74	11376.74	11376.74
Rate of energy charge ex-bus	₹/kWh	12.792	12.792	12.792	12.792	12.792

Maintenance Spares

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

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1584.01	1683.35	1789.17	1901.47	2021.32

68. Regulation 28(1)(b)(iii) of the 2014 Tariff Regulations provide for maintenance spares @ 30% of the operation & maintenance expenses as specified in Regulation 29. As specified in Regulation 29 (2) of the 2014 Tariff Regulations, the maintenance spares @ 30 % of the operation & maintenance expenses, including water charges, is allowed are as under:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1584.01	1683.25	1788.97	1901.16	2020.90

Receivables

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

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Variable Charges - 2 months	55655.79	55808.27	55655.79	55655.79	55655.79
Fixed Charges – 2 months	4745.67	4815.51	4875.20	4944.91	5019.42
Total	60401.47	60623.79	60530.99	60600.70	60675.22



O & M Expenses (1 month)

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

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
440.00	467.60	496.99	528.18	561.48

71. O&M expenses (one month) including water charges as allowed in terms of the 2014 Tariff Regulations is as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
440.00	467.57	496.94	528.10	561.36

Rate of interest on working capital

72. 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.”

73. In terms of the above regulations, SBI PLR of 13.50% (Bank rate 10.00 + 350 bps) has been considered for the purpose of calculating interest on working capital. Interest on working capital has been computed as under:

(₹ in lakh)					
	2014-15	2015-16	2016-17	2017-18	2018-19
Fuel cost – 30 days	27447.43	27447.43	27447.43	27447.43	27447.43
Liquid fuel stock - 15 days	13723.72	13723.72	13723.72	13723.72	13723.72
Maintenance Spares	1584.01	1683.26	1788.97	1901.16	2020.90
Receivables	60401.47	60623.79	60530.99	60600.70	60675.22
O&M expenses - 1 month	440.00	467.57	496.94	528.10	561.36
Total Working Capital	103596.63	103945.76	103988.05	104201.11	104428.63
Rate of Interest	13.50%	13.50%	13.50%	13.50%	13.50%
Interest on Working capital	13985.54	14032.68	14038.39	14067.15	14097.86

74. Accordingly, the annual fixed charges approved for the generating station for the period from 2014-19 is summarized as under:



(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	1931.95	1935.59	1935.59	1946.11	1958.32
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on Equity	7276.50	7313.97	7313.97	7319.00	7324.02
Interest on Working Capital	13985.54	14032.68	14038.39	14067.15	14097.86
O&M Expenses	5280.04	5610.85	5963.24	6337.20	6736.34
Total	28474.03	28893.09	29251.19	29669.46	30116.54

Note: All figures are on annualised basis. All figures under each head have been rounded. The figure in total column in each year is also rounded. As such, the sum of individual items may not be equal to the arithmetic total of the column.

Month to Month Energy Charges

75. 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)(b) of the 2014 Tariff Regulations read with Commission's order dated 25.1.2016 in Petition No. 283/GT/2014.

76. 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 filing fee and Publication Expenses

77. The petitioner has sought 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 ₹1579600/- each for the year 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 for the period 2014-15 and the expenses incurred on publication of notices (₹38134/-) directly from the respondents, on production of documentary proof. The filing fees for the



remaining years of the tariff period 2015-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

78. The annual fixed charges approved for the period 2014-19 as above are subject to truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.

79. Petition No. 269/GT/2015 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

