

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 263/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: 21st March, 2017

In the matter of

Approval of tariff of Ratnagiri Gas and Power Project (1967.08 MW) for the period from 1.4.2014 to 31.3.2019

And

Ratnagiri Gas and Power Pvt. Ltd,
5th Floor, GAIL Jubilee Tower,
B 35-36, Sector-I, NOIDA
Uttar Pradesh

...Petitioner

Vs

1. Maharashtra State Electricity Distribution Company Ltd,
5th Floor, Prakashgad
G-9, Prof Anant Kanekar Marg,
Bandra (East)
Mumbai-400051

2. Dadra & Nagar Haveli Power Distribution Company Ltd,
Opposite Secretariat
Amlj, Silvassa-396230
Dadra & Nagar Haveli

3. Electricity Department,
Daman & Diu,
Plot No. 35, Somnath
Nani Daman-396210

4. Electricity Department,
Govt of Goa,
3rd Floor, Vidyut Bhawan,
Panaji, Goa

....Respondents



Parties present:

Shri Arshad Jilani, RGPPL
Shri J.S. Chordia, RGPPL

ORDER

This petition has been filed by the petitioner, RGPPL for revision of tariff of Ratnagiri Power Station (1967.08 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 petitioner, a joint venture company of NTPC Ltd, GAIL, MSEB Holding Company and ICICI, IDBI, SBI and Canara Bank and established as a special purpose vehicle, had taken over the generating station from Dabhol Power Company. The power project of the petitioner is an inter-state generating station having arrangement for sale of electricity in more than one State. The generating station has been designed to operate on LNG as the main fuel for generation of electricity and GAIL has been entrusted with the responsibility of sourcing LNG on long term basis. The actual dates of commercial operation of the different blocks of the generating station are as under:

Blocks (Units)	Capacity (MW)	COD
Block – II	663.54	1.9.2007
Block – III	663.54	21.11.2007
Block – I	640	19.5.2009

3. The Commission vide order dated 18.8.2010 in Petition No.283/2009 had determined the tariff of the generating station for the period 2009-14 based on capital cost of ₹571296.15 lakh as on 1.4.2009. Thereafter, the Commission by order dated 21.6.2016 in Petition No. 258/GT/2014 had revised the tariff of the generating station for the period 2009-14 after truing-up of the actual additional capital expenditure incurred in respect of the generating station for the period 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 21.6.2016 are as under:

Capital Cost

	2009-10		2010-11	2011-12	2012-13	2013-14
	1.4.2009 to 18.5.2009	19.5.2009 to 31.3.2010				
Opening Capital Cost	571272.95	864364.47	864301.51	862942.87	861827.01	864677.75
Add: Additional capital expenditure	12.01	(-)62.96	(-)1358.64	(-)1115.86	2850.74	12108.46
Closing Capital Cost	571284.96	864301.51	862942.87	861827.01	864677.75	876786.21
Average Capital Cost	571278.95	864332.99	863622.19	862384.94	863252.38	870731.98

Annual Fixed Charges

	2009-10		2010-11	2011-12	2012-13	2013-14
	1.4.2009 to 18.5.2009	19.5.2009 to 31.3.2010				
Depreciation	29868.99	45343.51	45310.69	45254.30	45303.05	45700.55
Interest on Loan	35361.99	56472.65	52384.34	47914.11	43805.29	40557.51
Return on Equity	19703.37	27290.33	34042.29	34003.78	27240.55	27588.35
Interest on Working Capital	9244.88	13770.27	16355.28	18290.77	18032.22	17980.06
O&M Expenses	35048.18	51950.58	51950.58	51950.58	51950.58	51950.58
Total	129227.42	194827.36	200043.18	197413.55	186331.70	183777.07

4. The petitioner vide affidavit dated on 18.8.2014 has sought approval of tariff in accordance with the provisions of the 2014 Tariff Regulations. Subsequently, the petitioner vide affidavit dated 5.5.2016 had revised the annual fixed charges based on increase in additional capital expenditure and floating of PSDF scheme. Accordingly, the capital cost and the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

Capital Cost

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	878763.00	880935.17	881241.17	885955.17	899474.17
Add: Additional capital expenditure	2169.57	0.00	4714.00	13519.00	5830.00
Add: Discharges during the	2.60	306.00	0.00	0.00	0.00



year/period					
Closing capital cost	880935.17	881241.17	885955.17	899474.17	905304.17
Average capital cost	879849.08	881088.17	883597.17	892714.67	902389.17

Annual Fixed Charges

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	46279.80	46344.98	46477.00	46956.53	47465.40
Interest on Loan	36858.99	32659.22	28535.23	24777.99	21022.14
Return on Equity	35555.59	35801.09	35949.47	36488.39	37060.30
Interest on Working Capital	19727.35	19943.97	20108.18	20352.94	20621.57
O&M Expenses	52225.97	55786.39	59582.85	63635.04	67982.28
Total	190647.71	190535.64	190652.73	192210.88	194151.70

5. The petitioner has filed the additional information in compliance with the directions of the Commission and has served copies on the respondents. None of the respondents have filed their replies 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 records as stated in the subsequent paragraphs.

Capital Cost as on 1.4.2009

6. Clause 3 of Regulation 9 of the 2014 Tariff Regulations provides as under:

“The Capital cost of an existing project shall include the following:

(a) the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;

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

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

7. The annual fixed charges claimed in the petition is based on opening capital cost of ₹878763.00 lakh as on 1.4.2014 as against the admitted capital cost of ₹876786.21 lakh as on 31.3.2014 vide Commission’s order dated 21.6.2016 in Petition No. 258/GT/2014. Further, the petitioner vide affidavit dated 18.8.2014 has furnished the value of capital cost and liabilities as on 1.4.2014 as per books of accounts in Form-9E. The details of liabilities



and capital cost have been reconciled with the information available with the record of the Commission as under:

	(₹ in lakh)		
	As per Form-9E	As per records of Commission	Difference
Capital cost as on 1.4.2014 as per books	879589.61	879611.55	(-) 21.94
Liabilities included in the above	826.61	826.61	0.00

8. It is evident from the above that there is variation of ₹21.94 lakh in the capital cost as on 1.4.2014 as per the books and records available with the Commission. We direct the petitioner to submit clarification on the difference of capital cost of (-) ₹21.94 lakh at the time of revision of tariff based on true-up exercise in terms of Regulation 8 of the 2014 Tariff Regulations. Further, the total liabilities of ₹826.61 lakh as on 1.4.2014 corresponds to the admitted capital cost of ₹876786.21 lakh (on cash basis) as on 31.3.2014. Accordingly, the opening capital cost considered as on 1.4.2014, after removal of un-discharged liabilities works out to ₹876786.21 lakh (on cash basis).

Projected 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 total projected additional capital expenditure claimed during the period 2014-19 is detailed as under:

(₹ in lakh)								
Sl. No.	Regulations	2014-15	2015-16	2016-17	2017-18	2018-19	Total	
A	Items approved by the Commission for additional capitalization for the period 2009-14							
1	Additional dwelling units for employees	14(3)(vii)	0.00	0.00	0.00	1361.00	0.00	1361.00
2	Additional dwelling units for CISF	14(3)(vii)	0.00	0.00	0.00	1476.00	0.00	1476.00
3	Plant boundary wall	14(3)(vii)	0.00	0.00	0.00	2002.00	0.00	2002.00
4	Warehouse/stores construction	14(3)(vii)	0.00	0.00	0.00	440.00	0.00	440.00
5	WTP extension & O/H tank construction	14(3)(vii)	0.00	0.00	179.00	0.00	0.00	179.00
6	CT overflow collection tanks & pumping arrangement	14(3)(vii)	0.00	0.00	280.00	0.00	0.00	280.00



7	Chemistry lab. building construction	14(3)(vii)	9.68	0.00	0.00	0.00	0.00	9.68
8	Construction of 2 nos. Of check dams for rain water harvesting	14(3)(vii)	2.81	0.00	0.00	0.00	0.00	2.81
9	Construction of workshop building & purchase of workshop Machines	14(3)(vii)	0.00	0.00	0.0	600.0	0.00	600.00
10	Construction of entrance gate complex	14(3)(vii)	0.00	0.00	0.00	263.00	0.00	263.00
11	Construction of additional office building	14(3)(vii)	0.00	0.00	0.00	574.00	0.00	574.00
12	Permanent canteen building	14(3)(vii)	0.00	0.00	0.00	0.00	191.00	191.00
13	Construction of drains & culverts inside plant & Township	14(3)(vii)	0.00	0.00	0.00	0.00	94.00	94.00
14	Construction of Approach road to scrap yard. Cooling tower, Salt water intake	14(3)(vii)	0.00	0.00	0.00	0.00	216.00	216.00
15	Control room for power block	14(3)(vii)	0.00	0.00	0.00	0.00	230.0	230.00
16	Construction of service building	14(3)(vii)	0.00	0.00	0.00	0.00	424.0	424.00
17	Construction of electrical & C&I lab. building	14(3)(vii)	0.00	0.00	0.00	0.00	220.0	220.00
18	Training centre building construction	14(3)(vii)	0.00	0.00	0.00	224.0	0.00	224.00
19	Lift for power block	14(3)(vii)	0.00	0.00	0.00	0.00	111.0	111.00
20	Crane & lifting equipment	14(3)(vii)	0.00	0.00	0.00	0.00	370.0	370.00
Electrical capital items								
21	Station Service transformer	14(3)(vii)	527.10	0.00	0.00	0.00	0.00	527.10
22	Phase-I Extension transformer	14(3)(vii)	64.00	0.00	0.00	0.00	0.00	64.00
23	CW Load Centre transformer	14(3)(vii)	62.00	0.00	0.00	0.00	0.00	62.00
24	Augmentation of Shiral P/H	14(3)(vii)	0.00	0.00	0.00	0.00	0.00	0.00
	Total (A)		665.59	0.00	459.00	6940.00	1856.00	9920.59
B	New items proposed for additional capitalization							
1	Generator Transformer	14(3)(vii)	1503.98	0.00	0.00	0.00	0.00	1503.98
2	DGP(Digital Generator Protection) Relays for generator relay panel	14(3)(vii)	0.00	0.00	95.00	0.00	0.00	95.00
3	Installation of Disturbance Recorders for Generators & line	14(3)(vii)	0.00	0.00	200.00	176.00	0.00	376.00



4	Installation of 400kv-125 MVAR shunt reactor & two 400kv Bays	14(3)(vii)	0.00	0.00	0.00	0.00	1500.0	1500.00
5	Procurement & installation of MV switchgear boards	14(3)(vii)	0.00	0.00	665.00	0.00	0.00	665.00
6	Installation of additional Cable feeder for intake well pump House & Colony	14(3)(vii)	0.00	0.00	50.00	0.00	0.00	50.00
7	Sea water Revers Osmosis (SWRO) plant & associated pumping system	14(3)(vii)	0.00	0.00	2000.00	2000.00	0.00	4000.00
8	Fire water line inter connection with PH2 water Tank	14(3)(vii)	0.00	0.00	50.00	0.00	0.00	50.00
9	CT make up water over - ground lines	14(3)(vii)	0.00	0.00	0.00	1820.00	1820.00	3640.00
10	Augmentation of plant area lighting	14(3)(vii)	0.00	0.00	0.00	75.00	75.00	150.00
11	CCTV for Security in power plant area	14(3)(vii)	0.00	0.00	0.00	200.00	0.00	200.00
12	Renovation of AC system of power block control system equipment room like BAC, PEECC, control room etc.	14(3)(vii)	0.00	0.00	70.00	0.00	0.00	70.00
13	Control system & excitation system of frame 6b unit- i. Control system obsolete mark-V to mark- Vie migration and digital front end (DFE) retrofit for Ex2000 Excitation system	14(3)(vii)	0.00	0.00	0.00	555.0	0.00	555.00
14	Window upgradation i. HMI & Historian upgrade for all GTs to migrate from Window-XP ii. ACLE controller upgrade for GT Excitation system EX2100 iii. UCVG controller upgrade for GT LCI system LS2100	14(3)(vii)	0.00	0.00	0.00	732.00	0.00	732.00
15	DCS Foxboro system upgradation	14(3)(vii)	0.00	0.00	500.00	0.00	0.00	500.00
16	Installation of DG set for safe coasting down of machines in black out condition	14(3)(vii)	0.00	0.00	525.00	0.00	0.00	525.00



17	400kV Breakers	14(3)(vii)	0.00	0.00	0.00	800.0	0.00	800.00
18	Block-1 Load Centre LV Breakers	14(3)(vii)	0.00	0.00	100.0	0.00	0.00	100.00
19	H2 Dryers for Block 1 & Dew point analyser for Block I, II & III	14(3)(vii)	0.00	0.00	0.00	221.00	579.00	800.00
	Total (B)		1503.98	0.00	4255.00	6579.00	3974.00	14808.00
	Discharges during the year/period (C)		2.60	306.00	0.00	0.00	0.00	308.60
	Grand Total (A+B+C)		2172.17	306.00	4714.00	13519.00	5830.00	26541.17

Additional capital expenditure against claims already approved during 2009-14 but could not be capitalized upto 31.3.2014

11. The petitioner vide affidavit dated 18.8.2014 has claimed total projected additional capital expenditure of ₹16292.08 lakh towards various assets/works for the period 2014-19 under Regulation 14(3)(vii) of the 2014 Tariff Regulations. However, the petitioner vide affidavit 5.5.2016 has revised the claim of additional capital expenditure to ₹26232.57 lakh for the period 2014-19 under Regulation 14(3)(vii) of the 2014 Tariff Regulations in respect of assets required for efficient operation of the generating station.

12. The petitioner has further submitted that works / equipment mentioned at Sl. No. 1 to 24 were approved by the Commission in order dated 18.8.2010 in Petition No. 283/2009 for the period 2009-14 but could not be completed due to financial constraints of the Petitioner Company on account of less declaration of capacity due to non-availability of allocated domestic natural gas, non-payment of fixed charges by the beneficiaries on account of declaration of capacity on RLNG. Accordingly, the petitioner has submitted that the works are proposed to be completed in 2014-19 period and has prayed that same may be allowed under the Regulation 14 (3) (vii) of the 2014 Tariff Regulation.

13. We have examined the matter. It is noticed that the additional capital expenditure (at Sl. No. 1 to 24) claimed after the cut-off date for the period 2014-19 mainly pertains to the construction of office building such as service building, electrical and C&I Lab, control



rooms for power blocks, workshop, construction of drain and culverts, and construction of boundary wall and were not completed earlier due to paucity of funds and major emphasis on revival of gas turbines. Considering the fact that these expenditures are necessary for the smooth and successful operation of the generating station, the additional capital expenditure to ₹26232.57 lakh is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

New Items

Generator Transformer

14. The petitioner has claimed projected additional capital expenditure of ₹1503.98 lakh towards Generator Transformer (GT) in year 2014-15 and has submitted that the said asset is critical and an important part that serves the purpose of stepping up the generation voltage and matching the same with the transmission system voltage and the failure of the same would lead to generation loss. The petitioner has further submitted that at present there are nine transformers consisting of three of each Power block and the life of the nine GTs since commissioning has exceeded for more than 15 years and failure of any transformer will directly affect the generation of the plant. In addition, the petitioner has submitted that due to the failure of one of the Generator Transformer in 2011-12, the petitioner has suffered generation loss and due to these losses, the petitioner had obtained an old used GT on loan from NTPC, Korba to run this generating station and the same was later on purchased since the GT could not be returned to NTPC due to lead time for the procurement of new GT. Considering the fact, that these 9 GTs were more than 15 years old the petitioner has stated that it was essential to keep one GT as spare for the smooth & efficient operation of the generation plant.

15. The matter has been examined. It is observed that the generator transformer claimed by the petitioner is for keeping the same as a standby in case of failure of any existing



generator transformer which are under operation. Since, capital spares claimed after the cut-off date of the generating station is not admissible in terms of the 2014 Tariff Regulations, the projected additional capital expenditure of ₹1503.98 lakh claimed by the petitioner is not allowed.

Digital Generator Protection (DGP) relays for generator relay panel

16. The petitioner has claimed projected additional capital expenditure of ₹95.00 lakh in 2016-17 towards Digital Generator Protection (DGP) relays for generator relay panel installed at the generating station. In justification to the same, the petitioner has submitted that these relays are of digital type and have been declared obsolete by its OEM (M/s GE) vide Notification dated 20.12.2010 and also lack the functionalities available with numerical relays which are the present day industry standard. Accordingly, the petitioner has stated that in such circumstances it has become necessary to replace the digital relay with numerical type relay to improve the reliability of the system and the work towards installation of these relays is proposed to be completed in 2016-17.

17. The matter is examined. It is observed that the DGP relays were become obsolete and hence the same is required to be replaced with numerical relays as per the present day industry standard. It is also observed from the Notification dated 20.12.2010 that the customer support presently available from M/s. GE (OEM) towards the DGP relay is to expired during 20.12.2013. In view of this we are inclined to allow the projected capital expenditure of ₹95.00 lakh in terms of Regulation 14(3) (vii) of the 2014 Tariff Regulations. However, the petitioner is directed to submit the copy of the document explaining customer support available from M/s. GE at the time of truing-up in terms of Regulation 8 of the 2014 Tariff Regulations.



Installation of Disturbance Recorders for Generators & line and transformer

18. The petitioner has claimed projected additional capital expenditure of ₹200.00 lakh in 2016-17 and ₹176.00 lakh in 2017-18 towards installation of on-line DGA monitoring for all 400kV transformer for installation of Disturbance Recorders for Generators and line as per clause 8.6.3.1 of technical specification of Generator transformers/ Unit Auxiliary transformers/ Station Transformers notified by CEA. CEA has recommended the online installation of DGA monitoring for power transformers. The petitioner has submitted that there are 9 Nos Generator transformers, 2 Nos Station transformers and 6 Nos Unit Auxiliary transformers installed at the generating station and none of the transformers have online DGA. The petitioner has further stated that the generating station has experienced catastrophic failure of a Generator Transformer in July 2010 and as per the current practice followed by NTPC and PGCIL, all EHV transformers are fitted with on-line gas DGA analysers for close monitoring of equipment and to prevent catastrophic failures of EHV transformers. Accordingly, it has prayed that the projected expenditure may be allowed.

19. It is observed from the above submissions that CEA in its report regarding Standard Technical Specification for Sub-critical Thermal Power Project (2X500 MW or above) table 8.6.3 has recommended the installation of online DGA analysers for close monitoring of Power Transformers and to prevent the catastrophic failures of EHV transformers. In this background, the projected additional capital expenditure of ₹200.00 lakh in 2016-17 and ₹176.00 lakh in 2017-18 is allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations and since the asset is required for efficient operation of the generating station.

Installation of 400 kv-125 MVAR shunt reactor & two 400 kv Bays

20. The petitioner has claimed projected additional capital expenditure of ₹1500.00 lakh in 2018-19 towards Installation of 400 kv-125 MVAR shunt reactor and two 400kv Bays. In



justification of the same, the petitioner has submitted that the voltage level of transmission zone in the vicinity of the generating station generally specified under the Indian Energy Grid Code (IEGC) limit and persisting high voltage causes over stressing of switch yard and downstream equipment. It has further submitted that on many occasions, the voltage level crossed the trip limit and the generating station has experienced black out condition and the repeated tripping and charging of lines has also affected the life of Switch yard equipment. The petitioner has further stated that this issue was discussed in OCCMs of WRPC and was taken up in the 24th meeting of TCC/WRPC held on 9.10.013 at GOA and accordingly the installation of one 125 MVAR bus reactor at the generating station switchyard to control the voltage level was agreed to by the Members of the Standing Committee. In addition, the petitioner has stated that the members of WRPC had also recommended that the additional capital expenditure of reactor shall be passed on to beneficiaries by the petitioner through tariff mechanism.

21. In view of the submission of the petitioner and considering the fact that the asset is required for efficient operation of the generating station the projected additional capital expenditure of ₹1500.00 lakh is allowed under the Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Procurement & installation of MV switchgear boards

22. The petitioner has claimed projected additional capital expenditure of ₹665.00 lakh in 2016-17 towards Procurement and installation of MV switchgear boards. In justification to the same, the petitioner has submitted that at present the existing MV switchgear installed at the generating station are of M/s. GE Powervac make imported by Dabhol Power Company and is approximately 16-17 years old. The petitioner has further submitted that this type of switchgear is already obsolete and spares for this switchgear are extremely expensive and generally not available to maintain the existing GE MV switchgear. Hence, the petitioner has



proposed to replace the selected GE switchgear with indigenous make switchgear for plant reliability and has prayed for allowing the projected additional capital expenditure for 2016-17.

23. The matter has been examined. It is observed from the above that the existing MV switchgear installed at the generating station is of M/s. GE Powervac make and is already obsolete and spares for this switchgear is extremely expensive and is generally not available. It is evident from the documentary evidence furnished by the petitioner (letter dated 5.1.2015 of OEM), that HV/MV switchgear supplied to the generating station is presently not in supply as a standard item. In view of the submission of the petitioner and considering the fact that the asset is required for efficient and successful operation of the generating station the projected additional capital expenditure of ₹665.00 lakh is allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Installation of additional Cable feeder for intake well pump House & Colony

24. The petitioner has claimed projected additional capital expenditure of ₹50.00 lakh in 2016-17 towards installation of additional Cable feeder for intake well pump House & Colony. In justification to the same, the petitioner has submitted that the power supply from the Power block to intake well pump house is extended through two 11KV overhead feeders on single structure and in case of field fault in any one of the feeders, both feeders need to be shut down to attend the fault. The petitioner has stated that in such circumstances there is no supply at intake pump house to operate salt water make up pump which is very critically required to operate power station as continuous make up is required to meet the evaporation loss while removing the condenser heat. It has further submitted that the power supply to the residential complex is extended through single 11 KV overhead line and any fault in feeder cause complete black out in residential complex. Therefore in order to improve the reliability of the generating station, one additional feeder for intake well pump house and colony area has been planned for uninterrupted power supply to intake pump house as well as colony.



Accordingly, the petitioner has prayed for allowance of the expenditure for the period 2016-17 claimed towards the installation of additional cable feeder for intake well pump house and colony.

25. The matter has been examined. Keeping in view the submission of the petitioner and considering the fact that the said expenditure is required for efficient operation of the generating station the projected additional capitalization of ₹50.00 lakh in the 2016-17 is allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Sea water Reverse Osmosis (SWRO) plant & associated pumping system

26. The petitioner has claimed projected additional capital expenditure of ₹2000.00 lakh each during 2016-17 and 2017-18, towards Sea water Reverse Osmosis (SWRO) plant & associated pumping system. In justification of the same, the petitioner has submitted that at present the generating station is dependent on Koyna tail water from Shiral Pump House which is located at 45 Kms (approx) away for fresh water supply. The petitioner has further submitted that the availability of water from this source was severely affected during the period from April 2014 to June 2014 thereby leading to declaration of units as non- available for generation and the problem faced were many fold from the salinity ingress to losses enroute and severe deterioration of the total system from pumping station to pipeline (Installed in 1994 by MIDC). In addition, the petitioner has submitted the reasons for the line rupture and leakage which is the frequent start up of pumping system due to frequent power failure at Shiral pump house which is being managed by M/s. MAHAGENCO (Agency responsible for operation & maintenance of Shiral Pump house and associated pipe line). The petitioner has stated that despite of best efforts when the pumping was made available by Maha Genco, against the pumping of 900 M³/hr water, the generating station only received less than 200 M³/hr water during the said period. The petitioner has further submitted that the reason for less receipt of water was mainly due to illegal connection at



different points enroute and due to this the emergency storage reservoir level went below the minimum level of 101.4 m for almost one month during May 2014 to June 2014. It has further submitted that these problems were accelerated exponentially since 2010 and it is difficult to depend on this fresh water supply from Koyna Tail for the potable water requirement and there is no other sweet water body in the vicinity of the generating station and hence, the system requires total replacement or major R&M involving huge cost. Accordingly, the petitioner has prayed that the Commission may allow the projected additional capital expenditure claimed towards installation of Sea water Reverse Osmosis (SWRO) plant & associated pumping system in 2016-17 and 2017-18.

27. The matter has been examined. It is observed that the petitioner has proposed to carry out alternate sourcing through desalination of sea water (of output capacity 2x150 M³/Hr) through Reverse Osmosis. It is further noticed that the system consists of pre-treatment for removing suspended solids, Stage - I RO for reducing the TDS from 36,000 ppm (approx) to < 500 ppm with 40 % recovery and Stage -II RO to bring down the TDS to < 50 ppm. In this background and considering the fact that the asset is required for efficient operation of the generating station the projected additional capital expenditure of ₹2000.00 lakh in 2016-17 and ₹ 2000.00 lakh in 2017-18 is allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Fire water line inter connection with PH2 water Tank

28. The petitioner has claimed projected additional capital expenditure of ₹50.00 lakh in 2016-17 towards fire water line inter connection with PH2 water Tank. The petitioner in its justification has submitted that a reliable source of water supply is essential for fire fighting system to meet any emergency and the fire fighting system of the generating station is fed from the raw water storage tank of Phase-I only. The petitioner has further submitted that the generating station has another source of water supply i.e. raw water storage tank of Phase -II



but it is not connected to fire fighting system. The petitioner has further stated that in case of non-availability of raw water Tank Phase-I due to any maintenance work or breakdown, fire water system will become unavailable and it is not safe to operate such a large power station without availability of adequate fire fighting system. Accordingly, the petitioner has proposed to provide interconnection between Phase- I and Phase-II raw water storage systems to ensure availability of adequate water for fire fighting system for safety of station equipment. Thus, the petitioner has prayed that the Commission may allow the capitalisation of the expenditure claimed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

29. The matter has been examined. It is observed from the above, that it would not be safe to operate such large power station without availability of adequate water for fire fighting system for safety of station equipment. Keeping in view the submission of the petitioner and considering the fact that the said expenditure is required for efficient operation of the generating station the projected additional capitalization of ₹50.00 lakh in the year 2016-17 is allowed under the Regulation 14(3) (vii) of the 2014 Tariff Regulations.

CT make up water over -ground lines

30. The petitioner has claimed projected additional capital expenditure of ₹1820.00 lakh each in year 2017-18 and in 2018-19 for Cooling Towers (CT) make up water over-ground lines. In justification to the same, the petitioner has submitted that the sea water at the generating station was used to remove heat from the main condenser and reject this heat to atmosphere through Cooling Towers (CT-1, 2, & 3) and at present, the requirement of sea water for cooling purpose is carried out through two nos. (Phase-I & Phase-II) of HDPE and combination of above & underground parallel cross country pipe line laid between make up pump house to cooling towers. The petitioner has further submitted that at full running load of plant i.e. of 1967 MW, sea water make up line is designed for three make up pumps parallel operation with both lines in service and there were repeated incidences of underground



leakages due to cracks in Phase-I & II HDPE lines since takeover of plant. The petitioner has pointed out that one such incident of leakage of Phase-I line had occurred even at the time of takeover of the plant and several attempts made to prevent the leakages could not succeed. It has further stated that attending of leakage of these pipe line take a long time because of difficulty in accessibility of pipeline (underground) and specific repair procedure for these lines (HDPE). It has stated that 0.5 KM (approx.) portion of these underground HDPE pipelines (both Phase-I&II) are passing underneath M/s. GAIL Gas terminal and any underground leakage in this section will make it impossible to repair and would lead to abandonment of the line permanently. One of the reasons as submitted by the petitioner in the ageing of the pipe line (pipe line laid by erstwhile Dabhol Power Company is more than 15 years old). The petitioner has stated that the availability of both the lines is very crucial for generation and failure of any line will greatly affect the generation of the plant. The petitioner has added that though the management had accorded approval for additional make up water above ground pipe line for one line due to financial constraints of the Petitioner company, the tender for the same could not been finalised and is now planned to be executed in the coming years. Considering the importance of the requirement, the petitioner has stated that two over ground lines are required to be installed on priority at the estimated cost of ₹36.40 crore. Accordingly the petitioner has prayed that the Commission may allow the capitalisation of the expenditure claimed under Regulation 14(3)(vii) of the 2014 Tariff Regulations.

31. The matter has been examined. The generating station is 15 years old (approx.) and has been taken over from M/s. Dabhol Power Company Limited. It is observed at the time of takeover and during the preliminary assessment for repair and rehabilitation of the generating station, the exact status of the various underground piping/ lines, machines and their working condition etc. could not be fully ascertained. The sea water make up line for the project has been designed for 3 make up pumps for parallel operation with both lines in



service. It is observed that Phase-I underground pipe line has developed various leakages and cracks at different locations since takeover of the plant and as per submissions of the petitioner, several attempts made to arrest the leakage could not succeeded due to underground leakage and difficulty in assessing the location. Though the reason may be the ageing of the pipe line (pipe line laid by erstwhile Dabhol Power Company is more than 15 years old) and excessive corrosion, for running the plant at full capacity, the availability of both lines are very crucial from generation point of view and any failure of these lines would greatly affect the performance of the generation of the plant. Therefore, in our view the requirement of an additional make up water line above ground would contribute for the smooth operation of plant. In this background we are inclined to allow the projected expenditure of ₹1820.00 lakh in 2017-18 and ₹1820.00 lakh in 2018-19 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Augmentation of Plant area lighting

32. The petitioner has claimed projected additional capital expenditure of ₹75.00 lakh each during the years 2017-18 and 2018-19 towards augmentation of plant area lighting under Regulation 14 (3) (iii) of the 2014 Tariff Regulations. The petitioner in justification of the same has submitted that at present many important areas in the generating station and colony such as material stock yards, critical approach roads to BOP and main entrance gates have not been provided with adequate lighting for proper security and safety. The petitioner has further submitted that the cross functional committee at the site including CISF was set up to review the lighting requirements in totality and the committee has recommended the augmentation of lighting, by providing high mast and street lights, for enhancement of security, safety of plant and the personnel therein. Accordingly, the petitioner has submitted that it was necessary to implement the recommendations of the Committee to undertake improved lighting conditions in plant area.



33. We have examined the matter. It is noticed that as per the Security Review Committee in its recommendations dated 25.8.2012 has suggested the improvement in the plant lighting system for proper security and safety of plant and personnel therein. Keeping in view the fact that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow projected additional capitalization of ₹75.00 lakh in 2017-18 and ₹75.00 lakh in 2018-19 under Regulation 14(3) (iii) of the 2014 Tariff Regulations.

CCTV for Security in power plant area

34. The petitioner has claimed projected additional capital expenditure of ₹200.00 lakh in 2017-18 towards CCTV for Security in power plant area. The petitioner has submitted that the generating station is located in security sensitive area surrounded by sea and road and a cross functional committee (Security Review Committee) at site including CISF has recommended installation of CCTV for Power Block at various locations for enhancement of security, safety of plant and personnel. Accordingly, the petitioner has submitted that it is necessary to implement the committee recommendations to achieving improved security conditions in the plant.

35. The matter has been examined. It is observed that in terms of the recommendations of the Security Review Committee dated 25.8.2012 for the installation of CCTV for Power Block at various locations for enhancement of security, safety of plant and personnel is found essential. Keeping in view the fact that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the projected additional capitalization of ₹200.00 lakh in 2017-18 under Regulation 14(3) (iii) of the 2014 Tariff Regulations.



Renovation of AC system of power block control system equipment room like BAC, PEECC, control room etc.

36. The petitioner has claimed projected additional capital expenditure of ₹70.00 lakh in 2016-17 towards Renovation of AC system of power block control system equipment. The petitioner in its justification has submitted that the AC systems for power block (BAC, PEECC, control room) equipment are installed by erstwhile DPC along with main plant. The petitioner has further stated that the AC system is almost 15 years old and gets break down regularly due to ageing of equipment and the non-working of AC system largely affects the reliability and safety of units. The petitioner has further submitted that to maintain the reliability and safety of machines, it is necessary to replace all the AC systems with new one cost of which will be qualified to be part of the project cost. It has however submitted that in order to keep the revival cost minimum, these items have not been replaced. Accordingly, the petitioner has prayed to allow the expenditure claimed in 2016-17.

37. It is noticed that the AC systems is in operation for more than 15 years and it has become necessary to replace all the AC systems with new one in order to maintain the reliability and safety of the machines. Keeping in view the submissions of the petitioner and considering the fact that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the projected additional capital expenditure of ₹70.00 lakh in 2016-17 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Control system & excitation system of frame 6b unit

Control system obsolete mark-V to mark- Vie migration and digital front end (DFE) retrofit for Ex2000 Excitation system

38. The petitioner has claimed projected additional capital expenditure of ₹555.00 lakh in 2017-18 towards Control system & excitation system of frame 6b unit- Control system obsolete mark-V to mark. In justification of the same, the petitioner has submitted that frame 6B gas turbine is critical to supply black out power to the generating station and its availability



is critical for Power Block. It has further stated that the control system of Frame - 6B machine is based on Mark - V platform which has been declared obsolete by GE and furnished proposal for Migration to Mark – Vie and same is necessary to ensure availability of services and spares. The petitioner has further stated that the Digital Front End (DFE) retrofit is also required for Ex2000 Excitation system of Frame 6 B for reliable and safe operation of the generating station and hence, the Commission may allow the said expenditure.

39. We have examined the matter. It is noticed that the control system and excitation system of frame 6b & control system mark-V to mark have become obsolete and DFE retrofit is required for Ex2000 Excitation system of Frame 6 B for safe and reliable operation of the unit. Based on the submission and keeping in view that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the projected additional capital expenditure of ₹555.00 lakh in 2017-18 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Window up gradation

40. The petitioner has claimed projected additional capital expenditure of ₹732.00 lakh in 2017-18 towards Window up gradation under the following heads and has submitted as under:

- (i) **HMI & Historian upgrade for all GTs to migrate from Window-XP**
Present HMIs & Historian used at RGPPL control room have been supplied by M/s GE with preloaded Win-XP operating system. All application packages for Mark-VIe GT control system were developed for working on this platform. M/S GE vide their letter LCN-CS012_00 dated 7.6.2013, informed that Microsoft have already announced discontinuation of this package and have advised all users to shift to Win-8 platform, accordingly GE has proposed to upgrade all HMIs & Historian capable to work with Windows-8.
- (ii) **ACLE controller upgrade for GT Excitation system EX2100**
Excitation system is critical to start up of GT and GE has stopped production of the controller with a declaration of obsolescence vide letter GE LCN-CS009-03 dated 3.5.2013 of OEM (GE) ACLE controller upgrade is thus critical for maintaining availability of gas turbines at RGPPL.



(iii) **UCVG controller upgrade for GT LCI system LS2100**

LCI system is critical to start up of GT and GE has stopped production of UCVG controller with a declaration of obsolescence vide their letter ref GE LCN-CS007-04 dated 10.4.2013. UCVG controller upgrade is thus critical for maintaining availability of gas turbines at RGPPL.

41. The matter has been examined. It is noticed from the above submission that due to obsolescence of existing system, window up gradation is required and the OEM (M/s. GE) has proposed the up-gradation of all HMIs & Historian capable to work with Windows-8. Also, as this up-gradation is critical for maintaining availability of gas turbines. In this background and keeping in view that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the projected additional capital expenditure of ₹732.00 lakh in 2017-18 under the Regulation 14(3) (vii) of the 2014 Tariff Regulations.

DCS Foxboro system up gradation

42. The petitioner has claimed projected additional capital expenditure of ₹500.00 lakh in 2016-17 towards DCS Foxboro system up gradation. In justification the petitioner has submitted that the Foxboro DCS is the control system that takes care of all HRSGs and BOP equipment and at present, the installed system has been declared obsolete by supplier M/s Invensys and neither spares nor troubleshooting technology is available with them. The petitioner has further furnished the detailed report dated 23.4.2014 of M/s. Invensys with its recommendation to upgrade the hardware to ensure healthy and trouble free operation of control system of HRSG and BOP. Accordingly, the petitioner has prayed for allowance of the expenditure in 2016-17.

43. The matter has been examined. it is noticed that the DCS Foxboro system is control system that takes care of all HRSGs and BOP equipment and the installed system has been declared obsolete by supplier M/s. Invensys with the recommendation to upgrade the said system. In this background and keeping in view that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow we are of the view that



the projected additional capital expenditure of ₹500.00 lakh in 2016-17 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Installation of DG set for safe coasting down of machines in black out condition

44. The petitioner has claimed projected additional capital expenditure of ₹525.00 lakh in 2016-17 towards the Installation of DG set for safe coasting down of machines in black out condition. In justification the petitioner has submitted that due to the persisting high voltage condition in the transmission zone in the vicinity of the generating station, 400 kV lines are frequently tripping on high voltage and causes total black out at the generating station. It has further submitted that all the nine generators installed at the generating station are hydrogen cooled and need essential supply for lube oil system and seal oil system to prevent escape of hydrogen and the DC supply for this system is designed for 2-3 hours. The petitioner has stated that in case the grid supply is not restored within the time frame, hydrogen may start escaping from generator and lead to explosion and lube oil and lift oil pumps supply is also required for safe coasting down of units till it cool down to normal temperature to avoid bearings and shaft damage. Accordingly, the petitioner has prayed that the expenditure claimed on this count may be allowed.

45. We have examined the matter. It is noticed that for the safe coasting down of units till it cool down to normal temperature in order to avoid bearings and shaft damage, essential supply for lube oil system and seal oil system to prevent escape of Hydrogen installation of DG set. In this background and keeping in view that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the projected additional capital expenditure of ₹525.00 lakh in 2016-17 under the Regulation 14(3) (vii) of the 2014 Tariff Regulations.



400kV Breakers

46. The petitioner has claimed projected additional capital expenditure of ₹800.00 lakh in 2017-18 towards installation of 400 kV breakers at the generating station. The petitioner has submitted that these equipments were supplied almost 20 years back by M/s ABB who has notified the obsolescence of these breakers and has shown inability to provide spares and services. Accordingly, it has stated that in order to overcome this obsolescence these breakers with improved design to ensure the healthiness of power system needs to be replaced. Accordingly, the petitioner has further prayed that the said expenditure may be allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

47. We have examined the matter. It is noticed that the installation of 400kV breakers are almost 20 years old and the OEM (M/s. ABBB) has also notified obsolescence of these breaker and has also shown its inability to provide spares and services. In this background, and keeping in view that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the projected additional capital expenditure of ₹800.0 lakh in 2017-18 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

Block-1 Load Centre LV Breakers

48. The petitioner has claimed projected additional capital expenditure of ₹100.00 lakh in 2016-17 towards Block-1 Load Centre LV Breakers. The petitioner has submitted that the Load centre breakers provided for Block-1 are almost 20 years old design and at present the spares and services of these type of breakers is not available. It has further submitted that the supplier of breaker M/s. GE has given obsolescence notification for these breakers and has recommended to replace with LV breakers of latest design available with OEM. Accordingly, the petitioner has further prayed that the said expenditure may be allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations.



49. The matter has been examined. It is noticed that the load centre breakers provide for Block-I are of 20 years old design and presently spares and services of these type of breakers are not available in terms of the report of the OEM. Based on this and considering the fact that the said expenditure will contribute to the efficient operation of the generating station we are inclined to allow the, the projected additional capital expenditure of ₹100.00 lakh in 2016-17 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

H2 Dryers for Block 1 & Dew point analyser for Block I, II & III

50. The petitioner has claimed projected additional capital expenditure of ₹221.00 lakh in 2017-18 and ₹579.00 lakh in 2018-19 towards H2 Dryers for Block 1 & Dew point analyser for Block I, II & III. In justification to the same, the petitioner has submitted that at present no hydrogen gas drier system has been provided for three hydrogen gas cooled generators in Block-1. It has further submitted that it is essential to maintain adequate dryness of hydrogen gas in the machines to prevent moisture induced failures of generator internal components. It has further submitted that for safety of generators, hydrogen drier has been provided for Block- 2 and 3 Units by design itself and any moisture in hydrogen would cause catastrophic failure of generators. Accordingly, the petitioner has submitted that, it is essential to supply moisture free hydrogen to generators. It has further submitted that for the equipment safety and plant reliability improvement, it is proposed to provide hydrogen gas drier systems in three generators in Block 1. In addition to the above, the petitioner has submitted that the hydrogen gas dew-point measuring instruments are not provided in all the nine units (3 blocks) at the generating station and the Dew Point analyser is required to ensure the functioning of the proper drier and supply moisture free hydrogen to generator to avoid any catastrophic failure. Accordingly, the petitioner has further prayed that the said expenditure may be allowed under Regulation 14(3) (vii) of the 2014 Tariff Regulations.



51. We have considered the matter. Considering the fact that hydrogen drier for Block 1 & Dew point analyser for Block I, II & III is essential for the safety of generators and in order to avoid any catastrophic failure, the expenditure is required to be incurred by the petitioner. Since the expenditure will contribute to the efficient operation of the generating station we are inclined to allow the, the projected additional capital expenditure of ₹221.00 lakh in 2017-18 and ₹579.00 lakh in 2018-9 under Regulation 14(3) (vii) of the 2014 Tariff Regulations.

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

(₹ in lakh)							
Sl. No.		2014-15	2015-16	2016-17	2017-18	2018-19	Total
A	Items approved by Commission during the period 2009-14						
1	Additional dwelling units for RGPPL employee	0.00	0.00	0.00	1361.00	0.00	1361.00
2	Additional dwelling units for CISF	0.00	0.00	0.00	1476.00	0.00	1476.00
3	Plant boundary wall	0.00	0.00	0.00	2002.00	0.00	2002.00
4	Warehouse/stores construction	0.00	0.00	0.00	440.00	0.00	440.00
5	WTP extension & O/H tank construction	0.00	0.00	179.0	0.00	0.00	179.00
6	CT overflow collection tanks & pumping arrangement	0.00	0.00	280.0	0.00	0.00	280.00
7	Chemistry lab. building construction	9.68	0.00	0.00	0.00	0.00	9.68
8	Construction of 2 nos. Of check dams for rain water harvesting	2.81	0.00	0.00	0.00	0.00	2.81
9	Construction of workshop building & purchase of workshop Machines	0.00	0.00	0.00	600.00	0.00	600.00
10	Construction of entrance gate complex	0.00	0.00	0.00	263.00	0.00	263.00
11	Construction of additional office building	0.00	0.00	0.00	574.00	0.00	574.00
12	Permanent canteen building	0.00	0.00	0.00	0.00	191.00	191.00
13	Construction of drains & culverts inside plant & Township	0.00	0.00	0.00	0.00	94.00	94.00
14	Construction of Approach road to scrap yard. Cooling tower, Salt water intake	0.00	0.00	0.00	0.00	216.00	216.00
15	Control room for power block	0.00	0.00	0.00	0.00	230.00	230.00



16	Construction of service building	0.00	0.00	0.00	0.00	424.00	424.00
17	Construction of electrical & C&I lab. building	0.00	0.00	0.00	0.00	220.00	220.00
18	Training centre building construction	0.00	0.00	0.00	224.00	0.00	224.00
19	Lift for power block	0.00	0.00	0.00	0.00	111.00	111.00
20	Crane & lifting equipment	0.00	0.00	0.00	0.00	370.00	370.00
Electrical capital items							
21	Station Service transformer	527.10	0.00	0.00	0.00	0.00	527.10
22	Phase-I Extension transformer	64.00	0.00	0.00	0.00	0.00	64.00
23	CW Load Centre transformer	62.00	0.00	0.00	0.00	0.00	62.00
24	Augmentation of Shiral P/H	0.00	0.00	0.00	0.00	0.00	0.00
	Total (A)	665.59	0.00	459.00	6940.0	1856.00	9920.59
B	New items proposed for additional capitalization for 2014-19						
1	Generator Transformer	0.00	0.00	0.00	0.00	0.00	0.00
2	DGP(Digital Generator Protection) Relays for generator relay panel	0.00	0.00	95.00	0.00	0.00	95.00
3	Installation of Disturbance Recorders for Generators & line	0.00	0.00	200.0	176.00	0.00	376.00
4	Installation of 400kv-125 MVAR shunt reactor & two 400kv Bays	0.00	0.00	0.00	0.00	1500.00	1500.00
5	Procurement & installation of MV switchgear boards	0.00	0.00	665.00	0.00	0.00	665.00
6	Installation of additional Cable feeder for intake well pump House & Colony	0.00	0.00	50.00	0.00	0.00	50.00
7	Sea water Revers Osmosis (SWRO) plant & associated pumping system	0.00	0.00	2000.00	2000.00	0.00	4000.00
8	Fire water line inter connection with PH2 water Tank	0.00	0.00	50.00	0.00	0.00	50.00
9	CT make up water over -ground lines	0.00	0.00	0.00	1820.00	1820.00	3640.00
10	Augmentation of plant area lighting	0.00	0.00	0.00	75.00	75.00	150.00
11	CCTV for Security in power plant area	0.00	0.00	0.00	200.00	0.00	200.00
12	Renovation of AC system of power block control system equipment room like BAC, PEECC, control room etc.	0.00	0.00	70.00	0.00	0.00	70.00
13	Control system & excitation system of frame 6b unit- ii. Control system obsolete mark-V to mark- Vie migration and digital front end (DFE) retrofit for Ex2000 Excitation system	0.00	0.00	0.00	555.00	0.00	555.00
14	Window upgradation iv. HMI & Historian upgrade for all GTs to migrate from Window-XP	0.00	0.00	0.00	732.00	0.00	732.00



	v. ACLE controller upgrade for GT Excitation system EX2100 vi. UCVG controller upgrade for GT LCI system LS2100						
15	DCS Foxboro system upgradation	0.00	0.00	500.0	0.00	0.00	500.00
16	Installation of DG set for safe coasting down of machines in black out condition	0.00	0.00	525.00	0.00	0.00	525.00
17	400 kV Breakers	0.00	0.00	0.00	800.0	0.00	800.00
18	Block-1 Load Centre LV Breakers	0.00	0.00	100.00	0.00	0.00	100.00
19	H2 Dryers for Block 1 & Dew point analyser for Block I, II & III	0.00	0.00	0.00	221.00	579.00	800.00
	Total (B)	0.00	0.00	4255.00	6579.00	3974.00	14808.00
	Discharges during the year/period (C)	2.60	306.00	0.00	0.00	0.00	308.60
	Grand Total (A+B+C)	668.19	306.00	4714.00	13519.00	5830.00	25037.19

53. Accordingly, the capital cost considered for the period 2014-19 is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Opening capital cost	876786.21	877454.40	877760.40	882474.40	895993.40
Admitted Projected additional capital expenditure including discharges	668.19	306.00	4714.00	13519.00	5830.00
Closing capital cost	877454.40	877760.40	882474.40	895993.40	901823.40
Average Capital Cost	877120.30	877607.40	880117.40	889233.90	898908.40

Debt-Equity Ratio

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

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

Provided that:

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

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

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

Explanation - The premium, if any, raised by the generating company or the transmission licensee, as the case may be, while issuing share capital and investment of internal resources created out of its free reserve, for the funding of the project, shall be reckoned as paid up capital for the purpose of computing return on equity, only if such premium



amount and internal resources are actually utilised for meeting the capital expenditure of the generating station or the transmission system.

(2) The generating Company or the transmission licensee shall submit the resolution of the Board of the company or approval from Cabinet Committee on Economic Affairs (CCEA) regarding infusion of fund from internal resources in support of the utilisation made or proposed to be made to meet the capital expenditure of the generating station or the transmission system including communication system, as the case may be.

(3) In case of the generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, debt:equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2014 shall be considered.

(4) In case of generating station and the transmission system including communication system declared under commercial operation prior to 1.4.2014, but where debt:equity ratio has not been determined by the Commission for determination of tariff for the period ending 31.3.2014, the Commission shall approve the debt:equity ratio based on actual information provided by the generating company or the transmission licensee as the case may be.

(5) Any expenditure incurred or projected to be incurred on or after 1.4.2014 as may be admitted by the Commission as additional capital expenditure for determination of tariff, and renovation and modernisation expenditure for life extension shall be serviced in the manner specified in clause (1) of this regulation.

55. Accordingly, gross loan and equity of ₹696980.57 lakh and ₹179805.64 lakh respectively as on 31.3.2014 as allowed in order dated 21.6.2016 in Petition No. 258/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

56. 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.

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

“Tax on Return on Equity

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

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

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

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

58. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate (MAT) of 20.961% for the year 2014-15 and 21.342% for the years from 2015-16 to 2017-19. However, from the audited accounts for the year 2014-15, it is observed that the petitioner has not paid any tax for the said year. Accordingly, the present



effective tax rate has been considered as 'nil'. This is subject to truing-up in terms of the 2014 Tariff Regulations. 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	179805.64	180006.10	180097.90	181512.10	185567.80
Addition of Equity due to Additional capital expenditure	200.46	91.80	1414.20	4055.70	1749.00
Normative Equity - Closing	180006.10	180097.90	181512.10	185567.80	187316.80
Average Normative Equity	179905.87	180052.00	180805.00	183539.95	186442.30
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Effective Tax Rate for respective years	0.000%	0.000%	0.000%	0.000%	0.000%
Rate of Return on Equity (Pre Tax)	15.500%	15.500%	15.500%	15.500%	15.500%
Return on Equity (Pre Tax)- annualized	27885.41	27908.06	28024.77	28448.69	28898.56

Interest on loan

59. 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.”

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

(a) As stated above gross normative loan amounting to ₹696980.57 lakh has been considered as on 1.4.2014.

(b) Cumulative repayment amounting to ₹266968.37 lakh as on 31.3.2014 as considered in order dated 21.6.2016 in Petition No. 258/GT/2014 has been considered.

(c) Accordingly, the net normative opening loan as on 1.4.2014 is worked out as ₹430012.20 lakh.

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

(e) Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2009-14.

(f) For the present, the weighted average rate of interest as claimed by the petitioner has been considered for the purpose of tariff. This is subject to truing-up in terms of the 2014 Tariff Regulations. However, the petitioner is directed to submit the details of scheduled repayment for the period 2014-19.

61. The necessary calculation for interest on loan is as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Gross opening loan	696980.57	697448.30	697662.50	700962.30	710425.60
Cumulative repayment of loan upto previous year / period	266968.37	313009.03	359075.26	405273.24	451949.75



Net Loan Opening	430012.20	384439.27	338587.24	295689.06	258475.85
Addition due to Additional capital expenditure	467.73	214.20	3299.80	9463.30	4081.00
Repayment of loan during the year	46040.66	46066.23	46197.98	46676.51	47184.33
Net Loan Closing	384439.27	338587.24	295689.06	258475.85	215372.52
Average Loan	407225.74	361513.26	317138.15	277082.46	236924.19
Weighted Average Rate of Interest on Loan	9.0637%	9.0413%	9.0139%	8.9699%	8.9154%
Interest on Loan	36909.55	32685.47	28586.54	24854.12	21122.82

Depreciation

62. 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..”

63. The cumulative depreciation as on 31.3.2014 vide order dated 21.6.2016 in Petition No. 258/GT/2014 works out to ₹266968.37 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 ₹522412.98 lakh. Since the used life of the generating station as on 1.4.2014 is 5.95 years, which is less than 12 years from the effective generating station COD of 18.4.2008, depreciation has been calculated by applying the weighted average rate of depreciation for the period 2014-19.

64. The petitioner has claimed the depreciation considering the weighted average rate of depreciation of 5.26% for the period 2014-19. However, considering the rates of depreciation as specified in Appendix-II to the 2014 Tariff Regulations, the weighted average rate of depreciation for the year 2014-15 works out to 5.2491%. This has been considered for calculating depreciation for the period 2014-19 and is subject to truing up in



terms of the 2014 tariff Regulations. Accordingly, depreciation has been computed as follows:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Average Capital Cost	877120.30	877607.40	880117.40	889233.90	898908.40
Freehold land (included above)	29.91	29.91	29.91	29.91	29.91
Depreciable value @ 90%	789381.35	789819.74	792078.74	800283.59	808990.64
Balance useful life of the assets	19.05	18.05	17.05	16.05	15.05
Balance depreciable value	522412.98	476810.71	433003.48	395010.35	357040.89
Depreciation (annualized)	46040.66	46066.23	46197.98	46676.51	47184.33
Cumulative depreciation at the end	313009.03	359075.26	405273.24	451949.75	499134.08

O&M Expenses

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

(₹ in lakh/MW)				
2014-15	2015-16	2016-17	2017-18	2018-19
26.55	28.36	30.29	32.35	34.56

66. Based on the above norms, the O&M expenses claimed by the petitioner for the period 2014-19 is worked out and allowed as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
52225.97	55786.39	59582.85	63635.04	67982.28

Water Charges

67. The petitioner has submitted that the water supply system of the generating station is maintained by MAHAGENCO on behalf of MSEDCL and no amount is being charged to them. Accordingly, no claim for water charges has been projected for the period 2014-19. In view of this, water charges have not been considered in this order. However, the claim of the petitioner shall be considered on merits, if any, after prudence check at the time of truing-up.



Capital spares

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

Operational Norms

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

Normative Annual Plant Availability Factor (NAPAF)	85.0
Gross Station Heat Rate (kcal/kwh)	1850.0
Auxiliary Power Consumption %	2.5

70. The above operational norms claimed by the petitioner are in terms of the provisions of Regulation 36 of the 2014 Tariff Regulations and is in order. However, the Commission has notified the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (First Amendment) Regulations, 2015 and inserted Regulation 23A for Gas based Station which provides as under:

“23A. Tariff Determination of Gas based generating stations: The tariff of gas based generating stations covered under the “Scheme for Utilization of Gas based power generation capacity” issued by the Government of India, Ministry of Power vide Office Memorandum No. 4/2/2015-Th.1 dated 27.3.2015 shall be determined in due consideration of the provisions of that scheme in deviation of the relevant regulations”.

71. In terms of the above regulation, the petitioner was a successful bidder for the PSDF support for the period from 1.6.2015 to 30.09.2015 under Phase-I PSDF scheme, and from 1.10.2015 to 31.3.2016 under Phase-II PSDF scheme and from 1.4.2016 to 30.9.2016 under Phase-III PSDF scheme.



Operation under Phase-I scheme

72. The petitioner has participated in Phase-I of the PSDF scheme wherein the target price for sale of power to Discoms has been determined as ₹4.70 per unit at the maximum PLF of 35%, by reverse auction. Further, by reverse auction PSDF support amount to be additionally payable by MoP, Gol to the petitioner through Discom has been determined as ₹1.45 per unit for incremental electricity to be supplied to Discom by the petitioner.

Operation under Phase-II scheme

73. The MoP, Gol, had issued Letter of Award dated 17.9.2015 to the petitioner, allocating 315.952 MMSCM (1.736 MMSCMD RLNG x 182 days) for Phase-II from 1.10.2015 to 31.3.2016 for generation of 1562.87 MUs of incremental electricity at target PLF of 50% and target price of ₹4.70 per unit to Discom, with PSDF support of ₹1.45 per unit.

Operation under Phase-III scheme

74. The MoP, Gol, had issued Letter of Award dated 21.03.2016 to the petitioner allocating 424.377 MMSCM (2.319 MMSCMD RLNG x 183 days) for phase-III from 1.4.2016 to 30.9.2016 for generation of 2087.56 MUs of incremental electricity with PLF of 30% and target price to Railway is ₹4.70 per unit, with PSDF support of minus (-) ₹0.02 per unit.

75. The petitioner has submitted that it has availed PSDF scheme during the period from 1.6.2015 to 30.9.2015, and from 1.10.2015 to 31.3.2016 and from 1.4.2016 to 30.9.2016. However, the petitioner has not furnished any details as regards the Distribution Companies (Discoms) to whom it has supplied/ to be supplied power for the period from 1.6.2015 to 31.3.2016. In view of this the petitioner shall furnish the following information at the time of truing up:



- i) Distribution Companies to whom power was supplied under PSDF scheme during period from 1.6.2015 to 30.9.2015 and from 1.10.2015 to 31.3.2016.
- ii) The incremental electricity generated at target PLF and at what target price same were sold to Distribution Companies.
- iii) Details of Quantum of RLNG allocated under PSDF scheme and whether the same was fully utilized for generation up to target PLF.
- iv) Whether any Electricity generated over & above the target PLF in the above said period. If yes, the details of the same should be furnished and to whom it was supplied.

76. As per the PSDF scheme, the price/kWh of incremental electricity shall not exceed the target price. Further there is capping of fixed cost, the petitioner (i) Shall completely forego the Return on Equity, and (ii) Fixed Cost recovery shall be limited to meet only the debt service obligation and Operation & Maintenance cost.

77. Accordingly, the petitioner is directed to furnish the details of recovery of cost above the fuel price paid to gas supply companies for the incremental generation and details of Debt Service obligation met and O&M charges recovered for incremental capacity.

Interest on Working Capital

78. Sub-section (a) 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

79. The petitioner vide affidavit dated 18.8.2014 has claimed the cost for fuel component in working capital based on price and GCV of domestic gas, for preceding three months from January, 2014 to March, 2014 as under:

	(₹ in lakh)				
	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Fuel (gas) – 1 month	31444.64	31530.79	31444.64	31444.64	31444.64
Cost of liquid for 15 days	0.00	0.00	0.00	0.00	0.00

80. The petitioner has submitted that the domestic gas price is also subject to revision from 1.4.2014 and will have an impact on interest liability on working capital. The petitioner has also sought liberty to seek enhancement in the interest of working capital towards the increase in price of Domestic gas/ RLNG as applicable for the period 2014-19 and has prayed that the same may be allowed by the Commission.

81. We are not inclined to consider the prayer of the petitioner for any increase in the fuel cost in the working capital based on variation in the fuel price for the period 2014-19. The petitioner appears to have computed the fuel cost by considering the cost of fuels as per the mode of operation from January, 2014 to March, 2014. Moreover, the petitioner has not used any liquid fuel for the year 2013-14 which includes the preceding three months i.e. January, 2014, February, 2014 and March, 2014. Accordingly, we are of the view that the petitioner is not entitled to get liquid fuel stock in the working capital.

82. Based on above, the fuel components based on the price and GCV of APM gas for preceding three months from January, 2014 to March, 2014 has been computed and considered as under:



(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Fuel (gas) for 30 days	31028.31	31028.31	31028.31	31028.31	31028.31
Cost of liquid for 15 days	0.00	0.00	0.00	0.00	0.00

Energy/ Variable Charges

83. The petitioner vide affidavit dated 18.8.2014 has claimed the Energy Charge Rate (ECR) of 264.228 paise/kWh based on the weighted average price and GCV and price of Naphtha used for operation of the plant during the preceding three months i.e. January, 2014, February, 2014 and March, 2014. Accordingly, based on the Normative Heat Rate, Auxiliary Power Consumption and the mode of operation of the generating station for the preceding three months, the energy charges computed and allowed for the period 2014-19 is as under:

	Unit	2014-15, 2016-17, 2017-18, 2018-19	2015-16
Capacity	MW	1967.08	1967.08
Normative Heat-Rate	kcal/kWh	1850.0	1850.0
Auxiliary Power Consumption	%	2.50	2.50
Weighted average price of Gas	/1000SCM	13594.74	13594.74
Weighted average GCV of gas	Kcal/SCM	9757.935	9757.935
Rate of Energy Charge (ex-bus)	₹/kWh	2.644	2.644

Maintenance spares

84. The petitioner has claimed the following maintenance spares in the working capital:

(₹ in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
15667.79	16735.92	17874.86	19090.51	20394.69

85. 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 as above is allowed.

Receivables

86. Receivables equivalent to two months of fixed 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	62930.31	63102.72	62930.31	62930.31	62930.31
Fixed Charges – 2 months	30426.04	30356.48	30376.81	30620.95	30927.62
Total	93356.35	93459.21	93307.12	93551.26	93857.93

O & M Expenses (1 month)

87. 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
4352.16	4648.87	4965.24	5302.92	5665.19

88. Based on the O&M expense norms specified by the Commission, the O&M expenses for 1 month is allowed as under:

(₹ in lakh)				
2014-15	2015-16	2016-17	2017-18	2018-19
4352.16	4648.87	4965.24	5302.92	5665.19

Rate of interest on working capital

89. 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.”

90. 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	31028.31	31028.31	31028.31	31028.31	31028.31
Liquid Fuel Cost - 15 days	0.00	0.00	0.00	0.00	0.00
Maintenance Spares	15667.79	16735.92	17874.86	19090.51	20394.69
Receivables	93356.35	93459.21	93307.12	93551.26	93857.93
O & M expenses - 1 months	4352.16	4648.87	4965.24	5302.92	5665.19
Total Working Capital	144404.61	145872.30	147175.52	148973.01	150946.12
Rate of interest	13.50%	13.50%	13.50%	13.50%	13.50%
Interest on Working Capital	19494.62	19692.76	19868.70	20111.36	20377.73



Annual Fixed Charges

91. Accordingly, the 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	46040.66	46066.23	46197.98	46676.51	47184.33
Interest on Loan	36909.55	32685.47	28586.54	24854.12	21122.82
Return on Equity	27885.41	27908.06	28024.77	28448.69	28898.56
Interest on Working Capital	19494.62	19692.76	19868.70	20111.36	20377.73
O&M Expenses	52225.97	55786.39	59582.85	63635.04	67982.28
Total	182556.21	182138.91	182260.84	183725.71	185565.72

Note: (1) All figures are on annualized basis. (2) All the figures under each head have been rounded. The figure in total column in each year is also rounded. Because of rounding of each figure the total may not be arithmetic sum of individual items in columns.

Month to Month Energy Charges

92. 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 (gas station):

“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 based and liquid fuel based stations

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

Where,

AUX = Normative auxiliary energy consumption in percentage.

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

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

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

LPPF = Weighted average landed price of primary fuel, in Rupees per kg, per litre or per standard cubic metre, as applicable during the month.”

93. The petitioner shall compute and claim the Energy Charges on month to month basis from the beneficiaries based on the above formulae read with Regulation 23 (A) of the 2014 Tariff Regulations.

94. The petitioner has been directed by the Commission in its order dated 19.2.2016 in Petition No. 33/MP/2014 to introduce helpdesk to attend to the queries of the beneficiaries



with regard to the Energy Charges. Accordingly, contentious issues if any, which arise regarding the Energy Charges, should be sorted out with the beneficiaries at the Senior Management level.

Application Fee and Publication Expenses

95. The petitioner has sought the reimbursement of filing fee and also the expenses incurred towards publication of notices (₹517744/-) for application of tariff for the period 2014-19. The petitioner has deposited the filing fees of ₹25965456/- for the period 2014-17 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 2017-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

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

97. Petition No. 263/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

