CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI

Petition No. 308/GT/2014

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

Date of Order: 27th January, 2017

In the matter of

Approval of tariff of Dadri Gas Power Station (829.78 MW) for the period from 1.4.2014 to 31.3.2019

And

In the matter of

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

Vs

1. Uttar Pradesh Power Corporation Ltd
Shakti Bhawan, 14, Ashoka Road,
Lucknow – 226001

2. Jaipur Vidyut Vitaran Nigam Ltd.,
Vidyut Bhawan, Janpath,
Jaipur – 302005

3. Jodhpur Vidyut Vitaran Nigam Ltd.
New Power House, Industrial Area,
Jodhpur-342003

4. Ajmer Vidyut Vitaran Nigam Ltd
Old Power House,
Hatthi Bhatta, Jaipur Road,
Ajmer-305001(Rajasthan)

5. Tata Power Delhi Distribution Ltd
33 kV Sub-station, Hudson Lines,
Kingsway Camp,
Delhi – 110009

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

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

8. Punjab State Power Corporation Ltd
The Mall, Patiala – 147001

9. Haryana Power Purchase Centre
Shakti Bhawan, Sector VI,
Panchkula- 134019

10. Himachal Pradesh State Electricity Board Ltd
Vidyut Bhawan,
Shimla – 171004

11. Power Development Department (J&K)
Government of J&K,
Mini Secretariat, Jammu

12. Power Department
Union Territory of Chandigarh,
Additional Office Building, Sector 9D,
Chandigarh

13. Uttrakhand Power Corporation Ltd.
Urja Bhawan, Kanwali Road,
Dehradun- 248001 …**Respondents**

Parties present:

Shri Ajay Dua, NTPC
Shri S.K. Jain, NTPC
Shri Nishant Gupta, NTPC
Shri T. Vinod Kumar, NTPC
Shri Bhupinder Kumar, NTPC
Shri Rajeev Choudhary, NTPC
Shri R. B. Sharma, Advocate, BRPL
Shri Kanishk, BRPL
Shri Dhananjaya Mishra, Advocate, TPDDL
Shri Varun Shankar, Advocate, TPDDL
Shri Manish Garg, UPPCL & BYPL

ORDER

This petition has been filed by the petitioner, NTPC for approval of tariff of Dadri Gas Power Station (829.78 MW) ('the generating station') for the period 2014-19 based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2014 ("the 2014 Tariff Regulations").

2. The generating station with a capacity of 829.78 MW comprises of four Gas Turbine (GT) units of 130.19 MW each and two Steam Turbine (ST) units of 154.51 MW. The dates of commercial operation of the different units of the generating station are as under:

		Date of commercial operation (COD)
GT-I	**Module / Block-I**	1.5.1992
GT-II		1.6.1992
ST-I		1.8.1996
GT-III	**Module / Block-II**	1.8.1992
GT-IV		1.12.1992
ST-II/ generating station		1.4.1997

3. The Commission by order dated 7.12.2015 in Petition No. 301/GT/2014 had revised the tariff of the generating station for the period 2009-14, after truing-up exercise 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 7.12.2015 are as under:

Capital Cost

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Opening capital cost	87954.32	87222.20	87171.54	86970.93	86949.66
Actual additional Capital Expenditure	(-) 732.13	(-) 50.66	(-) 200.61	(-) 21.26	(-)109.36
Closing capital cost	**87222.20**	**87171.54**	**86970.93**	**86949.66**	**86840.30**

Annual Fixed Charges

(₹in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	12.53	46.85	36.37	48.00	41.32
Interest on Loan	140.29	137.04	132.65	128.60	124.33
Return on Equity	10300.49	10154.36	10029.33	10021.70	10251.65
Interest on Working Capital	6654.60	6700.72	6763.92	6802.81	6864.45
O&M Expenses	12280.74	12986.06	13724.56	14512.85	15342.63
Total	**29388.66**	**30025.02**	**30686.83**	**31513.97**	**32624.39**

4. The petitioner vide affidavit dated 14.8.2014 has sought approval of tariff of the generating station in accordance with the provisions of the 2014 Tariff Regulations. Thereafter, the petitioner vide affidavit dated 31.10.2014 has sought correction of minor errors in affidavit dated 14.8.2014 and has accordingly revised the claim for annual fixed charges. The capital cost and the annual fixed charges claimed by the petitioner for the period 2014-19 are as under:

Capital Cost

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening Capital Cost	86995.53	88154.93	88154.93	89859.93	91564.93
Add: Additional capital expenditure	1159.40	0.00	1705.00	1705.00	0.00
Closing capital cost	**88154.93**	**88154.93**	**89859.93**	**91564.93**	**91564.93**
Average capital cost	**87575.23**	**88154.93**	**89007.43**	**90712.43**	**91564.93**

Annual Fixed Charges

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Depreciation	166.80	299.55	561.41	1356.49	2028.79
Interest on Loan	156.29	172.82	188.75	211.22	106.23
Return on Equity	8938.70	8974.14	9026.26	9130.50	9182.62
Interest on Working Capital	9165.82	9249.47	9297.98	9385.05	9469.59
O&M Expenses	12228.21	12995.12	13812.05	14678.99	15604.27
Total	**30655.82**	**31691.11**	**32886.45**	**34762.25**	**36391.50**

5. The petitioner has filed the additional information in compliance with the directions of the Commission and has served copies on the respondents. Reply has been filed by the respondents, UPPCL, BRPL and TPDDL and the petitioner has filed its rejoinder to the said replies. We now proceed to examine the claim of the petitioner on prudence check, based on the submissions and the documents available on record, as stated in the subsequent paragraphs.

Capital Cost as on 1.4.2014

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

> *"9(3) The Capital cost of an existing project shall include the following: (a)the capital cost admitted by the Commission prior to 1.4.2014 duly trued up by excluding liability, if any, as on 1.4.2014;*
>
> *(b) additional capitalization and de-capitalization for the respective year of tariff as determined in accordance with Regulation 14; and*
>
> *(c) expenditure on account of renovation and modernisation as admitted by this Commission in accordance with Regulation 15.*

7. Clause (6) of Regulation 9 of the 2014 Tariff Regulations provides as under:

> *"9(6) The following shall be excluded or removed from the capital cost of the existing and new project:*
>
> *(a) The assets forming part of the project, but not in use;*

(b) De-capitalization of Asset;

(c) xxxxxx; and

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

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

8. The petitioner has claimed opening capital cost of ₹86995.53 lakh as on 1.4.2014 as detailed under:

(₹In lakh)

Capital cost as on 31.3.2014 as per Commission's order dated 14.6.2012 in Petition No. 224/2009	87165.59
Adjustment	(-) 170.06
Capital cost claimed as on 1.4.2014	**86995.53**

9. The Commission in its order dated 7.12.2015 in Petition No. 301/GT/2014 had approved the closing capital cost of ₹86840.30 lakh as on 31.3.2014, based on the actual capital expenditure incurred for the period 2009-14. However, the petitioner has claimed the opening capital cost of ₹86995.53 lakh, after adjustment of (-) ₹170.06 lakh as on 1.4.2014. It is noticed that the closing capital cost of ₹86840.30 lakh as on 31.3.2014 approved vide order dated 7.12.2015 is less than the opening capital cost of ₹86995.53 lakh as on 1.4.2014 claimed by the petitioner. Accordingly, the opening capital cost of ₹86840.30 lakh as on 1.4.2014 as admitted by order dated 7.12.2015 has been considered for determination of tariff for the period 2014-19.

Projected Additional Capital Expenditure

10. Regulation14 (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 obsolesce of technology, replacement of switchyard equipment due to increase of fault level, tower strengthening, communication equipment, emergency restoration system, insulators cleaning infrastructure, replacement of porcelain insulator with polymer insulators, replacement of damaged equipment not covered by insurance and any other expenditure which has become necessary for successful and efficient operation of transmission system; and

(x) Any capital expenditure found justified after prudence check necessitated on account of modifications required or done in fuel receiving system arising due to non-materialization of coal supply corresponding to full coal linkage in respect of thermal generating station as result of circumstances not within the control of the generating station:

Provided that any expenditure on acquiring the minor items or the assets including tools and tackles, furniture, air-conditioners, voltage stabilizers, refrigerators, coolers, computers, fans, washing machines, heat convectors, mattresses, carpets etc. brought after the cut-off date shall not be considered for additional capitalization for determination of tariff w.e.f. 1.4.2014:

Provided further that any capital expenditure other than that of the nature specified above in (i) to (iv) in case of coal/lignite based station shall be met out of compensation allowance:

Provided also that if any expenditure has been claimed under Renovation and Modernisation (R&M), repairs and maintenance under (O&M) expenses and Compensation Allowance, same expenditure cannot be claimed under this regulation."

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

(₹in lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**Total**
Phasing out of Halon Fire Fighting system	247.00	0.00	0.00	0.00	0.00	247.00
R&M of electrical system (ST excitation system)	86.69	0.00	0.00	0.00	0.00	86.69
Replacement of PGB coolers	787.96	0.00	0.00	0.00	0.00	787.96
Supply of CCTV system	37.75	0.00	0.00	0.00	0.00	37.75
R&M of generating station C&I	0.00	0.00	1705.00	1705.00	0.00	3410.00
Total	**1159.40**	**0.00**	**1705.00**	**1705.00**	**0.00**	**4569.40**

12. The petitioner has claimed total projected additional capital expenditure of ₹4569.40 lakh for the period 2014-19 under sub-clauses (ii), (iii) and (vii) of Regulation 14(3) of the 2014 Tariff Regulations and the same is discussed in the succeeding paragraphs.

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

Phasing out of Halon fire fighting system

13. The petitioner has claimed projected additional capital expenditure of ₹247.00 lakh in 2014-15 towards phasing out of Halon fire fighting system under Regulations 14(3)(ii) and 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the Commission in order dated 16.7.2013 in Petition No.16/GT/2013 had allowed the projected additional capital expenditure of ₹181.13 lakh (247.00 - 65.87) in 2012-13, on net basis. It has further submitted that the work is still in progress and an amount of ₹183.00 lakh (approx) has been spent till the year 2013-14 and the scheme would be completed and capitalized during the year 2014-15.

14. The respondent, UPPCL has submitted that there is significant cost escalation and the petitioner has not furnished any explanation. The respondent, BRPL has submitted that the Commission may like to take note of the progress of work on assets connected with environmental degradation under change in law. It has however submitted that the net amount of ₹181.13 lakh, which is exclusive of de-capitalisation may be allowed as additional capitalisation on this item of work. The respondent, TPDDL has submitted that the claim cannot be allowed unless it is established that the work/item has been capitalised. It has also submitted that the petitioner be directed to provide the current status of work. In response to the reply of UPPCL, the petitioner has clarified that there is no variation between the gross amount (before de-cap) approved by the Commission and those projected in the petition. It has reiterated that the work is still in progress and likely to be capitalised during 2014-15.

15. The matter has been examined. The Commission in order dated 16.2.2013 in Petition No.16/GT/2013 while revising the tariff of the generating station based on truing-up exercise for the

period 2009-14 had considered the claim of the petitioner on this item of work and had allowed the same observing as under:

> *"43…………………...The petitioner vide its affidavit 20.11.2012 has now submitted that the scheme of phasing out of Halon Fire Fighting has now been awarded for ₹247.00 lakh and based on actual award, the projected expenditure has now been shifted to 2012-13 and accordingly projected capitalization has been revised. As the asset is required as statutory compliance under National Fire Protection Association Standard on Clean Agent Fire Extinguishing system (NFPA-2001), the claim of the petitioner for ₹247.00 lakh is allowed along with the corresponding de-capitalization. It is noticed that the petitioner has not submitted the de-capitalization value of Halon system. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new assets. Accordingly, the de-capitalization value of Halon system works out to ₹65.87 lakh (247.00 x 0.2667). In view of this, the capitalization of ₹181.13 lakh (247.00-65.87) is allowed under Regulation 9(2)(ii) of the 2009 Tariff Regulations.*

16. It is observed that the Commission in the above order had considered the gross value of old asset as 26.67% of the new assets for the period 2009-14. The petitioner in this petition has submitted that the work is still in progress and is likely to be capitalised during 2014-15. Considering the fact that the asset is required as statutory compliance under the National Fire Protection Association Standard on Clean Agent Fire Extinguishing system (NFPA-2001), the claim of the petitioner for ₹247.00 lakh is allowed along with the corresponding de-capitalization. The petitioner has however not furnished the de-capitalization value of the said item. However, from the de-capitalization value of GT components on which R&M has been carried out, it is observed that the estimated value of original component is about 26.67% of the value of new assets and the same has been considered by the Commission in the previous orders. Accordingly, the de-capitalization value of Halon fire fighting system is worked out as ₹65.87 lakh (247.00 x 0.2667). In view of this, the projected additional capital expenditure of ₹181.13 lakh (247.00-65.87) is allowed under Regulation 14(3)(ii) of the 2014 Tariff Regulations.

Supply of CCTV System

17. The petitioner has claimed projected additional capital expenditure of ₹37.75 lakh towards supply of CCTV system in 2014-15 under Regulation 14(3)(iii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the expenditure has been proposed in order to monitor unmanned location of the plant and for improving the safety, security and healthiness of the plant equipment. The respondents, TPDDL and BRPL have submitted that the

expenditure incurred can be considered under Regulation 14(3)(iii) only on security related issues of internal/ external threat to the power plant based on the advice or direction from the appropriate Govt. agencies or statutory authorities.

18 The petitioner was directed to submit the documentary evidence in support of its claim for supply of CCTV system in the generating station and in response, the petitioner vide affidavit dated 12.7.2016 had furnished the documentary evidence wherein CCTV system has been recommended by the Intelligence Bureau (IB), GOI, for the generating station. Since the expenditure incurred is in compliance with the recommendations of the IB, for safety and security of the plant, the projected additional capital expenditure of ₹37.75 lakh towards installation of CCTV system is allowed under Regulation 14(3)(iii) of the 2014 Tariff Regulations.

R&M of Electrical System (ST excitation system)

19. The petitioner has claimed projected additional capital expenditure of ₹86.69 lakh in 2014-15 towards R&M of Electrical system (ST excitation system) under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the Commission in order dated 14.6.2012 in Petition No. 224/2009 had allowed the projected additional capital expenditure of ₹58.00 lakh each during the years 2012-13 and 2013-14 respectively. It has also submitted that in order dated 16.7.2013 in Petition No. 16/GT/2013, the revised projected additional capital expenditure of ₹80.40 lakh claimed for this item was however disallowed by the Commission on account of deferment of the R&M activity for GTs & C&I beyond 31.3.2014. The petitioner has however submitted that the work is still in progress and an amount of ₹60.00 lakh (approx.) has already been spent in 2013-14.

20. The respondents, TPDDL and BRPL have submitted that that projected additional capital expenditure incurred under Regulation 14(3)(vii) of the 2014 Tariff Regulations, is permissible only for efficient operation of generating station and is required to be substantiated by way of technical justification, duly supported by documentary evidence.

21. We have examined the matter. It is noticed that the projected additional capital expenditure of ₹80.40 lakh claimed by the petitioner was disallowed in Commission's order dated 16.7.2013 and it was observed as under:

> *"45......The petitioner in this petition has claimed expenditure of ₹80.40 lakh during 2013-14 for Renovation of Generator Excitation System. In view of the deferment of the R&M activities for GTs & C&I beyond 31.3.2014, this expenditure has not been considered during 2009-14."*

22. Considering the fact that the excitation system is required for efficient operation of the generating station and that the same could not be capitalized during the period 2009-14 due to deferment of R&M activities, the projected additional capital expenditure of ₹86.69 lakh is allowed along with the corresponding de-capitalization value. It is noticed that the petitioner has not furnished the de-capitalization value of the old asset. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new asset and the same has been considered by the Commission in the previous orders. Accordingly, the de-capitalization value of R&M of Excitation system (ST excitation system) works out to ₹23.12 lakh (86.69 x 0.2667). In view of this, the projected net additional capital expenditure of ₹63.57 lakh (86.69-23.12) is allowed under Regulation 14(3)(vii) of the 2014 Tariff Regulations. The petitioner is directed to furnish the technical justification duly supported by documentary evidence such as test results etc., for consideration at the time of truing-up of tariff.

Replacement of PGB coolers by Plate type Heat Exchanger

23. The petitioner has claimed projected additional capital expenditure of ₹787.96 lakh in 2014-15 towards replacement of PGB coolers by Plate type Heat Exchanger (PHE) under Regulation 14(3)(vii) of the 2014 Tariff Regulations as against the awarded value of ₹747.00 lakh through open tendering process in 2012. In justification of the same, the petitioner has submitted that the Commission vide order dated 14.6.2012 in Petition No. 224/2009 had allowed the projected additional capital expenditure of ₹274.00 based on budgetary offer. It has also submitted that however, the actual award value of the item was ₹747.00 lakh based on open tendering during the year 2012. Accordingly, the petitioner has submitted that the projected additional capital expenditure was claimed by the petitioner in Petition No. 16/GT/2013 based on the actual price

discovered through open tendering process and it was clarified that the GT R&M package award has been shifted and the work of R&M of GTs is likely to be commissioned and capitalized beyond 31.3.2014.

24. The respondent, UPPCL has submitted that there is significant cost escalation and the petitioner has not furnished any explanation. The respondents, BRPL and TPDDL have submitted that the projected additional capitalisation claimed under Regulation 14(3)(vii) of the 2014 Tariff Regulations is permissible only for efficient operation of the generating station and the claim is required to be substantiated with technical justification duly supported by documentary evidence like test results carried out by independent agency as required under the said regulation. It has stated that since the petitioner has not substantiated the claim with technical justification duly supported with documentary evidence, the claim of the petitioner is liable to be rejected by the Commission.

25. The matter has been examined. It is observed that as against the net additional capital expenditure of ₹200.93 lakh allowed by order dated 14.6.2012 in Petition No. 224/2009, the petitioner had claimed projected additional capital expenditure of ₹669.00 lakh in 2012-13 and ₹78.00 lakh in 2013-14 towards this item in Petition No. 16/GT/2013. However, the Commission by order dated 16.7.2013 in Petition No. 16/GT/2013 had not considered the capitalisation of this asset and had held as under:

> *"41. It is noticed that the petitioner in its affidavit dated 20.11.2012 has clarified that the GT R&M package award has shifted and accordingly considering the execution time, the work of R&M of GTs is likely to be commissioned and capitalized beyond 31.3.2014. We also notice that the petitioner had made similar submissions in the review petition No. 21/2012 filed before the Commission against the order dated 14.6.2012 in Petition No. 224/2009, which has been considered and disposed of by the Commission on 1.5.2013. In view of the deferment of R&M activities for GTs & C&I beyond 31.3.2014 (during the next tariff period), the expenditure claimed for 2012-14 is not allowed to be capitalized. However, the same would be considered during the next tariff period in accordance with law."*

26. The petitioner in this petition has not submitted any justification on the increase in the additional capital expenditure claimed as against the awarded value of ₹747.00 lakh. It is however observed that the Commission in order dated 14.6.2012 in Petition No.224/2009 had allowed the net additional capitalisation of ₹200.93 lakh for this item in 2012-13 under Regulation 9(2)(vi) i.e. for efficient and successful operation of the generating station of the 2009 Tariff Regulations based

on the submissions of the petitioner that the existing PGB coolers have deteriorated and are unable to reduce the air temperature and that the replacement /modification of existing PGB coolers which have outlived their life by a combination of cooling towers and plate type heat exchangers have been planned and would achieve desired cold water temperature and generation loss on account of high temperature can be avoided. In this background and considering the fact that the asset is necessary for efficient and successful operation of the generating station, we are inclined to allow the capitalisation of the said asset. However, as the petitioner has not submitted any justification for the increase in the said expenditure we restrict the amount for capitalisation to the awarded value of ₹747.00 lakh along with the corresponding de-capitalization value. It is observed that the petitioner has not furnished the de-capitalization value of old PGB coolers. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original component is about 26.67% of the value of new asset and the same has been considered by the Commission in the previous orders. Accordingly, the de-capitalization value of PGB coolers works out to ₹199.22 lakh (747.00 x 0.2667) and the net projected additional capital expenditure of ₹547.78 lakh (747.00-199.22) is allowed in 2014-15 under the Regulation 14(3) (vii). The petitioner is directed to furnish the technical justification duly supported by documentary evidence such as test results etc., for consideration at the time of truing-up of tariff.

Renovation & modernization of Station C&I

27. The petitioner has claimed projected additional capital expenditure of ₹3410.00 lakh (₹1705.00 lakh each during the years 2016-17 and 2017-18) towards Renovation & modernization of Station C&I under Regulation 14(3)(vii) of the 2014 Tariff Regulations. In justification of the same, the petitioner has submitted that the Commission by its order dated 16.4.2012 in Petition No. 224/2009 had allowed the projected additional capital expenditure of ₹695.17 lakh (948-252.83) in 2011-12, ₹1390.34 lakh (1896-505.66) in 2012-13 and ₹693.70 lakh (946-252.30) in 2013- 14 on net basis. It has further submitted that since these expenditure were deferred, the petitioner had not claimed the said expenditure for capitalisation in Petition No.16/GT/2013.

28. The respondent, UPPCL has submitted that the petitioner has not projected the R&M of GT for life extension during the period 2014-19. It has also submitted that the expenditure was approved by CEA on 30.5.2008 and there will be a lag of 11 years in the implementation of the proposal. It has further submitted that the issue needs to be observed by the Commission as regards the implication on sustainability of plant, the operational performance and cost escalation on account of delay in implementation of R&M proposal. In response, the petitioner has submitted that the R&M of Gas Turbine Package (including C&I package) was tendered in January, 2012 and the Techno Commercial & Price bids were opened during May, 2012 and January, 2013 respectively. It has further submitted that the tendering process was annulled and thereafter, it was decided to delink C&I Package from the combined composite package. It has stated that subsequently the bids for C&I package were issued to M/s Siemens AG (OEM) in August, 2014. The respondents, BRPL and TPDDL have submitted that the projected additional capitalisation claimed under Regulation 14(3)(vii) of the 2014 Tariff Regulations is permissible only for efficient operation of the generating station and the claim is required to be substantiated with technical justification duly supported by documentary evidence like test results carried out by independent agency as required under the said regulation. It has stated that since the petitioner has not substantiated the claim with technical justification duly supported with documentary evidence, the claim of the petitioner is liable to be rejected by the Commission.

29. We have examined the matter. The COD of the generating station is 1.4.1997 and accordingly the useful life of the generating station is till 31.3.2022. The petitioner has envisaged the projected additional capitalization of the expenditure during the years 2016-17 and 2017-18 in respect of R&M of C&I only and not the R&M of GTs for life extension during the period 2014-19 Therefore, the issue of life extension no longer survives. Considering the fact that the work of R&M of C&I is necessary for efficient operation of the generating station, we are inclined to allow projected additional capital expenditure of ₹1705.00 lakh each for the years 2016-17 and 2017-18 along with the corresponding de-capitalization value. It is observed that the petitioner has not furnished the de-capitalization value of old asset. However, from the de-capitalization value of GT components on which R & M has been carried out, it is found that the estimated value of original

component is about 26.67% of the value of new asset and the same has been considered by the Commission in the previous orders. It is further observed that the estimated value of original component is about 26.67% of the value of new assets and the same has been considered by the Commission in its orders dated 14.6.2012 in Petition No. 224/2009 and dated 16.7.2013 in Petition No. 16/GT/2013 . Accordingly, the de-capitalization value of R&M of C&I is worked out to ₹454.72 lakh (1705.00 x 0.2667). Hence, the net projected additional capital expenditure of ₹1250.28 lakh (1705.00-454.72) each is allowed for the years 2016-17 and 2017-18 respectively The petitioner is directed to furnish the technical justification duly supported by documentary evidence such as test results etc., for consideration at the time of truing-up of tariff.

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

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Phasing out of Halon Fire Fighting System	181.13	0.00	0.00	0.00	0.00
R&M of electrical system (ST excitation system)	63.57	0.00	0.00	0.00	0.00
Replacement of PGB coolers	547.78	0.00	0.00	0.00	0.00
Supply of CCTV system	37.75	0.00	0.00	0.00	0.00
R&M of station C&I	0.00	0.00	1250.28	1250.28	0.00
Total projected additional capital expenditure allowed	**830.23**	**0.00**	**1250.28**	**1250.28**	**0.00**

Capital Cost

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

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Opening capital cost	86840.30	87670.53	87670.53	88920.81	90171.09
Projected additional capital expenditure allowed	830.23	0.00	1250.28	1250.28	0.00
Closing capital cost	**87670.53**	**87670.53**	**88920.81**	**90171.09**	**90171.09**

Debt-Equity Ratio

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

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

Provided that:

(i) where equity actually deployed is less than 30% of the capital cost, actual equity shall be considered for determination of tariff:
(ii) the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment:
(iii) any grant obtained for the execution of the project shall not be considered as a part of capital structure for the purpose of debt-equtiy ratio.

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

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

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

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

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

33. Accordingly, the gross loan and equity of ₹43197.35 lakh and ₹43642.96 lakh respectively as on 31.3.2014 as allowed in order dated 7.12.2015 in Petition No. 301/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

34. 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."

35. 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."

36. The petitioner has claimed return on equity considering the base rate of 15.5% and effective tax rate of 23.939%. However, it is observed that in response to the directions of the Commission in Petition No. 290/GT/2014 (tariff of Singrauli STPS for 2014-19), the petitioner vide affidavit dated 23.9.2015 has worked out the effective tax rate as 22.584% based on the actual profit and tax paid for the year 2014-15. During the hearing of the tariff petitions filed by the petitioner for 2014-19, the respondent beneficiaries had raised the issue regarding the computation of effective tax rate. Accordingly, in terms of the directions of the Commission, the petitioner vide

affidavit dated 8.1.2016 in Petition No. 280/GT/2014 (pertaining to tariff of Farakka STPS, Stage-III) has filed the Auditor's Certificate regarding the deposit of advance tax on generation business for the year 2014-15 and Income Tax return for the year 2014-15 (AY 2015-16). We have perused these documents. Though the 2014 Tariff Regulations specify the computation of effective tax rate on the basis of tax paid, we deem it proper to allow the grossing up on MAT rate considering the fact that the matter is being decided and disposed of during 2016-17. Accordingly, for the present, the effective tax rate (MAT) of 20.961% has been considered for the year 2014-15 and 21.342% for the year 2015-16 onwards up to 2018-19 for the purpose of grossing up of the base rate of 15.5%. Based on the above, the rate of ROE works out to 19.610% for FY 2014-15 and 19.705% for FY 2015-16 onwards. This is 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	43642.96	43892.02	43892.02	44267.11	44642.19
Addition of Equity due to Additional capital expenditure	249.07	0.00	375.08	375.08	0.00
Normative Equity - Closing	43892.02	43892.02	44267.11	44642.19	44642.19
Average Normative Equity	43767.49	43892.02	44079.57	44454.65	44642.19
Return on Equity (Base Rate)	15.500%	15.500%	15.500%	15.500%	15.500%
Tax Rate for respective years	20.961%	21.342%	21.342%	21.342%	21.342%
Rate of Return on Equity (Pre Tax)	19.610%	19.705%	19.705%	19.705%	19.705%
Return on Equity (Pre Tax)-annualized	**8582.80**	**8648.92**	**8685.88**	**8759.79**	**8796.74**

Interest on loan

37. 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 orthe 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."

38. Interest on loan has been worked out as under**:**

(a) The gross normative loan amounting to ₹43197.35 lakh has been considered as on 1.4.2014.

(b) Cumulative repayment amounting to ₹41920.24 lakh as on 31.3.2014 as considered in order dated 7.12.2015 in Petition No. 301/GT/2014.

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

(d) Depreciation allowed has been considered as repayment of normative loan during the respective year of the tariff period 2014-19. Further proportionate adjustment has been made to the repayments corresponding to discharges and reversals of liabilities considered during the respective years on account of cumulative repayment adjusted as on 1.4.2014.

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

39. Necessary calculation for interest on loan is as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Gross opening loan	43197.35	43778.51	43778.51	44653.71	45528.90
Cumulative repayment of loan upto previous year / period	41920.24	42047.26	42269.24	42682.99	43678.54
Net Loan Opening	1277.11	1731.25	1509.27	1970.72	1850.36
Addition due to Additional capital expenditure	581.16	0.00	875.20	875.20	0.00
Repayment of loan during the year	127.02	221.98	413.74	995.55	1492.52
Less: Repayment adjustment on account of de-caps	0.00	0.00	0.00	0.00	0.00
Add: Repayment adjustment on discharges corresponding to un-discharged liabilities deducted as on 1.4.2014	0.00	0.00	0.00	0.00	0.00
Net Repayment	127.02	221.98	413.74	995.55	1492.52
Net Loan Closing	1731.25	1509.27	1970.72	1850.36	357.84
Average Loan	1504.18	1620.26	1739.99	1910.54	1104.10
Weighted Average Rate of Interest on Loan	9.58%	9.58%	9.58%	9.58%	9.58%
Interest on Loan	**144.10**	**155.22**	**166.69**	**183.03**	**105.77**

Depreciation

40. Regulation 27of 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 on1.4.2014 shall be worked out by deducting the cumulative depreciation as admitted by the Commission upto 31.3.2014 from the gross depreciable value of the assets.

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

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

41. The cumulative depreciation vide order dated 7.12.2016 in Petition No.301/GT/2014 works out to ₹77841.29 lakh as on 31.3.2014. Depreciation has been calculated by spreading over of the balance depreciable value. The balance useful life as on 1.4.2014 as per order dated 7.12.2015 is 4.93 years and the same has been considered for calculation of depreciation. The petitioner is however directed to furnish additional information as regards un-recovered depreciation at the time of truing-up of tariff in terms of Regulation 8 of the 2014 Tariff Regulations. Necessary calculations in support of depreciation are as shown below:

(₹In lakh)

	2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
Average Capital Cost	87255.42	87670.53	88295.67	89545.95	90171.09
Depreciable value (ex. land) @ 90%	78467.99	78841.60	79404.22	80529.48	81092.10
Balance useful life of the assets	4.93	3.93	2.93	1.93	0.93
Balance depreciable value	626.71	873.29	1213.94	1925.45	1492.52
Depreciation (annualized)	**127.02**	**221.98**	**413.74**	**995.55**	**1492.52**
Cumulative depreciation at the end	77968.30	78190.29	78604.03	79599.58	81092.10
Less: Cumulative Depreciation adjustment on account of un-discharged liabilities	0.00	0.00	0.00	0.00	0.00
Less: Cumulative Depreciation reduction due to de-capitalization	0.00	0.00	0.00	0.00	0.00
Cumulative depreciation (at the end of the period)	**77968.30**	**78190.29**	**78604.03**	**79599.58**	**81092.10**

O&M Expenses

42. 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
14.67	15.59	16.57	17.61	18.72

43. 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
12172.87	12936.27	13749.45	14612.43	15533.48

Water Charges

44. Regulation 29(2) of the 2014 Tariff Regulations provides as under:

"*29 (2) The Water Charges and capital spares for thermal generating stations shall be allowed separately:*

Provided that water charges shall be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check. The details regarding the same shall be furnished along with the petition:

Provided that the generating station shall submit the details of year wise actual capital spares consumed at the time of truing up with appropriate justification for incurring the same and substantiating that the same is not funded through compensatory allowance or special allowance or claimed as a part of additional capitalisation or consumption of stores and spares and renovation and modernization"

45. The petitioner has submitted that as per Regulation 29(2) of the 2014 Tariff Regulations, water charges and capital spares consumed for the thermal generating stations are to be allowed separately. The petitioner has furnished the details in respect of water charges such as type of cooling water system, total water charges as applicable for 2013-14 and has submitted that the water charges may be allowed in tariff based on actual of 2013-14. It has further stated that in accordance with provisions of the Regulations, the petitioner shall furnish the details of actuals for the relevant year at the time of truing up and the same shall be subject to retrospective adjustment. The petitioner has added that it would be relevant to mention that the expenditure of these nature are necessarily to be incurred by the generating station on a continuous basis and accordingly, these need to be provided in the Annual Fixed Charges as well as working capital so as to enable the generator to recover such expenses and pay for them on continuous basis.

46. In terms of the above regulation, water charges are to be allowed based on water consumption depending upon type of plant, type of cooling water system etc., subject to prudence check of the details furnished by the petitioner. The details regarding the same furnished by the petitioner is as under:

Description	**Remarks**
Type of Plant	Gas
Type of cooling water system	closed cycle
Total water charges in 2013-14	₹55.34 lakh

47. In order to examine the trend of the actual water consumption and rate of water charges, the petitioner was directed vide ROP of the hearing dated 14.6.2016 to submit the details of the actual water consumption and the water charges for the period 2009-14. Accordingly, the petitioner vide affidavit dated 12.7.2016 has furnished the details of water consumption and the water charges for last 5 years as under:

Year	Qty. Discharged pre revised (cusecs)	Qty. Discharged - post revised (cusecs)	Cost of water pre-revised (₹)	Cost of water post-revised (₹)	Royalty pre-revised (₹)	Royalty post-revised (₹)	Total (₹)	₹ In lakh
2009-10	219206.5		2462127		3753536		6215662	62.17
2010-11	340306		3822317		5827158		9649475	96.5*
2011-12	120660	275712	1354579	12387189	2065068	18884384	34691220	346.9
2012-13		386976		17386058		26505206	43891164	438.89
2013-14		336104		15100481		23020822	38121303	381.21

** Rs 8.24 lakh has been capitalized for Stage-II*

48. The water charges claimed by the petitioner for 2014-19 are as follows:

(₹in lakh)

2014-15	**2015-16**	**2016-17**	**2017-18**	**2018-19**
55.34	58.85	62.59	66.57	70.79

49. The petitioner has claimed water charges for the year 2014-15 based on the water consumption and rate of water charges for the year 2013-14. The water charges for the period from 2015-16 to 2018-19 has been claimed by escalating @ 6.35% the water charges of ₹55.34 lakh in 2014-15 every year.

50. It is observed that the petitioner vide affidavit dated 12.7.2016 has submitted that there is a single reservoir for meeting the water requirement for whole of Dadri Station (i.e. for Dadri-I, Dadri-II and Dadri Gas Station). Accordingly, U.P. Irrigation Department is raising the invoices for

payment of water charges for whole of Dadri Station. The rate of water charges as per the notification of UP Irrigation Department is ₹3.12 per 1000 cubic feet upto 15.7.2011 which has been revised to ₹12.48 per 1000 cubic feet on consumption basis and the rate of royalty as per the notification of UP Irrigation Department is ₹115000 per cusec per annum upto 15.7.2011 which has been revised to ₹600000 per cusec per annum on consumption basis. The actual expenditure incurred in the year 2013-14 towards the water charges for whole of Dadri Thermal Power Station was apportioned in the ratio of the Steam turbine generation capacity of Dadri thermal Stage-I (840 MW), Dadri thermal Stage-II (980 MW) and Dadri Gas Station (2 Steam Turbine of 154.54 MW capacity each) formed the basis of water charges of respective stages for the year 2014-15. Accordingly, water charges apportioned to the generating station is as under:

(₹ in lakh)

Year	Water Charges paid for whole Dadri TPS (Dadri Stage-I&II and Dadri Gas)	Apportioned to Dadri gas (2x154.54 - ST) in the ratio of MW capacity = (309.08/2129.08) *water charges
2009-10	62.17	9.03
2010-11	96.5	14.01
2011-12	346.9	50.36
2012-13	438.89	63.71
2013-14	381.21	55.34

51. It is observed from the table above that the Water Charges during the period from 2011-12 to 2013-14 has gone up fourfold due to the increase in rate of Water Charges and Royalty as per the notification of U.P irrigation department. Accordingly, water charges of ₹55.34 lakh paid in the year 2013-14 has been considered for allowing the water charges on projection basis during the period 2014-19 as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
55.34	55.34	55.34	55.34	55.34

52. The petitioner is directed to furnish the details such as the contracted quantity, allocation of water, the actual water consumed during 2014-19, the basis of calculation of quantity of CW and computation of water charges at the time of truing-up of tariff in terms of the 2014 Tariff Regulations. In addition, the petitioner shall also confirm / clarify as to whether the water charges have been paid on the basis of contracted quantity or on the basis of allocation, and what is the watch and ward charges claimed as a part of water charges.

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

(₹ in lakh)

Sl. No.		2014-15	2015-16	2016-17	2017-18	2018-19
1	O&M Expenses claimed	12172.87	12936.27	13749.45	14612.43	15533.48
2	**O&M Expenses allowed**	**12172.87**	**12936.27**	**13749.45**	**14612.43**	**15533.48**
3	Water Charges claimed	55.34	55.85	62.59	66.57	70.79
4	**Water Charges allowed**	**55.34**	**55.34**	**55.34**	**55.34**	**55.34**
5	Total O&M Expenses claimed (1 + 3)	12228.21	12992.12	13812.05	14678.99	15604.27
	Total O&M Expenses allowed (2 + 4)	**12228.21**	**12991.61**	**13804.79**	**14667.77**	**15588.82**

SRPC vide e-mail dated 24.8.2016 has stated that the methodology adopted by the Commission for accounting Water charges is not in line with the provisions in the Regulations 29(1) and 2(2) of the 2014 Tariff Regulations. It has submitted that as per Regulation 29(1) and 29(2) and also in terms of the definition of O&M expenses under Regulation 3 (42), O&M expenses has been defined excluding water charges. It is observed that the Commission in its order pertaining to the tariff of Sugen CCPP for the period 2014-19 by a conscious decision had adopted the methodology wherein water charges have been included for the computation of one month O&M expenses and maintenance spares in the working capital for determination of tariff for the period 2014-19. This methodology has been adopted for determination of tariff in respect of other generating stations namely, Simhadri STPS Stage-I & II, Singrauli STPS, Faridabad GPS for the period 2014-19.The same has been considered in this order. In view of this, the submissions of SRPC are not acceptable.

Enhancement of O&M expenses

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

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

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

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

Capital spares

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

Operational Norms

57. The operational norms in respect of the generating station claimed by the petitioner in terms of the provisions of the 2014 Tariff Regulations is allowed is as under:

Normative Annual Plant Availability Factor (NAPAF)	85.0
Gross Station Heat Rate (kcal/kwh)	2000.00
Auxiliary Power Consumption %	2.5

Interest on Working Capital

58. 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) Liquid fuel stock for 15 days corresponding to the normative annual plant availability factor and in case of use of more than one liquid fuel, cost of main liquid fuel duly taking into account mode of operation of the generating stations of gas fuel and liquid fuel';

(iii) Maintenance spares @ 30% of operation and maintenance expense specified in regulation 29; and

(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

59. The petitioner in the petition vide affidavit dated 14.8.2014 has claimed the cost for fuel component in working capital based on price and GCV of APM gas, RLNG and Naphtha for preceding three months from January, 2014 to March, 2014 and the mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during the year 2013-14 which was 74.00%, 1.00% and 25.00% respectively as under:

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Fuel (gas) – 1 month	22419.66	22481.08	22419.66	22419.66	22419.66
Cost of liquid fuel for 15 days	4771.31	4784.39	4771.31	4771.31	4771.31

60. However, the petitioner vide affidavit dated 31.10.2014 has submitted that the mode of operation based on consumption of different fuel during the year 2013-14 has erroneously been submitted as that of the year 2008-09. Accordingly, the petitioner has revised and claimed the cost of fuel component based on the mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during the year 2013-14 which was 93.79%, 6.20% and 0.01% respectively as under:

(₹ in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Fuel (gas) – 1 month	18623.75	18674.78	18623.75	18623.75	18623.75
Cost of liquid fuel for 15 days	2226.95	2226.95	2226.95	2226.95	2226.95

61. The petitioner has further submitted that mode of operation has erroneously been submitted as that of year 2008-09. The petitioner has now submitted revised pattern of mode of

operation on fuel during 2013-14 for the purpose of computation of energy charge. The petitioner has further submitted that though the generation on HSD is only 0.01% during the said period, the petitioner has to maintain the HSD stock in view of the requirement of beneficiaries for HSD based generation. In view of this, the stock of HSD has to be maintained and therefore cost of HSD stock as actually maintained at the generating station is considered while calculating working capital.

62. The fuel components based on the price and GCV of APM gas, RLNG and Naphtha for preceding three months from January, 2014 to March, 2014 and revised mode of operation between APM gas, RLNG and Naphtha achieved by the generating station during the year 2013-14 was 93.79%, 6.20% and 0.01% respectively computed below may be considered for the purpose of tariff for the tariff period 2014-19.

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Cost of Fuel (gas) for 30 days	18368.63	18368.63	18368.63	18368.63	18368.63
Cost of liquid for 15 days	1.88	1.88	1.88	1.88	1.88

63. It is observed from above that the petitioner has considered 1 month (instead of 30 days) as per Regulation 28(1)(b)(i) of the 2014 Tariff Regulations for computation fuel cost (gas) and the cost of liquid fuel (Naphtha) procured during 2013-14. However, considering the mode of operation as 0.01% on liquid fuel (HSD) as per Regulation 28(1)(b)(ii) of the 2014 Tariff Regulations, the cost of liquid for 15 days works out to ₹1.88. The NAPAF of the generating station in terms of the 2014 Tariff Regulation is 85%. It is observed from the computation of energy charges in Form-13 F furnished by the petitioner vide affidavit dated 31.10.2014, has claimed ₹2226.95 lakh as liquid fuel stock for 15 days. The petitioner in its justification has submitted that the stock of HSD has to be maintained and therefore cost of HSD stock as actually maintained at the generating station is considered. However, the petitioner has not supported the submissions by computation / calculations for arriving at the cost of ₹2226.95 lakh of the liquid fuel stock when there was 0.01% contribution on HSD for generation. In view of this, cost of liquid fuel (HSD) for 15 days which works out to ₹1.88 lakh is considered in working capital for the purpose of tariff for the period 2014-19.

Energy/Variable Charges

64. The petitioner vide affidavit dated 14.8.2014 has claimed Energy Charge Rate (ECR) of 446.01 paisa/kWh based on the weighted average price and GCV of domestic gas, RLNG and Naphtha used for operation of the plant during the preceding three months i.e. January, 2014, February, 2014 and March, 2014 and the mode of operation for the preceding three months. Subsequently, the petitioner vide affidavit dated 31.10.2014 has submitted that the mode of operation has erroneously been submitted as that of the year 2008-09 and has accordingly submitted the revised mode of operation during the year 2013-14 for the purpose of computing the energy charge. Based on this, the revised ECR claimed by the petitioner are as under:

	Unit	**2014-15, 2016-17, 2017-18, 2018-19**	**2015-16**
Capacity	MW	829.78	829.78
Fuel		APM+RLNG+Naphtha	
Normative Heat-Rate	kcal/kWh	2000	2000
Aux. Power Consumption	%	2.5	2.5
Weighted average price of Gas	/1000SCM	15521.76	11521.76
Weighted average price of LNG	/1000SCM	47015.31	47015.32
Weighted average price of HSD	/1000SCM	33508.14	33508.14
Weighted average GCV of gas	Kcal/SCM	9665.51	9665.51
Weighted average GCV of LNG	Kcal/SCM	9649.48	9649.48
Weighted average GCV of HSD	Kcal/SCM	9040.00	9040.00
Revised Mode of Operation Gas LNG HSD	 93.79 % 6.20 % 0.01 %		
Rate of energy charge ex-bus	**Paisa/kWh**	**370.986**	**370.986**

65. Based on the norms of operation, the weighted average price and GCV of APM gas, RLNG and Naphtha used for operation of the plant during the preceding three months i.e. January, 2014, February, 2014 and March, 2014 and the mode of operation, the Energy Charges claimed by the petitioner as above is allowed for the period 2014-19 as under:

Rate of energy charge ex-bus	**2014-19**
APM (₹/ kWh)	3.294
RLNG (₹/ kWh)	9.994
Naptha	7.603

Energy Charges for two (2) months

66. Energy charges for 2 months on the basis of as billed GCV for the purpose of interest in working capital has been worked out as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
37247.50	37349.54	37247.50	37247.50	37247.50

Maintenance spares

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

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
3668.46	3898.54	4143.61	4403.70	4681.28

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

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
3668.46	3897.48	4141.44	4400.33	4676.65

Receivables

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

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Variable Charges -2 months	37247.19	37349.23	37247.19	37247.19	37247.19
Fixed Charges – 2 months	4982.67	5151.27	5335.70	5605.04	5848.08
Total	**42229.85**	**42500.51**	**42582.89**	**42852.23**	**43095.26**

O & M Expenses (1 month)

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

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1019.02	1082.93	1151.00	1223.25	1300.36

71. Based on the O&M expense norms and the year wise O&M expenses, the O&M expenses for 1 month is allowed as under:

(₹in lakh)

2014-15	2015-16	2016-17	2017-18	2018-19
1019.02	1082.63	1150.40	1222.31	1299.07

Rate of interest on working capital

72. Clause (3) of Regulation 28 of the 2014 Tariff Regulations provides as under:

"Interest on working Capital: (3) Rate of interest on working capital shall be on normative basis and shall be considered as the bank rate as on 1.4.2014 or as on 1st April of the year during the tariff period 2014-15 to 2018-19 in which the generating station or a unit thereof or the transmission system including communication system or element thereof, as the case may be, is declared under commercial operation, whichever is later."

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

(₹in lakh)

	2014-15	2015-16	2016-17	2017-18	2018-19
Fuel Cost (APM & RLNG) - 30 days	18368.63	18368.63	18368.63	18368.63	18368.63
Liquid Fuel (Naptha) Cost - 15 days	1.88	1.88	1.88	1.88	1.88
Maintenance Spares	3668.46	3897.48	4141.44	4400.33	4676.65
O & M expenses - 1 months	1019.02	1082.63	1150.40	1222.31	1299.07
Receivables - 2 months	42229.85	42500.51	42582.89	42852.23	43095.26
Total Working Capital	**65287.84**	**65851.13**	**66245.24**	**66845.38**	**67441.49**
Rate of interest	13.50%	13.50%	13.50%	13.50%	13.50%
Interest on Working Capital	**8813.86**	**8889.90**	**8943.11**	**9024.13**	**9104.60**

Annual Fixed Charges

74. 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	127.02	221.98	413.74	995.55	1492.52
Interest on Loan	144.10	155.22	166.69	183.03	105.77
Return on Equity	8582.80	8648.92	8685.88	8759.79	8796.74
Interest on Working Capital	8813.86	8889.90	8943.11	9024.13	9104.60
O&M Expenses	12228.21	12991.61	13804.79	14667.77	15588.82
Total	**29895.99**	**30907.64**	**32014.21**	**33630.27**	**35088.46**

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

75. Clause 6 sub-clause (b) of Regulation 30 of the 2014 Tariff Regulations provides as under:

"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 x LPPF x 100 / {CVPF x (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, perlitre or per standard cubic metre, as applicable during the month."

76. The petitioner shall compute and claim the Energy Charges on month to month basis from the beneficiaries based on the above formulae.

77. 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

78. The petitioner has sought the reimbursement of tariff petition filing fee and also the expenses (₹330594/-) incurred towards publication of notices for application of tariff for the year 2014-15. Accordingly, in terms of Regulation 52 of the 2014 Tariff Regulations and in line with the decision in Commission's order dated 5.1.2016 in Petition No. 232/GT/2014, we direct that the petitioner shall be entitled to recover *pro rata,* the filing fees and the expenses incurred on publication of notices for the period 2014-15 directly from the respondents on submission of documentary proof. The filing fees for the remaining years of the tariff period 2015-19 shall be recovered *pro rata* after deposit of the same and production of documentary proof.

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

80. Petition No. 308/GT/2014 is disposed of in terms of the above.

-Sd/-	***-Sd/-***	***-Sd/-***	***-Sd/-***
(Dr.M.K.Iyer)	**(A. S. Bakshi)**	**(A. K. Singhal)**	**(Gireesh B. Pradhan)**
Member	**Member**	**Member**	**Chairperson**