

CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Petition No. 286/2010

**Coram: Shri S. Jayaraman, Member
Shri V.S. Verma, Member
Shri M. Deena Dayalan, Member**

Date of Hearing: 7.6.2011

Date of Order: 23.1.2012

In the matter of:

Approval under Regulation 86 of Central Electricity Regulatory Commission (Conduct of Business) Regulations 1999 and Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations 2009 for determination of Transmission Tariff for 400 kV S/C Singrauli-Vindhyachal Transmission Link along with (2X250 MW) HVDC back at Vindhyachal between NR and WR from 1.4.2009 to 31.3.2014 (DOCO: 6.6.1989).

And

In the matter of:

Power Grid Corporation of India Limited, Gurgaon

.....Petitioner

Vs

1. Madhya Pradesh Power Trading Company Ltd., Jabalpur
2. Maharashtra State Electricity Distribution Co. Ltd., Mumbai
3. Gujarat Urja Vikas Nigam Ltd., Vadodara
4. Electricity Department, Govt. of Goa, Panaji
5. Electricity Department, Administration of Daman & Diu, Daman
6. Electricity Department Administration of Dadar & Nagar Haveli, Silvassa
7. Chhattisgarh State Electricity Board, Raipur
8. Madhya Pradesh Audyogik Kendra, Indore
9. Rajasthan Rajya Vidyut Prasaran Nigam Ltd., Jaipur
10. Ajmer Vidyut Vitran Nigam Ltd., Jaipur
11. Jaipur Vidyut Vitran Nigam Ltd., Jaipur
12. Jodhpur Vidyut Vitran Nigam Ltd., Jaipur
13. Himachal Pradesh State Electricity Board, Shimla
14. Punjab State Electricity Board, Patiala
15. Haryana Power Purchase Centre, Panchkula

16. Power Development Department, Govt. of J&K, Jammu
17. Uttar Pradesh Power Corporation Ltd., Lucknow
18. Delhi Transco Ltd., New Delhi
19. BSES Yamuna Power Ltd., New Delhi
20. BSES Rajdhani Power Ltd., New Delhi
21. North Delhi Power Ltd., New Delhi
22. Chandigarh Administration, Chandigarh
23. Uttarakhand Power Corporation Ltd., Dehra Dun
24. North Central Railway, Allahabad
25. New Delhi Municipal Council, New Delhi

.....Respondents

The following were present:

1. Shri S S Raju, PGCIL
2. Shri Manoj Dubey, MPPTCL

ORDER

This petition has been filed for determination of transmission tariff for 400 kV S/C Singrauli -Vindhyachal Transmission Line along with (2X250 MW) HVDC back to back at Vindhyachal between Northern Region and Western Region(hereinafter referred to as “transmission asset”) from 1.4.2009 to 31.3.2014 (date of commercial operation 6.6.1989) based on the Central Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2009, (hereinafter referred to as the “2009 regulations”).

2. The assets covered in the petition are as follows:-

Srl. No.	Name of the asset	Line length (ckt-km)	Date of commercial operation
1.	Transmission Line- 400 kV S/C Singrauli – Vindhyachal (twin conductor)	3.34	6.6.1989
2.	Vindhyachal (2X250MW)HVDC back to back	-	6.6.1989

3. The date of commercial operation of the transmission asset was 6.6.1989. The tariff for the tariff block 2004-09 was allowed by the Commission by its order dated 15.12.2005 in Petition No. 113/2004 and its amendment order dated 14.2.2008. The admitted capital cost of the transmission asset as on 31.3.2009 was ₹ 17712.57 lakh. The details of admitted cost as on 31.3.2009 and estimated additional capitalization projected to be incurred of the asset covered in the instant order is given below:-

(₹ in lakh)

Name of Asset	Admitted capital cost as on 31.3.2009	Add-Cap proposed for 2012-13	Total estimated capital cost as on 31.3.2014
400 kV S/C Singrauli-Vindhyachal TL along with (2X250 MW) HVDC back to back at Vindhyachal between NR and WR	17712.57	1532.03	19244.6

4. Details of the transmission charges claimed by the petitioner are as under:-

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	273.41	273.41	273.41	618.12	1307.53
Interest on Loan	0.00	0.00	0.00	31.44	31.44
Return on equity	1453.17	1453.57	1453.57	1493.34	1533.51
Interest on Working Capital	58.21	59.46	60.81	70.90	87.60
O & M Expenses	444.20	469.26	496.34	524.41	554.49
Total	2228.99	2255.30	2283.73	2738.21	3514.57

5. The details submitted by the petitioner in support of its claim for interest on working capital are as under:-

(₹ in lakh)

	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	66.63	70.39	74.45	78.66	83.17
O & M expenses	37.02	39.11	41.36	43.70	46.21
Receivables	371.50	375.88	380.62	456.37	585.76
Total	475.15	485.38	496.43	578.73	715.14
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
Interest	58.21	59.46	60.81	70.89	87.60

6. No comments or suggestions have been received from the general public in response to the notices published by the petitioner under section 64 of the Electricity Act, 2003. Reply to the petition has been filed only by Respondent No.1, Madhya Pradesh Power Trading Company Limited (MPPTCL), and Respondent No.17, Uttar Pradesh Power Corporation Limited (UPPCL). MMPTCL has mainly raised the issue of necessity of procuring a spare smoothing reactor and the admissibility of such expenditure under Regulation 9(2) (v) of the 2009 Regulations. UPPCL has raised the issue pertaining to smoothing reactor, separate tariff for additional capital expenditure, depreciation, filling fees, service tax, license fee and revision of O&M expenses etc. The objections have been dealt with in relevant paragraphs of this order.

7. Having heard the representatives of the parties and perused the material on records, we proceed to dispose of the petition. While doing so, we also take care of the submissions of the respondent in its reply and address them in the relevant paragraphs.

CAPITAL COST

8. As regards the capital cost, proviso to Regulation 7(2) of the 2009 regulations provides as under:-

“Provided also that in case of the existing projects, the capital cost admitted by the Commission prior to 1.4.2009 and the additional capital expenditure projected to be incurred for the respective year of the tariff period 2009-14, as may be admitted by the Commission, shall form the basis for determination of tariff.”

9. The approved capital cost as per the Commission's order dated 14.2.2008 in Petition No. 113/2004 was ₹ 17712.57. Accordingly, capital cost ₹ 17712.57 lakh, as on 1.4.2009 has been considered for the purpose of tariff calculation for 2009-14 period.

PROJECTED ADDITIONAL CAPITAL EXPENDITURE

10. The petitioner has claimed an amount of ₹ 1532.03 lakhs as projected additional capital expenditure proposed to be incurred during the year 2012-13 for purchasing one spare smoothing reactor. The admissibility of the additional capital expenditure has been claimed under Regulation 9(2) (v) for successful and efficient operation of the transmission system.

11. The petitioner has submitted that 2 Nos. of 40mH, 70kV DC, 3700 Amp smoothing reactors are in service since the commissioning of the Vindhyachal station in 1989. The petitioner has submitted that these reactors shall complete the 25 years of useful life in June, 2014. The petitioner has further submitted that the oil filled smoothing reactors which are presently in service have been subjected to several electrical stresses during their life. Since 1990, there was a total of 20 trippings on DC over current protection and the smoothing reactors have been subjected to electrical stresses during the fault. It is experienced that the winding failure of such oil filled equipments can happen suddenly despite all efforts to maintain the reactors in good healthy conditions as far as possible. The effect of the failure of the smoothing reactors is that the HVDC block shall be out of service till the reactor is repaired. Moreover, smoothing reactor of the same capacity and design is not readily available and would

involve longtime to procure new smoothing reactor or to undertake repair of the failed reactor. The petitioner is stated to have explored the possibility of running the block without the smoothing reactors but the OEM, ABB Sweden has advised the petitioner for not running the HVDC block at Vindhyachal without reactor for the following reasons:-

- (a) Actual short circuit capacity in the Vindhyachal area is already higher there originally anticipated for Vindhyachal HVDC. OEM cannot recommend adding stress to the valves by running without smoothing reactor.
- (b) In addition, the harmonics current generation will increase above the specified level with risk of problems in the inter-connected generators.

12. The petitioner has submitted that the procurement time of new oil filled smoothing reactor is 3 to 4 years. Moreover, no spare smoothing reactor was supplied by OEM during the commissioning of the project. In case of failure, outage of the block for long period will listed the power flow in either direction (W-N/N-W) by 50% which will cause an adverse effect on the northern and western grid.

13. Madhya Pradesh Power Trading Company Limited (MPPTCL) in its reply dated 6.6.2011 has submitted that since the life of substation equipments is 25 years, the petitioner is obliged to maintain the substation equipments in good serviceable conditions till is useful length of life. The petitioner is claiming O&M expenses on normative basis and is also having insurance policy for its equipments which may be utilized in the event of failure of the equipments. MPPTCL has further submitted that

the petitioner has not undertaken any study which substantiates the contention that the equipment is likely to fail within next 3 to 4 years compelling the petitioner to include procurement of additional spare reactor in its claim for additional capitalization. Claiming additional transmission charges on account of spare reactor is not justified as it will amount to recovery of transmission charges from the beneficiaries on an asset which is not in use. MPPTCL has also submitted that if a petitioner intends to extend the life of the equipment beyond their useful life, it may put up a proposal for renovation and modernization under Regulation 10 of the 2009 Regulations.

14. Uttar Pradesh Power Corporation Limited (UPPCL) in its reply dated 3.6.2011 has submitted that the petitioner may be directed to explain the reasons for its failure to make proper planning in the matter of procurement of smoothing reactor. UPPCL has also submitted that separate tariff for additional capitalization of account of smoothing reactors as prayed by the petitioner may not be allowed.

15. The petitioner in its rejoinder has reiterated its submission regarding the smoothing reactor made in the petition. It has been submitted that since the winding failure of the oil filled equipments can happen suddenly and cannot be foreseen, it is necessary to procure additional reactor for efficient operation of Vindhyachal substation. The petitioner has also furnished to the Commission the details of electrical stresses developed during the service of smoothing reactors, details of fault occurred in the smoothing reactor during the period of operation and other details such as a reason for bypassing 3rd and 5th harmonic filters, test result of DGA and furan analysis wherein the

need for additional reactor has been clearly established. The petitioner has further submitted that the expenditure is covered under Regulation 9(2) (v) of 2009 Regulations.

16. We have considered the submissions of the petitioner and the respondents. The useful life of the AC and DC substations has been specified as 25 years in Regulation 3(42)(c) of 2009 Regulations. The petitioner has admitted that the substation has two smoothing reactors which will complete their useful life in June 2014. The reactors are in service, though they have been subjected to electrical stresses on account of tripping on DC over the current protections. The reactor proposed to be procured shall remain as a spare reactor and will not be put into service. The 2009 Regulations do not provide for capitalization of any asset which will not be put into use during the tariff period. Therefore, the claim of the petitioner for additional capitalization of ₹ 1532.03 lakh on account of spare smoothing reactor is not allowed. However, our decision does not prevent the petitioner from procuring a spare smoothing reactor. The petitioner is granted liberty to approach the Commission for additional capital expenditure for the smoothing reactor as soon as it is commissioned.

DEBT- EQUITY RATIO

17. Regulation 12(2) of the 2009 regulations provides that-

“In case of the generating station and the transmission system declared under commercial operation prior to 1.4.2009, debt-equity ratio allowed by the Commission for determination of tariff for the period ending 31.3.2009 shall be considered.”

18. Details of debt- equity claimed by the petitioner are given below:-

Admitted on 31.3.2009		
Particulars	Amount (₹ in lakh)	%
Debt	9399.70	53.07
Equity	8312.87	46.93
Total	17712.57	100.00

19. As no additional capitalization is being allowed, debt-equity ratio of 53.07:46.93 as on 1.4.2009 and as well as 31.3.2014 has been considered for the purpose of tariff calculations.

RETURN ON EQUITY

20. Regulation 15 of the 2009 regulations provides that:-

“15. (1) Return on equity shall be computed in rupee terms, on the equity base determined in accordance with regulation 12.

(2) Return on equity shall be computed on pre-tax basis at the base rate of 15.5% to be grossed up as per clause (3) of this regulation:

*Provided that in case of projects commissioned on or after 1st April, 2009, an additional return of 0.5% shall be allowed if such projects are completed within the timeline specified in **Appendix-II**:*

Provided further that the additional return of 0.5% shall not be admissible if the project is not completed within the timeline specified above for reasons whatsoever.

(3) The rate of return on equity shall be computed by grossing up the base rate with the Minimum Alternate/Corporate Income Tax Rate for the year 2008-09, as per the Income Tax Act, 1961, as applicable to the concerned generating company or the transmission licensee, as the case may be.

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

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

Where “t” is the applicable tax rate in accordance with clause (3) of this regulation.

(5) The generating company or the transmission licensee as the case may be, shall recover the shortfall or refund the excess Annual Fixed charge on account of Return on Equity due to change in applicable Minimum Alternate/ Corporate Income Tax Rate as per the Income Tax Act, 1961 (as amended from time to time) of the respective financial year directly without making any application before the Commission.

Provided further that Annual Fixed charge with respect to the tax rate applicable to the generating company or the transmission licensee, as the case may be, in line with the provisions of the relevant Finance Acts of the respective financial year during the tariff period shall be trued up in accordance with Regulation 6 of these regulations"

21. In this order, Return on Equity has been calculated as per Regulation 15 of the 2009 regulations with pre-tax ROE of 17.481%.

22. Petitioner's prayer to allow grossing up the base rate of ROE based on the tax rates viz., MAT, surcharge, any other cess, charges, levies etc., as per the relevant Finance Act, shall be settled in accordance with the provisions of Regulation 15 of 2009 regulations as amended by Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2011.

23. Details of return on equity calculated are as under:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Equity	8312.87	8312.87	8312.87	8312.87	8312.87
Addition due to additional capital expenditure	0.00	0.00	0.00	0.00	0.00
Closing Equity	8312.87	8312.87	8312.87	8312.87	8312.87
Average Equity	8312.87	8312.87	8312.87	8312.87	8312.87
Return on Equity (Base rate)	15.50%	15.50%	15.50%	15.50%	15.50%
Tax rate for the year 2008-29	11.33%	11.33%	11.33%	11.33%	11.33%
Rate of Return on Equity (Pre-Tax)	17.481%	17.481%	17.481%	17.481%	17.481%
Return on Equity (Pre Tax)	1453.17	1453.17	1453.17	1453.17	1453.17

INTEREST ON LOAN

24. There is no interest on loan as entire actual and notional loan has been repaid.

DEPRECIATION

25. Regulation 17 of the 2009 regulations provides for calculation of depreciation in the following manner:-

“17. (1) The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission.

(2) 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 stations, the salvage value shall be as provided in the agreement signed by the developers with the State Government for creation of the site:

Provided further that the capital cost of the assets of the hydro generating station for the purpose of computation of depreciable value shall correspond to the percentage of sale of electricity under long-term power purchase agreement at regulated tariff.

(3) 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.

(4) Depreciation shall be calculated annually based on Straight Line Method and at rates specified in Appendix-III 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 date of commercial operation shall be spread over the balance useful life of the assets.

(5) In case of the existing projects, the balance depreciable value as on 1.4.2009 shall be worked out by deducting the cumulative depreciation as admitted by the Commission up to 31.3.2009 from the gross depreciable value of the assets.

(6) 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.”

26. The petitioner has claimed the depreciation as per the above provision of 2009 regulations. UPPCL has submitted that the Commission while issuing amendment to the 2009 regulations may like to issue guidelines for treatment of depreciation in case of

combined assets, keeping in view the fact that after payment of the entire loan, no depreciation may be charged from the consumers. The petitioner in its rejoinder has submitted that depreciation has been allowed as per Regulation 17(2) of the 2009 regulations and in the view of the petitioner, there is no requirement of any amendment to this provision since the same has been specified after discussion/deliberation with the stakeholders.

27. The yearly depreciation has been worked out by spreading over the balance depreciable value over the remaining useful life of the asset. The balance useful life of the asset as per order dated 15.12.2005 in Petition No. 113/2004, for the tariff period 2004-09, was 10 years as on 1.4.2004. The life of the asset shall extinguish by the end of this tariff period. Accordingly, no more depreciation is required to be allowed after 31.3.2014.

28. Details of the depreciation worked out are as under:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening Gross Block	17712.57	17712.57	17712.57	17712.57	17712.57
Addition due to Projected Additional Capitalisation	0.00	0.00	0.00	0.00	0.00
Closing Gross Block	17712.57	17712.57	17712.57	17712.57	17712.57
Average Gross Block	17712.57	17712.57	17712.57	17712.57	17712.57
Rate of Depreciation	5.2709%	5.2709%	5.2709%	5.2709%	5.2709%
Depreciable Value	15941.31	15941.31	15941.31	15941.31	15941.31
Elapsed Life (Beginning of the year)	21	22	23	24	25
Balance Useful life of the asset	5	4	3	2	1
Remaining Depreciable Value	1367.05	1093.64	820.23	546.82	273.41
Depreciation	273.41	273.41	273.41	273.41	273.41

OPERATION & MAINTENANCE EXPENSES

29. Clause (g) of Regulation 19 of the 2009 regulations prescribes the norms for operation and maintenance expenses based on the type of sub-station and line. Norms prescribed in respect of the elements covered in the instant petition are as under:-

Element	2009-10	2010-11	2011-12	2012-13	2013-14
400 kV S/C twin conductor, T/line (₹ in lakh/ Kms.)	0.358	0.378	0.400	0.423	0.447
HVDC back to back stations (₹ in lakh per 500 MV.)	443	468	495	523	553

30. As per the existing norms, the allowable O&M expenses for the assets covered in the instant petition are as follows:-

Element	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
3.34 km, 400 kV S/C, twin conductor transmission line	1.20	1.26	1.34	1.41	1.49
HVDC back to back stations	443.00	468.00	495.00	523.00	553.00
Total O&M charges	444.20	469.26	496.34	524.41	554.49

31. The Petitioner has stated that O&M expenditure for 2009-14 tariff block had been arrived on the basis of normalized actual O&M expenses of the petitioner during the year 2003-04 to 2007-08. The wage hike of 50% on account of pay revision of the employees of public sector undertaking was also considered while calculating the O&M charges for tariff period 2009-14. The petitioner has submitted that it would approach the Commission for suitable revision in the norms for O&M expenditure in case the impact of wage hike w.e.f 1.1.2007 is more than 50%. UPPCL, in its reply has submitted that the 2009 regulations have been framed after detailed consultations, discussions and public hearing and the sanctity of the regulations should be maintained. Once the

normative parameters for O&M expenses have been defined, the question of considering the actuals does not arise. Therefore, the provision of the petitioner for revision of O&M norms on account of wage revision should be rejected.

32. As regards the reimbursement of cost of wage hike, it is clarified that if any such petition is filed, in future, by the petitioner it will be dealt in accordance with law.

INTEREST ON WORKING CAPITAL

33. As per the 2009 regulations the components of the working capital and the interest thereon are discussed hereunder:-

- (i) **Receivables:** As per Regulation 18(1) (c) (i) of the 2009 regulations, receivables will be equivalent to two months of fixed cost. The petitioner has claimed the receivables on the basis of 2 months transmission charges claimed in the petition. In the tariff being allowed, receivables have been worked out on the basis of 2 months transmission charges.

- (ii) **Maintenance spares:** Regulation 18(1)(c)(ii) of the 2009 regulations provides for maintenance spares @ 15% per annum of the O & M expenses from 1.4.2009. The value of maintenance spares has accordingly been worked out.

- (iii) **O & M expenses:** Regulation 18(1) (c) (iii) of the 2009 regulations provides for operation and maintenance expenses for one month as a component of working capital. The petitioner has claimed O&M expenses for 1 month of

the respective year as claimed in the petition. This has been considered in the working capital.

(iv)Rate of interest on working capital: The SBI PLR as on 1.4.2009 (i.e.12.25%) is considered as the rate of interest on working capital.

34. Necessary computations in support of interest on working capital are appended herein below:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	66.63	70.39	74.45	78.66	83.17
O & M expenses	37.02	39.11	41.36	43.70	46.21
Receivables	371.50	375.88	380.62	385.54	390.80
Total	475.14	485.38	496.44	507.90	520.18
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
Interest	58.21	59.46	60.81	62.22	63.72

TRANSMISSION CHARGES

35. The transmission charges being allowed for the transmission lines are summarized below:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	273.41	273.41	273.41	273.41	273.41
Interest on Loan	0.00	0.00	0.00	0.00	0.00
Return on equity	1453.17	1453.17	1453.17	1453.17	1453.17
Interest on Working Capital	58.21	59.46	60.81	62.22	63.72
O & M Expenses	444.20	469.26	496.34	524.41	554.49
Total	2228.99	2255.30	2283.74	2313.21	2344.80

FILING FEE AND THE PUBLICATION EXPENSES

36. The petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. UPPCL has submitted that the filing fee shall be governed as per the Commission's order. In accordance with the Commission's order dated 11.1.2010 in Petition No. 109/2009, the petitioner shall be entitled to recover the filing fee directly from the beneficiaries on *pro-rata* basis. The petitioner shall also be entitled for reimbursement of the publication expenses in connection with the present petition directly from the beneficiary on *pro-rata* basis.

LICENCE FEE

37. The petitioner further submitted that in O&M norms for tariff block 2009-14 the cost associated with license fees had not been captured and the license fee may be allowed to be recovered separately from the respondents. UPPCL, in its reply has submitted that the 2009 regulations do not provide for reimbursement of licence fee and hence it should not be allowed. As regards the prayer for reimbursement of licence fee, it is clarified that the same shall be dealt with in accordance with our order dated 25.10.2011 in Petition No. 21/2011 and 22/2011.

SERVICE TAX

38. The petitioner has made a prayer to bill and recover the service tax on transmission charges separately from the respondents if the exemption granted to it is withdrawn and transmission of power is made a taxable service. UPPCL has submitted that the petitioner's prayer to bill and recover service tax, if levied in future, is premature

and hence it must be negated. We agree with the submission of UPPCL and accordingly reject the prayer of the petitioner with regard to service tax.

SHARING OF TRANSMISSION CHARGES

39. The transmission charges allowed shall be recovered on monthly basis in accordance with Regulation 23 and shared by the beneficiaries in accordance with Regulation 33 of the 2009 regulations upto 30.6.2011. With effect from 1.7.2011, the billing, collection and disbursement of the transmission charges shall be governed by the provisions of Central Electricity Regulatory Commission (Sharing of Inter-State Transmission Charges and Losses) Regulations, 2010 and the Removal of Difficulties orders issued thereunder.

40. This order disposes of Petition No.286/2010.

Sd/-

(M. Deena Dayalan)
Member

Sd/-

(V.S. Verma)
Member

Sd/-

(S. Jayaraman)
Member