

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 150/TT/2013

Coram:

Shri V.S. Verma, Member

Shri M. Deena Dayalan, Member

Date of Hearing: 08.08.2013

Date of Order: 20.01.2014

In the matter of:

Approval under Regulation 86 of Central Electricity Regulatory Commission (Conduct of Business) Regulations, 1999 and Central Electricity Regulatory Commission (Terms & Conditions of tariff) Regulations, 2009 for determination of Revised Transmission Tariff for Pole-I of +/- 500 kV, 2500 MW Balia – Bhiwadi HVDC Transmission Line after approval of Revised cost estimate under Transmission System associated with Barh Generation Project (3x660 MW) in Northern Region from date of commercial operation (1.9.2010) to 31.3.2014.

And

In the matter of:-

Power Grid Corporation of India Limited, Gurgaon

...Petitioner

Vs

1. Uttar Pradesh Power Corporation Limited,
Shakti Bhawan, 14, Ashok Marg, Lucknow-22 6001.
2. Rajasthan Rajya Vidyut Prasaran Nigam Limited,
Vidyut Bhawan, Vidyut Marg, Jaipur-302 005
3. Ajmer Vidyut Vitran Nigam Ltd.
400 KV GSS Building (Ground Floor),



- Ajmer Road, Heerapura, Jaipur
4. Jaipur Vidyut Vitran Nigam Ltd.,
400 KV GSS Building (Ground Floor),
Ajmer Road, Heerapura, Jaipur.
 5. Jodhpur Vidyut Vitran Nigam Ltd.,
400 KV GSS Building (Ground Floor), Ajmer Road, Heerapura, Jaipur.
 6. Himachal Pradesh State Electricity Board, Vidyut Bhawan,
Kumar House Complex Building-II, Shimla-171 004.
 7. Punjab State Electricity Board,
The Mall, Patiala-147001
 8. Haryana Power Purchase Centre,
Shakti Bhawan, Sector-6, Panchkula (Haryana) 134 109.
 9. Power Development Department,
Govt. of Jammu & Kashmir, Mini Secretariat, Jammu
 10. Delhi Transco Limited,
Shakti Sadan, Kotla Road, New Delhi-110 002.
 11. BSES Yamuna Power Limited,
BSES Bhawan, Nehru Place, New Delhi.
 12. BSES Rajdhani Power Limited,
BSES Bhawan, Nehru Place, New Delhi
 13. North Delhi Power Limited,
Power Trading & Load Dispatch Group,
CENNET Building, Adjacent to 66/11 kV Pitampura-3 GRID Building,
Near PP Jewelers, Pitampura, New Delhi-110 034.
 14. Chandigarh Administration,
Sector-9, Chandigarh.
 15. Uttarakhand Power Corporation Limited,
Urja Bhawan, Kanwali Road, Dehradun.
 16. North Central Railway, Allahabad.
 17. New Delhi Municipal Council, Palika Kendra,
Sansad Marg, New Delhi-110 001

Respondents



For Petitioner: Shri S.S Raju, PGCIL
Shri U K Tyagi, PGCIL
Shri M M Mondal, PGCIL
Ms. Sangeeta Edward, PGCIL
Shri Prashant Sharma, PGCIL

For Respondents: Shri R B Sharma, Advocate, BRPL
Shri TPS Bawa, PSPCL
Shri Mahendra Pal, NDMC

ORDER

This petition has been filed by Power Grid Corporation of India Limited for re-determination of transmission tariff for Pole-I of +/- 500 kV, 2500 MW Balia – Bhiwadi HVDC Transmission Line (hereinafter referred to as “the transmission assets”) associated with Barh Generation Project (3x660 MW) in Northern Region after approval of Revised Cost Estimate, from date of commercial operation (1.9.2010) to 31.3.2014, based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009, (hereinafter referred to as “the 2009 Tariff Regulations”).

2. The administrative approval and expenditure sanction to the implementation of Transmission System associated with Barh Generation Project was accorded by the Government of India, Ministry of Power vide letter dated 12.12.2005 at an estimated cost of ₹377946 lakh including IDC of ₹17941 lakh (Based on 2nd Quarter, 2005 price level).

3. Scope of the work covered under the scheme is as follows:-

Transmission Lines

(a) LILO of Kahalgaon-Patna 400 kV D/C (Quad) line at Barh



- (b) Barh - Balia 400kV D/C (Quad) line
- (c) Balia-Bhiwadi 2500 MW, \pm 500 kV HVDC bipole line
- (d) Seoni -Bina 765 kV S/C line (to be initially charged at 400 kV)
- (e) Two nos. 66 kV Earth Electrode lines (one each at Balia and Bhiwadi 2 conductors of Twin Moose for each line)

Sub Stations

- (a) Balia 400kV Sub-station Extension
- (b) Bhiwadi 400/220kV Sub-station Extension
- (c) Seoni 400kV Sub-station Extension
- (d) Bina 400kV Switching Station Extension
- (e) Balia and Bhiwadi Converter Stations including Earth Electrode Stations and Repeater Stations
- (f) Barh 400kV Switchyard extension (NTPC) – Provision of power Line Carrier Communication.

4. The petitioner had filed Petition No. 315/2010, seeking determination of transmission tariff, for 2009-14 period, in respect of "Pole-I of +/- 500 kV, 2500 MW Balia – Bhiwadi HVDC Bi-pole including HVDC Transmission Line under Transmission System in Northern Region". As the actual expenditure as on date of commercial operation exceeded the apportioned approved cost, the Commission, vide order dated 14.3.2012, restricted the capital cost to the apportioned approved cost of ₹205054.00 lakh against total estimated completion cost of ₹235524.65 lakh claimed by the petitioner.

5. The Commission, vide order dated 14.3.2012 in Petition No. 315/2010, observed as below:-

"10. The total estimated completion cost exceeds the apportioned approved cost. The petitioner was asked to submit the RCE. The petitioner, vide affidavit dated 1.3.2011, has submitted that RCE of the project is under approval and the same shall be submitted after the approval. Hence, in the absence of RCE the total capital cost of the project has been restricted up to the apportioned approved cost i.e. Rs.205054 lakh and shall be re-examined after the submission of RCE.

6. In the meantime, the Revised Cost Estimate for Barh Transmission system was approved by the Board of Directors of the petitioner, vide letter dated 23.1.2012, for revised cost of ₹428259 lakh including the IDC of ₹41326 lakh (Based on 1st Quarter, 2011 price level) .

7. This petition has been filed in accordance with the Regulation 6(1) of the 2009 Tariff Regulations which stipulates that:-

"Provided that the generating company or the transmission licensee, as the case may be, may in its discretion make an application before the Commission one more time prior to 2013-14 for revision of tariff."

8. Details of the transmission charges claimed by the petitioner are as follows:-

	(₹ in lakh)			
	2010-11 (pro- rata)	2011-12	2012-13	2013-14
Depreciation	5976.51	10628.10	11155.32	11414.35
Interest on Loan	1736.01	2922.36	2798.17	2601.28
Return on equity	6059.87	10793.09	11331.71	11600.09
Interest on Working Capital	308.77	548.10	571.04	582.82
O & M Expenses	1150.45	2085.22	2204.71	2329.82
Total	15231.61	26976.87	28060.95	28528.36

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

(₹ in lakh)

	2010-11 (pro- rata)	2011-12	2012-13	2013-14
Maintenance Spares	295.83	312.78	330.71	349.47
O & M expenses	164.35	173.77	183.73	194.15
Receivables	4351.89	4496.15	4676.83	4754.73
Total	4812.07	4982.70	5191.26	5298.35
Interest	308.77	548.10	571.04	582.82
Rate of Interest	11.00%	11.00%	11.00%	11.00%

10. 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. Reply to the Petition has been filed only by BSES Rajdhani Power Limited and Punjab State Power Corporation Ltd (PSPCL). vide their affidavits dated 6.8.2013 and 13.8.2103 respectively. Gist of the submissions by the Respondents is as under:-

(a) The revised capital cost letter does not give any cause/detail/justification for the increase in capital cost of the total scheme.

(b) The revised capital cost letter of PGCIL dated 23.01.2012 (page 45-48 of petition) states at Sr. No.3, "Completion Schedule" that the remaining assets are expected to be commissioned by Mar-2012. Hence, the time of Mar-12 has been given by PGCIL itself in its approval letter of 23.03.2012. However, this Pole-II of HVDC line was delayed and the date of commercial operation is 01.07.2012

which needs to be explained by the petitioner as to how it has exceeded the time frame set by its own order/letter of Jan-2012. Due to delay in pole-II, the pole-I operated for extended period within the Pole-II.

(c) However, practically the Balia-Bhiwadi line Pole-I was commissioned on 1.9.2010, while the lines were to supply power to Balia sub-station were commissioned much later as under:

- (I) LILO of one circuit of Kahalgaon-Patna line at Barh: Oct-2009
- (II) LILO of 2nd circuit of Kahalgaon-Patna line at Barh: July-2011
- (III) Actual loading of Barh-Balia line: August-2011
- (IV) Commissioning of Pole-I HVDC line: September-2010
- (V) Commissioning of Pole-II HVDC line: July-2012

(d) The petitioner is not justified in claiming the tariff of HVDC line pole-I from 1.9.2010 because the lines to supply power to Balia, which were a part and parcel of the composite project approved by POWERGRID were commissioned much later.

(e) The petitioner has commissioned Pole-I of HVDC line from 1.9.2010 while the Pole-II was commissioned in July, 2012. Thus, for the period 1.9.2010 up to 30.6.2012, the line was operating with only Pole-I carrying the MW load. Operationally, Pole-1 can operate with

the return current from Bhiwadi to Balia being ensured by either of the two alternatives-

- (I) The return current of Pole-I is transmitted back to Balia using the metallic conductor of pole-II
- (II) The return current of Pole-I is transmitted back to Balia through the earth conductor system as under:
 - Bhiwadi to the earth electrode by means of the single circuit earth electrode line from Bhiwadi HVDC terminal to the earth electrode line.
 - The earth current as received at Balia earth electrode is then transmitted back to Balia HVDC terminal through the earth electrode line.
- (f) This problem has occurred because there was a huge time mismatch between the commissioning of Pole-I and Pole-II.
- (g) The claim of petitioner is that because the metallic return path of Pole-II was utilized for the operation of Pole-I, the petitioner should be allowed the O&M charges of the metallic conductor of Pole-II even though the Pole-II is not in commercial operation for the period 1.9.2010 up to 30.6.2012.

11. The petitioner has responded to the above submissions vide its affidavit dated 11.9.2013 and 26.9.2013.

12. Rival submissions are being addressed in the respective following paragraphs.



13. Having heard the representatives of the parties and perused the material on records, we proceed to dispose of the petition.

Capital cost

14. Regulation 7(1) (a) of the 2009 Tariff Regulations provides as under:-

“(1) Capital cost for a project shall include:

The expenditure incurred or projected to be incurred, including interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on the loan-(i) being equal to 70% of the funds deployed, in the event of the actual equity in excess of 30% of the funds deployed, by treating the excess equity as normative loan, or (ii) being equal to the actual amount of loan in the event of the actual equity less than 30% of the funds deployed,-up to the date of commercial operation of the project, as admitted by the Commission, after prudence check.”

15. Based on the above, following capital cost up to commercial operation of the transmission assets has been considered for the purpose of tariff:-

(₹ in lakh)		
Date of commercial operation	Capital cost considered for the purpose of tariff before adjustment of IEDC/IDC & initial spares, if any, as on date of commercial operation	Applicable period of tariff
1.9.2010	196437.64	1.9.2010 to 31.3.2014

16. As regards the respondents’ objection regarding the increase in capital cost, it is observed that there is an increase of ₹50313 lakh i.e. 13.31% of approved cost. The reason for increase is summarized overleaf:-

(₹ in lakh)			
S No.	Variation on account of :	Variation	Variation over approved Cost (%)
(i)	Price Variation		
a	FR to LOA	(-)99.35	
b	As per LOA PV formulae	174.15	
	Sub-Total	74.80	1.99%
(ii)	Variation in Quantities of Approved Items	30.30	0.80%
(iii)	Land & Compensation	31.04	0.82%
(iv)	a) FERV on Loan revaluation	151.97	
	b) FERV of contracts	121.37	
	Sub-Total (FERV)	273.34	7.23%
(v)	Other Reasons (IEDC & IDC)		
a	IEDC (Incl. Contingency)	(-) 140.20	
b	IDC	233.85	
	Sub-Total (Other Reasons)	93.65	2.47%
	Grand Total	503.13	13.31%

17. It may be seen from the above there has been an increase in the cost of the project by ₹7480 lakh on account of price variation, which works out to 1.99% of the approved cost. Further, the contracts for various packages under this project were awarded to the lowest evaluated and responsible bidder, on the basis of International/Domestic Competitive Bidding, after publication of NITs in leading Newspapers. Thus, the award prices represent the lowest prices available at the time of bidding of various packages.

18. The Board of Directors of the petitioner has approved the Revised Cost Estimate in line with the power delegated by Government of India for approval of the investment of transmission projects.

19. As regards cost apportionment, it is seen that item wise details are given. It is further noticed that, the cost of Assets/equipments which are

required for smooth operation of Pole-I, such as control room building, common equipment of the Switchyard, valve hall, etc., are booked under Pole-I.

20. As regards the operational aspects of the transmission assets objected to by the respondents, it needs to be clarified that in case of HVDC system there has to be one positive and one negative side. Power flow through HVDC bi-pole links can be under the following Modes of Operations.

(a) When both the poles are in service, one pole acts as positive and other pole acts as negative.

(b) When one pole is out of service due to terminal problem but the line portion is available, power flow can be facilitated through the link utilizing the line portion of the affected pole. This mode of operation is called Metallic Return Mode of Operation.

(c) When one pole is out of service and line portion of the affected pole is also not available, then the ground is considered as return path which is called as Ground Return Mode of Operations.

21. It is important to note that metallic return mode of operation is the normal mode of operation of HVDC system during outage of any one of the poles and ground return mode of operation is done only under exigency condition. Prolonged operation of HVDC pole in ground return mode shall erode the designed life of the earth electrode stations. Therefore, for

continuous running for longer period metallic return mode of operation is to be there. Since both circuits of Balia-Bhiwadi link is being used for power flow using metallic return mode of operation even when one pole is operative at terminals, the petitioner is entitled for O&M charges of the same. Accordingly, O&M expenses in tariff Balia- Bhiwadi line has been calculated considering the same as D/C line in the respective paras hereunder.

22. Based on the above, it is noted that there is no cost over-run. As regards time over-run, the same has been dealt with in order dated 14.3.2012 in Petition No 315/2010.

Treatment of IDC and IEDC

23. As regards IDC and IEDC, the Commission vide its order dated 14.3.2012 in Petition No. 315/2010 had observed as under:-

11. As per investment approval, dated 12.12.2005, the transmission system was to be completed within 45 months. Accordingly, the system was to be commissioned in October, 2009. However, the project was put under commercial operation on 1.9.2010 and thus there was a delay of 11 months in commissioning of the system.

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14. We are of the opinion that the delay in commissioning of subject assets was not attributable to the petitioner and accordingly the delay has been condoned.

24. Accordingly, there is no deduction in the capital cost on this account.

Treatment of initial spares

25. Capital cost as on date of commercial operation is inclusive of cost of initial spares amounting to ₹4069.76 lakh corresponding to sub-station. This



amount is within the ceiling limit defined in Regulation 8 of the 2009 Tariff regulations. Hence, the same is being allowed. Detailed calculations to arrive at excess initial spares are as given bellow:-

(₹ in lakh)

Capital cost claimed as on cut off date (31.3.2013)	Initial spares claimed	Ceiling limits as per Regulation 8 of 2009 Tariff Regulation	Initial spares worked out	Excess initial spares claimed
1,30,147.98	4,069.76	3.50%	4,572.79	-

26. The petitioner has filed Petition No.96/TT/2012 for determination of transmission tariff for Pole-II of +/- 500 kV, 2500 MW Balia – Bhiwadi HVDC Bipole associated with Barh Generation Project. In Petition No. 96/TT/2012, the petitioner has submitted that additional initial spares of approximately ₹31.98 crore are to be procured in addition to the already capitalized spares of ₹48.37 crore (₹40.70 crore and ₹7.67 crore for Pole I and II respectively). The petitioner had further submitted that some additional spares are to be procured for off-shore and on-shore equipments and that the failure rate is high in case of BHEL make circuit breakers and hence requested to allow additional initial spares of ₹11.48 crore and shall submit the actual expenditure of the initial spares to be procured at the time of truing up.

27. The instant petition is for re-determination of transmission tariff for Pole-I of +/- 500kV, 2500 MW Balia-Bhiwadi HVDC Bi-pole including HVDC Transmission line under Transmission system associated with Barh Generation Project and the petitioner has filed petitions for Pole-I and Pole-II separately. It is not clear from the petitioner's submission that which spares

they want to procure. Whether the proposed spares were originally planned or OEM recommended certain additional spares. If the spares were originally planned, it is not clear why they were not procured at the time of award. No details of proposed spares have been submitted. It appears that the petitioner proposes to procure additional spares merely to utilize the margin available between the norms and actual expenditure. In the absence of proper justification and details, approval for additional initial spares cannot be granted at this stage. Further, the petitioner has not filed the details about the failure of BHEL circuit breakers. If the petitioner has experienced higher failure rate in case of BHEL circuit breakers, it should have avoided procurement from BHEL. Beneficiaries cannot be burdened with liability on the ground of possible manufacturing defects in BHEL circuit breakers. However, the petitioner may submit the actual expenditure on the initial spares procured, if any, with full justification for each spare at the time of truing up and the same may be considered by the Commission on merits.

28. Based on the above, capital cost considered for the purpose of tariff calculation after scrutiny of IDC and IEDC and initial spares is as follows:-

(₹ in lakh)			
Capital cost considered for the purpose of tariff before adjustment of IEDC/IDC & Initial Spares, if any, as on date of commercial operation	Deduction in respect of excess IDC/IEDC	Deduction in respect of excess initial spares	Capital cost considered for the purpose of tariff after scrutiny of IEDC/IDC & Initial Spares, if any, as on date of commercial operation
196437.64	0.00	0.00	196437.64

Additional capital expenditure

29. With regard to additional capital expenditure, clause 9(1) of the 2009 Tariff Regulations provides as under:-

"The capital expenditure incurred or projected to be incurred, on the following counts within the original scope of work, after the date of commercial operation and up to the cut-off date may be admitted by the Commission, subject to prudence check:

- (i) Undischarged liabilities;
- (ii) Works deferred for execution
- (iii) Procurement of initial capital spares within the original scope of work, subject to the provisions of regulation 8;
- (iv) Liabilities to meet award of arbitration or for compliance of the order or decree of a court; and
- (v) Change in law.

Provided that the details of works included in the original scope of work along with estimates of expenditure, undischarged liabilities and the works deferred for execution shall be submitted along with the application for determination of tariff."

30. The 2009 Tariff regulations further defines cut-off date as-

"cut-off date means 31st march of the year closing after 2 years of the year of commercial operation of the project, and incase of the project is declared under commercial operation in the last quarter of the year, the cut-off date shall be 31st March of the year closing after 3 years of the year of commercial operation".

31. Based on the above, cut-off date of the transmission assets is 31.3.2013.

32. Details of the additional capital expenditure submitted by the petitioner are as follows:-

(₹ in lakh)

Pole-I of +/- 500kV, 2500 MW Balia-Bhiwadi HVDC Bi-pole including HVDC Transmission Line	Expenditure Up to date of commercial operation	1333.35	Land(Freehold)
		6811.40	Building & Civil Works
		86866.03	T/L
		100994.20	Sub-station
		432.66	PLCC
	TOTAL	196437.64	
	2010-11 (Balance/Retention Payments)	17.89	Land(Freehold)
		1565.83	Building & Civil Works
		1056.74	T/L
		655.29	Sub-station
		6.01	PLCC
	TOTAL	3301.76	
	2011-12 (Balance/Retention Payments)	0.00	Land(Freehold)
		948.94	Building & Civil Works
		583.67	T/L
		10600.75	Sub-station
		0.00	PLCC
	TOTAL	12133.36	
	2012-13 (Balance/Retention Payments)	6.28	Land(Freehold)
		645.94	Building & Civil Works
		1626.22	T/L
6020.44		Sub-station	
8407.88		PLCC	
TOTAL	8407.88		
2013-14 (Balance/Retention Payments)	0.00	Land(Freehold)	
	548.65	Building & Civil Works	
	92.06	T/L	
	1186.56	Sub-station	
	547.67	PLCC	
TOTAL	1827.27		

33. The additional capital expenditure incurred /projected to be incurred from commercial operation to 31.3.2011, 2011-12, and 2012-13 is on account of post commissioning payment and settlements within original scope of work. The additional capital expenditure incurred in the assets is on account of Balance/Retention Payments and it is within cut-off date i.e. 31.3.2013 as per the Regulation 9 (1) of the 2009 Tariff Regulation. The petitioner has also claimed add cap for the period 2013-14 (i.e. after cut-off date) on account of



balance and retention payment as per Regulation 9(2) (viii) of the 2009 Tariff Regulations. The claim of the petitioner has been allowed at this stage but at the time of truing up the petitioner shall submit details of liabilities and balance work for which petitioner has claimed additional capital expenditure.

34. The details of the additional capital expenditure allowed are follows:-

(₹ in lakh)			
2010-11	2011-12	2012-13	2013-14
3301.76	12133.36	8407.88	1827.27

Debt- equity ratio

35. Regulation 12 of the 2009 Tariff regulations provides that:-

“12. **Debt-Equity Ratio.** (1) For a project declared under commercial operation on or after 1.4.2009, 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 where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff:

Provided further that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment.

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

(2) 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.

(3) Any expenditure incurred or projected to be incurred on or after 1.4.2009 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.”

36. The details of Debt-Equity as on date of commercial operation of the transmission assets are as follows:-

(₹ in lakh)

Capital cost as on date of commercial operation		
Particulars	Amount	%
Debt	137506.35	70.000
Equity	58931.29	30.000
Total	196437.64	100.00

37. Details of Debt – Equity as on 31.3.2014 are as under:-

(₹ in lakh)

Capital cost as on 31.3.2014		
	Amount	%
Debt	155475.54	70.000
Equity	66632.37	30.000
Total	222107.91	100.00

Return on Equity

38. Regulation 15 of the 2009 Tariff regulations as amended 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:

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

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 year during the tariff period shall be trued up in accordance with Regulation 6 of these regulations.

39. ROE has been computed as per Regulation 15 of the 2009 Tariff regulations. Pre-tax ROE of 17.481% has been considered.

40. Details of the return on equity allowed are given hereunder:-

(₹ in lakh)

	2010-11 (pro-rata)	2011-12	2012-13	2013-14
Opening Equity	58931.29	59921.82	63561.83	66084.19
Addition due to Additional Capitalisation	990.53	3640.01	2522.36	548.18
Closing Equity	59921.82	63561.83	66084.19	66632.37
Average Equity	59426.55	61741.82	64823.01	66358.28
Return on Equity (Base Rate)	15.50%	15.50%	15.50%	15.50%
Tax rate for the year 2008-09 (MAT)	11.33%	11.33%	11.33%	11.33%
Rate of Return on Equity (Pre Tax)	17.481%	17.481%	17.481%	17.481%
Return on Equity (Pre Tax)	6059.87	10793.09	11331.71	11600.09

41. The petitioner's request to allow grossing up the base rate of return with the applicable tax rate as per the relevant Finance Act for the relevant year and direct settlement of tax liability between the transmission licensee and the beneficiaries on year to year basis, shall be settled in accordance with the provisions of Regulation 15 of the 2009 Tariff Regulations.

Interest on loan

42. Regulation 16 of the 2009 Tariff regulations provides that,-

“16. (1) The loans arrived at in the manner indicated in regulation 12 shall be considered as gross normative loan for calculation of interest on loan.

(2) The normative loan outstanding as on 1.4.2009 shall be worked out by deducting the cumulative repayment as admitted by the Commission up to 31.3.2009 from the gross normative loan.

(3) The repayment for the year of the tariff period 2009-14 shall be deemed to be equal to the depreciation allowed for that year:

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

(5) The rate of interest shall be the weighted average rate of interest calculated on the basis of the actual loan portfolio at the beginning of each year applicable to the project:

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 beneficiary or the transmission customers 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.”

43. In these calculations, interest on loan has been computed on the following basis:-

(a) Gross amount of loan, repayment of instalments and rate of interest on actual loans have been considered as per the details submitted vide original petition.

(b) The yearly repayment for the tariff period 2009-14 has been considered to be equal to the depreciation allowed for that year.

(c) Weighted average rate of interest on actual average loan worked out as per (a) above is applied on the notional average loan during the year to arrive at the interest on loan.

44. Detailed calculations in support of the weighted average rate of interest have been given in Annexure I.

45. Based on the above, interests on loan has been calculated as given hereunder:-

	(₹ in lakh)			
	2010-11 (Pro-rata)	2011-12	2012-13	2013-14
Gross Normative Loan	137506.35	139817.58	148310.93	154196.45
Cumulative Repayment upto Previous Year	0.00	5976.51	16604.61	27759.93
Net Loan-Opening	137506.35	133841.07	131706.33	126436.52
Addition due to Additional Capitalisation	2311.23	8493.35	5885.52	1279.09
Repayment during the year	5976.51	10628.10	11155.32	11414.35
Net Loan-Closing	133841.07	131706.33	126436.52	116301.26
Average Loan	135673.71	132773.70	129071.42	121368.89
Weighted Average Rate of Interest on Loan	2.1935%	2.2010%	2.1679%	2.1433%
Interest	1736.01	2922.36	2798.16	2601.27

Depreciation

46. Regulation 17 of the 2009 Tariff regulations provides for computation of depreciation in the following manner, namely:-

“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.

xxxx
xxxx

(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.”

47. Assets in the instant petition were put on commercial operation as on 1.9.2010 and accordingly will complete 12 years beyond 2013-14 and thus depreciation has been calculated annually based on Straight Line Method and at rates specified in Appendix-III.

48. Accordingly, depreciation has been worked out on the basis of capital expenditure as on date of commercial operation wherein depreciation for the first year has been calculated on pro rata basis for the part of year.

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

	(₹ in lakh)			
	2010-11 (Pro-rata)	2011-12	2012-13	2013-14
Opening Gross Block	196437.64	199739.40	211872.76	220280.64
Addition during 2009-14 due to Projected Additional Capitalisation	3301.76	12133.36	8407.88	1827.27
Gross Block	199739.40	211872.76	220280.64	222107.91
Average Gross Block	198088.52	205806.08	216076.70	221194.28
Rate of Depreciation	5.1722%	5.1641%	5.1627%	5.1603%
Depreciable Value	177071.60	184009.36	193250.09	197853.08
Remaining Depreciable Value	177071.60	178032.85	176645.48	170093.15
Depreciation	5976.51	10628.10	11155.32	11414.35

Operation & maintenance expenses

50. The O&M expenses of the Balia-Bhiwadi HVDC Sub-station cannot be determined on the basis of the HVDC back to back Sub-stations and it can only be determined on the basis of the existing norms for other HVDC bi-poles. Talcher-Kolar HVDC system of 2000 MW was put under commercial operation in 2002-03 and Rihand-Dadri HVDC system of 1500 MW was put under commercial operation in 1991-92. As is apparent, Talcher-Kolar HVDC system of 2000 MW is closer to Balia-Bhiwadi HVDC system of 2500 MW and accordingly the O&M expenses are determined on the basis of Talcher-Kolar HVDC system. In view of above, the O&M expenses of HVDC transmission line of Balia-Bhiwadi Bipole system is calculated on the basis of norms for double circuit bundled conductor (with four or more sub-conductors) transmission line as per the 2009 Tariff regulations. The O&M expenses for one pole of 1250 MW of this HVDC system is calculated on the basis of pro-rata rate of norms for 2000 MW Talcher-Kolar HVDC system, prescribed in 2009 Tariff Regulations. The admissible O&M for the assets covered in the petition are as follows:-

(₹ in lakh)					
Element	2009-10	2010-11	2011-12	2012-13	2013-14
Norms as per 2009 Tariff Regulations					
Norms for double ckt. (Bundled conductor with four or more Line (=L1) (₹ in lakh/km.)	0.940	0.994	1.051	1.111	1.174
Norms for single ckt. (Bundled conductor with four or more Line (=L2) (₹ in lakh/km.)	0.537	0.568	0.600	0.635	0.671
Norms for Talcher-Kolar HVDC Pole Scheme =C) (₹ in lakh/km.)	1699	1796	1899	2008	2122

Admissible O&M expenses					
Element	2009-10	2010-11 (Pro-rata)	2011-12	2012-13	2013-14
HVDC Transmission Line Length-789.786 km. (O&M= L1*789.786) (₹ in lakh)	---	457.94	830.07	877.45	927.21
One Pole of 1250 MW of Bipole HVDC Stations (O&M=1250*C/2000) (₹ in lakh)	---	654.79	1186.88	1255.00	1326.25
37.567 km of length of Earth Electrode line of at Balia End (L2*37.567) (₹ in lakh/km)		12.45	22.54	23.86	25.21
76.233 km of length of Earth Electrode line at Bhiwadi End (L2*76.233) (₹ in lakh/km)		25.26	45.71	48.41	51.15
Total O&M Expenses	---	1150.44	2085.20	2204.72	2329.82

51. The petitioner has submitted that O&M expenditure for the year 2009-14 had been arrived at on the basis of normalized actual O&M expenses during the period 2003-04 to 2007-08 and by escalating it by 5.72% per annum for arriving at the norms for the years of tariff period. The wage hike of 50% on account of pay revision of the employees of public sector undertaking has also been considered while calculating the O&M charges for the tariff period 2009-14. The petitioner has further submitted that it would approach the Commission for suitable revision in the norms for O&M expenditure in case the impact of wage hike with effect from 1.1.2007 is more than 50%.

52. The Commission has given effect to the impact of pay revision in the 2009 Tariff Regulations by factoring 50% on account of pay revision of the employees of PSUs after extensive stakeholders' consultation. We do not see any reason why the admissible amount is inadequate to meet the requirement

of the employee cost. However, in case the petitioner approaches with any such application, the same shall be dealt with in accordance with law.

Interest on working capital

53. As per the 2009 Tariff 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 Tariff Regulations, receivables will be equivalent to two months' of fixed cost. The petitioner has claimed the receivables on the basis of 2 months' of annual 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 Tariff 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 Tariff 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

As per Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2011 dated 21.6.2010, SBI Base Rate Plus 350 bps as on 1.7.2010 (i.e.11.00%) has been considered as the rate of interest on working capital for the Assets involved in the petition.

54. Necessary computations in support of interest on working capital are given overleaf:-

	(₹ in lakh)			
	20109-11 (pro-rata)	2011-12	2012-13	2013-14
Maintenance Spares	295.83	312.78	330.71	349.47
O & M expenses	164.35	173.77	183.73	194.15
Receivables	4351.89	4496.14	4676.83	4754.73
Total	4812.07	4982.69	5191.26	5298.35
Rate of Interest	11.00%	11.00%	11.00%	11.00%
Interest	308.77	548.10	571.04	582.82

Transmission charges

55. The transmission charges being allowed for the transmission assets are summarized overleaf:-

	(₹ in lakh)			
	2010-11 (pro- rata)	2011-12	2012-13	2013-14
Depreciation	5976.51	10628.10	11155.32	11414.35
Interest on Loan	1736.01	2922.36	2798.16	2601.27
Return on equity	6059.87	10793.09	11331.71	11600.09
Interest on Working Capital	308.77	548.10	571.04	582.82
O & M Expenses	1150.44	2085.20	2204.72	2329.82
Total	15231.61	26976.85	28060.96	28528.35

56. Transmission charges allowed are subject to truing up in accordance with the 2009 Tariff regulations.

Filing fee and the publication expenses

57. The petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. 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 beneficiaries on *pro-rata* basis.

Licence fee

58. The petitioner has 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.

59. The petitioner shall be entitled for reimbursement of licence fee in accordance with Regulation 42 A (1) (b) of the 2009 Tariff Regulations.

Service tax

60. The petitioner has made a prayer to be allowed to bill and recover the service tax on transmission charges separately from the respondents, if it is subjected to such service tax in future. We consider petitioner's prayer premature and accordingly this prayer is rejected.

Sharing of Transmission Charges

61. The billing, collection and disbursement of the transmission charges approved shall be governed by the provisions of Central Electricity Regulatory Commission (Sharing of inter-State Transmission Charges and Losses) Regulations, 2010, as amended from time to time.

62. This order disposes of Petition No. 150/TT/2013.

sd/-
M Deena Dayalan
(Member)

sd/-
V. S. Verma
(Member)



CALCULATION OF WEIGHTED AVERAGE RATE OF INTEREST ON LOAN

(₹ in lakh)

	Details of Loan	2010-11	2011-12	2012-13	2013-14
1	Bond-XXII				
	Gross loan opening	900.00	900.00	900.00	900.00
	Cumulative Repayment upto DOCO/previous year	0.00	75.00	150.00	225.00
	Net Loan-Opening	900.00	825.00	750.00	675.00
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	75.00	75.00	75.00	75.00
	Net Loan-Closing	825.00	750.00	675.00	600.00
	Average Loan	862.50	787.50	712.50	637.50
	Rate of Interest	8.68%	8.68%	8.68%	8.68%
	Interest	74.87	68.36	61.85	55.34
	Rep Schedule	12 Annual installments from 07.12.2010			
2	Bond-XX				
	Gross loan opening	82.00	82.00	82.00	82.00
	Cumulative Repayment upto DOCO/previous year	0.00	6.83	13.67	20.50
	Net Loan-Opening	82.00	75.17	68.33	61.50
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	6.83	6.83	6.83	6.83
	Net Loan-Closing	75.17	68.33	61.50	54.67
	Average Loan	78.58	71.75	64.92	58.08
	Rate of Interest	8.93%	8.93%	8.93%	8.93%
	Interest	7.02	6.41	5.80	5.19
	Rep Schedule	12 Annual installments from 07.09.2010			
3	Bond- XXI				
	Gross loan opening	405.00	405.00	405.00	405.00
	Cumulative Repayment upto DOCO/previous year	0.00	33.75	67.50	101.25
	Net Loan-Opening	405.00	371.25	337.50	303.75
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	33.75	33.75	33.75	33.75
	Net Loan-Closing	371.25	337.50	303.75	270.00
	Average Loan	388.13	354.38	320.63	286.88
	Rate of Interest	8.73%	8.73%	8.73%	8.73%
	Interest	33.88	30.94	27.99	25.04
	Rep Schedule	12 Annual installments from 11.10.2010			
4	Bond- XIX				

	Gross loan opening	893.00	893.00	893.00	893.00
	Cumulative Repayment upto DOCO/previous year	74.42	74.42	148.83	223.25
	Net Loan-Opening	818.58	818.58	744.17	669.75
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	0.00	74.42	74.42	74.42
	Net Loan-Closing	818.58	744.17	669.75	595.33
	Average Loan	818.58	781.38	706.96	632.54
	Rate of Interest	9.25%	9.25%	9.25%	9.25%
	Interest	75.72	72.28	65.39	58.51
	Rep Schedule	12 Annual Installments from 24.07.2010			
5	Bond- XXIV				
	Gross loan opening	3469.34	3469.34	3469.34	3469.34
	Cumulative Repayment upto DOCO/previous year	0.00	289.11	578.22	867.34
	Net Loan-Opening	3469.34	3180.23	2891.12	2602.01
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	289.11	289.11	289.11	289.11
	Net Loan-Closing	3180.23	2891.12	2602.01	2312.89
	Average Loan	3324.78	3035.67	2746.56	2457.45
	Rate of Interest	9.95%	9.95%	9.95%	9.95%
	Interest	330.82	302.05	273.28	244.52
	Rep Schedule	12 annual installments from 26.03.2011			
6	Bond- XXIV (Add Cap for 2010-11)				
	Gross loan opening	0.00	1567.66	1567.66	1567.66
	Cumulative Repayment upto DOCO/previous year	0.00	130.64	261.28	391.92
	Net Loan-Opening	0.00	1437.02	1306.38	1175.75
	Additions during the year	1567.66	0.00	0.00	0.00
	Repayment during the year	130.64	130.64	130.64	130.64
	Net Loan-Closing	1437.02	1306.38	1175.75	1045.11
	Average Loan	718.51	1371.70	1241.06	1110.43
	Rate of Interest	9.95%	9.95%	9.95%	9.95%
	Interest	71.49	136.48	123.49	110.49
	Rep Schedule	12 annual installments from 26.03.2011			
7	IBRD III				
	Gross loan opening	43302.28	43302.28	43302.28	43302.28
	Cumulative Repayment upto DOCO/previous year	0.00	0.00	2107.20	4306.41
	Net Loan-Opening	43302.28	43302.28	41195.09	38995.87
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	0.00	2107.20	2199.21	2294.48
	Net Loan-Closing	43302.28	41195.09	38995.87	36701.39
	Average Loan	43302.28	42248.68	40095.48	37848.63

	Rate of Interest	1.82%	1.82%	1.82%	1.82%
	Interest	788.10	768.93	729.74	688.85
	Rep Schedule	30 Half yearly Installments from 15.09.2011			
8	IBRD III (Add Cap for 2011-12)				
	Gross loan opening	0.00	0.00	720.40	720.40
	Cumulative Repayment upto DOCO/previous year	0.00	0.00	35.06	71.64
	Net Loan-Opening	0.00	0.00	685.35	648.76
	Additions during the year	0.00	720.40	0.00	0.00
	Repayment during the year	0.00	35.06	36.59	38.17
	Net Loan-Closing	0.00	685.35	648.76	610.59
	Average Loan	0.00	342.67	667.05	629.67
	Rate of Interest	2.00%	2.00%	2.00%	2.00%
	Interest	0.00	6.85	13.34	12.59
	Rep Schedule	30 Half yearly Installments from 15.09.2011			
9	IBRD IV				
	Gross loan opening	88454.73	88454.73	88454.73	88454.73
	Cumulative Repayment upto DOCO/previous year	0.00	0.00	0.00	0.00
	Net Loan-Opening	88454.73	88454.73	88454.73	88454.73
	Additions during the year	0.00	0.00	0.00	0.00
	Repayment during the year	0.00	0.00	0.00	1957.80
	Net Loan-Closing	88454.73	88454.73	88454.73	86496.93
	Average Loan	88454.73	88454.73	88454.73	87475.83
	Rate of Interest	1.86%	1.86%	1.86%	1.86%
	Interest	1645.26	1645.26	1645.26	1627.05
	Rep Schedule	30 Half yearly Installments from 15.11.2013			
10	IBRD IV (Add Cap 2010-11)				
	Gross loan opening	0.00	743.55	743.55	743.55
	Cumulative Repayment upto DOCO/previous year	0.00	0.00	0.00	0.00
	Net Loan-Opening	0.00	743.55	743.55	743.55
	Additions during the year	743.55	0.00	0.00	0.00
	Repayment during the year	0.00	0.00	0.00	16.46
	Net Loan-Closing	743.55	743.55	743.55	727.10
	Average Loan	371.78	743.55	743.55	735.32
	Rate of Interest	1.86%	1.86%	1.86%	1.86%
	Interest	6.92	13.83	13.83	13.68
	Rep Schedule	30 Half yearly Installments from 15.11.2013			
11	IBRD IV (Add Cap 2011-12)				
	Gross loan opening	0.00	0.00	7772.65	7772.65
	Cumulative Repayment upto	0.00	0.00	0.00	0.00

	DOCO/previous year				
	Net Loan-Opening	0.00	0.00	7772.65	7772.65
	Additions during the year	0.00	7772.65	0.00	0.00
	Repayment during the year	0.00	0.00	0.00	172.03
	Net Loan-Closing	0.00	7772.65	7772.65	7600.62
	Average Loan	0.00	3886.33	7772.65	7686.63
	Rate of Interest	1.95%	1.95%	1.95%	1.95%
	Interest	0.00	75.78	151.57	149.89
	Rep Schedule	30 Half yearly Installments from 15.11.2013			
	Total Loan				
	Gross loan opening	137506.35	139817.56	148310.61	148310.61
	Cumulative Repayment upto Date of commercial operation/previous year	74.42	609.75	3361.75	6207.31
	Net Loan-Opening	137431.93	139207.81	144948.86	142103.31
	Additions during the year	2311.21	8493.05	0.00	0.00
	Repayment during the year	535.33	2752.00	2845.55	5088.69
	Net Loan-Closing	139207.81	144948.86	142103.31	137014.62
	Average Loan	138319.87	142078.34	143526.08	139558.96
	Rate of Interest	2.1935%	2.2010%	2.1679%	2.1433%
	Interest	3034.07	3127.16	3111.53	2991.13