

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. 331/2010**

**Coram:**

**Shri V.S. Verma, Member  
Shri M. Deena Dayalan, Member**

**Date of Hearing: 18.06.2013  
Date of Order : 06.08.2013**

**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 Chukha Transmission System in Eastern Region for the period from 1.4.2009 to 31.3.2014

**And**

**In the matter of:**

Power Grid Corporation of India Limited, Gurgaon

**...Petitioner**

**Vs**

1. Bihar State Electricity Board, Patna
2. West Bengal State Electricity Distribution Co. Ltd., Calcutta
3. Grid Corporation of Orissa Ltd., Bhubaneshwar
4. Damodar Valley Corporation, Calcutta
5. Power Department, Government of Sikkim, Gangtok
6. Jharkhand State Electricity Board, Ranchi

**..Respondents**

**The following were present:**

- (i) Shri S.S. Raju, PGCIL
- (ii) Shri Prashant Sharma, PGCIL
- (iii) Shri J. Mazumder, PGCIL
- (iv) Shri. Shashi Bhushan, PGCIL
- (v) Shri R B Sharma, Advocate, JSEB



## ORDER

This petition has been filed by Power Grid Corporation of India Limited (PGCIL) for determination of transmission tariff for Chukha Transmission System (hereinafter referred to as "the transmission system") in Eastern Region for 2009-14 tariff period, based on the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2009 (hereinafter referred to as "the 2009 Tariff Regulations").

2. Tariff for the assets covered in the petition for the period 2004-09 was determined by this Commission vide order dated 21.12.2005 in Petition No. 124/2004, and subsequently modified vide order dated 31.3.2008. The current petition has been filed under the 2009 Tariff Regulations applicable for 2009-14 period based on the admitted capital cost of ₹13789.43 lakh as on 31.3.2009 and additional capital expenditure and de-capitalization during 2009-14 as per details given below:-

(₹ in lakh)

Admitted cost as on 31.3.2009	Projected additional capital expenditure				Total estimated completion cost
	2010-11	2011-12	2012-13	2013-14	
13789.43	387.00	0.00	1102.15	1268.98	15984.77
--	--	--	(339.18)	(223.61)	

Details of projected additional capital expenditure and de-capitalization has been considered as per PGCIL affidavit dated 3.8.2012.

3. 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	279.04	279.04	319.83	488.95	715.86
Interest on loan	0.00	0.00	22.91	103.00	181.80
Return on equity	1205.26	1205.26	1222.94	1291.96	1371.98
Interest on working capital	115.58	120.42	127.25	139.29	153.04
O & M expenses	1692.18	1788.83	1891.64	1999.57	2113.84
<b>Total</b>	<b>3292.06</b>	<b>3393.55</b>	<b>3584.57</b>	<b>4022.77</b>	<b>4536.52</b>

4. The details submitted by the petitioner in support of its claim for interest on working capital are given hereunder:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance spares	253.83	268.32	283.75	299.94	317.08
O & M expenses	141.02	149.07	157.64	166.63	176.15
Receivables	548.68	565.59	597.43	670.46	756.09
<b>Total</b>	<b>943.53</b>	<b>982.98</b>	<b>1038.82</b>	<b>1137.03</b>	<b>1249.32</b>
Interest	115.58	120.42	127.26	139.29	153.04
Rate of interest	12.25%	12.25%	12.25%	12.25%	12.25%

5. 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. Bihar State Electricity Board (BSEB), Respondent No.1 has filed its reply, where it has raised the issue of additional capital expenditure, filing fee and publication expenses, licence fee, depreciation, etc. The petitioner has filed its rejoinder to the reply of BSEB, vide affidavit dated 7.6.2011. The objections raised by BSEB in its reply and the clarifications given by the petitioner in its rejoinder are addressed in the relevant paragraphs of this order.

6. The matter was heard on 15.5.2012 and order was reserved. As one of the members of the Commission, who heard the matter on 15.5.2012 demitted office, the

matter was heard again on 18.6.2013. Having heard the representatives of the parties and perused the material on records, we proceed to dispose of the petition.

### **Capital cost**

7. Proviso to Regulation 7(2) of the 2009 Tariff Regulations states 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."

8. Capital cost of ₹13789.43 lakh as on 31.3.2009, admitted vide this Commission's order dated 31.3.2008 (modified) in Petition No. 124/2004, has been considered for the purpose of tariff calculation.

### **Additional capital expenditure**

9. Regulation 9(2) of the 2009 Tariff Regulations provides as under:-

"The capital expenditure incurred on the following counts after the cut-off date may, in its discretion, 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;
- (ii) Change in law;
- (iii) Deferred works relating to ash pond or ash handling system in the original scope of work;
- (iv) 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) including due to geological reasons after adjusting for proceeds from any insurance scheme, and expenditure incurred due to any additional work which has become necessary for successful and efficient plant operation; and
- (v) In case of transmission system any additional expenditure on items such as relays, control and instrumentation, computer system, power line carries communication, DC batteries, replacement of switchyards equipment due to increase of fault level, emergency restoration system, insulators cleaning infrastructure, replacement of damaged equipment not covered by insurance

and any other expenditure which has become necessary for successful and efficient operation of transmission system.”

10. The petitioner has claimed projected additional capital expenditure and de-capitalisation for 2012-13 and 2013-14 in the main petition. In its subsequent affidavit dated 3.8.2012, the petitioner has submitted the detailed break-up of additional capital expenditure and de-capitalization for the proposed works. The details of the claim made by the petitioner in the main petition and revised claim made in the affidavit dated 3.8.2012 are given hereunder:-

Particulars	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
<b>As per main Petition</b>					
Additional capital expenditure	--	--	815.83	2190.75	1338.98
De-Cap	--	--	(141.82)	(232.36)	(245.51)
<b>Total</b>	--	--	<b>674.01</b>	<b>1958.39</b>	<b>1093.47</b>
<b>As per affidavit dated 3.8.2012</b>					
Additional capital expenditure	--	387.00	--	1102.15	1268.98
De-Cap	--	--	--	(339.18)	(223.61)
<b>Total</b>	--	<b>387.00</b>	--	<b>762.97</b>	<b>1045.37</b>

11. BSEB, vide affidavit dated 25.3.2011, has submitted that the additional capital expenditure is required for meeting the requirements of ‘Foundation (Pile & normal)’ for the transmission line and replacement of some of the equipments after completion of their useful life in the case of sub-station for which no details and justification has been furnished in the petition. It has submitted that the claim for the additional capital expenditure can be made under Regulation 9 (2) of the 2009 Tariff Regulations only after the capital expenditure has been incurred and therefore the said amount cannot be included in the capital cost. It has further submitted that the

additional capital expenditure is not part of the original scope of the project. Moreover, the petitioner is also the beneficiary of huge amount from depreciation claim without reduction of the value of the capital assets when the entire debt is repaid. Thus, the beneficiaries are forced to pay the inflated cost of the capital assets besides the payment of depreciation.

12. The petitioner in its rejoinder dated 7.6.2011 has submitted that the additional capital expenditure after the cut-off date is covered under Regulation 9(2)(v) of the 2009 Tariff Regulations. Further, the petitioner in its affidavits dated 5.5.2011, 7.6.2011 and 28.6.2012 has furnished details of its claim. The petitioner's claim for capitalization of additional expenditure has been discussed item-wise as under:-

(a) **Replacement of 41 Circuit Breakers (CB)** - The petitioner has submitted that there are 220 kV ABB make Air Blast Circuit Breakers in five different Sub-stations (i.e. Siliguri, Birpara, Purnea, Malda, and Dalkhola) under Chukha Transmission System, requiring replacement due to various problems of air leakages. The CBs are connected with centralized compressor system. Due to frequent leakages, it is difficult to maintain the required pressure all the time and due to low pressure, the breakers are not opening, causing tripping of other lines. In its affidavit dated 5.5.2011 the petitioner has submitted that 36 nos. 220 kV ABB make Air Blast Circuit Breakers (ABCB) & 5 nos. 132 kV Circuit Breakers in six different Sub-stations under Chukha Transmission system are proposed to be replaced due to various problems. OEM of these CBs have phased out these designs

way back in 1986 and there is no spares and service support from them. These equipments are going to complete 25 years of useful service during the tariff block 2009-14. There is no option of repair also for these CBs and these are to be replaced. M/s ABB have stated in its letter dated 12.5.2008 attached with the affidavit dated 5.5.2011, that it is not practically possible for them to organize the spares. We are satisfied with the reason given by the petitioner for replacement and allow additional capital expenditure on this count.

(b) **Replacement of 85 CTs and 103 CVTs** - The petitioner has submitted that CTs with Tan Delta value more than 0.007 or with rate of rise of Tan Delta value by 0.001 per year are not acceptable as per norms. The petitioner has provided the DGA result of CTs and test results of CVTs. From the test results, it is observed that some of the CTs/CVTs proposed to be replaced are within the borderline. Keeping this in view, additional capital expenditure for replacement of CTs/CVTs is allowed. However, the petitioner is advised not to replace CT/CVTs which are still within permissible limits and to do regular testing/ monitoring. If the petitioner observes that the test results of the equipments show that they are deteriorating and crossing the permissible limit, the same may be replaced and the full details may be submitted at the time of truing up.

(c) **Automation of Purnea Sub-station** - The petitioner has submitted that 220/132 kV Purnea Sub-station was commissioned in 1986. Most of the equipments have already served their complete life of 25 years. The

petitioner has further submitted that it proposes to do the automation of 220/132 kV Purnea Sub-station for better monitoring of the system parameters, and for proper analysis of fault in case of any tripping/ outage etc. We agree with the reasons adduced by the petitioner for automation, and hence, additional capital expenditure is allowed.

(d) **258 Nos. 220 kV and 36 Nos. 132 kV Bus Post Insulators (BPIs)** - The petitioner has submitted that Malda, Dalkhola, Siliguri and Birpara Sub-stations have 220 and 132 kV BPIs which are affected by environmental pollution. The cleaning of BPIs have been done but are ineffective due to the chemical effect of the pollution on BPIs on di-electric strength which can lead to a bus fault for smooth running of the Sub-stations. In view of the problems faced by the petitioner, their replacement is allowed.

(e) **Earthing (earth switch) in 220kV/132 kV bus** - The petitioner has submitted that pneumatic operated isolators and earth switches, which were installed and commissioned in 1986, have become non-functional. Further, as per earlier design bus earth switches are not being provided in the 220/ 132 kV buses. This is causing problem during operation and maintenance of the system. Hence, 3 sets of 220 kV isolators (for Bus-I, Bus-II and Transfer bus) and 2 sets of 132 kV isolators (Main and transfer bus) are to be replaced with isolators with double earth switch. The existing structures and post insulators provided for the isolators will be utilized. Therefore, the whole isolator replacement is not envisaged and retrofitment is being proposed. GRPS make



hand operated lever mechanism type earth switches which are installed in 132 kV area of Purnea Sub-station are not having auxiliary contacts. Frequent problems are being faced in the operation of these earth switches. The same are required to be retrofitted with motor operated operating mechanism boxes for safe and smooth operation of the earth switches. We agree with the submissions of the petitioner and allow retrofitting. Since the petitioner has not submitted the original cost of the old asset, we direct that the same should be provided at the time of truing up for de-capitalisation under this head.

**(f) Electrical/ Remote operation of 245 kV & 145 kV Class BIMCO Isolators** - The petitioner has submitted that due to frequent problem of air leakage in pipes and reduction in pressure, the pneumatic mechanism has become non-functional. Even auxiliary contacts are not operating properly and inter locks are not functional. We feel that the petitioner should have done proper maintenance of the system and works should have been attended under O&M. The petitioner has submitted that Electrical MOM box for BIMCO isolators were not provided during the commissioning of sub-stations in 1986. However, the need for providing remote operation at this fag end of the life of sub-station is not justifiable and hence additional capital expenditure on this account is not being allowed.

**(g) Replacement of 142 Nos. Lightning Arrestors (LAs)** - The petitioner has submitted that Lightning Arrestors (LAs) are more than 25 years old. These LAs are gapped type Silicon Carbide, which are phased out. As per

IEEE transaction on power delivery, October 1996, gapped type lightning arrestors need to be replaced after 13 years of service, as these do not provide required protection margin for the switch yard equipment. The petitioner has further submitted that Gapped LAs have inherent drawbacks as against Gapless LAs which improve the efficiency and performance against surges due to inherent superiority on account of fast response, high energy handling capabilities, absence of series/ spark gap and superior performance under environmental pollution. We allow the same in line with our stand in an earlier order dated 7.8.2009 in Petition No. 76/2009, wherein additional capital expenditure for replacement of such LAs in Southern Region was allowed.

(h) **DG Sets** - The petitioner has submitted that DG sets at Dalkhola, Siliguri, Birpara & Purnea Sub-stations are going to complete 25 years of useful service life in tariff block 2009-14. Due to technological obsolescence, service support as well as spare parts is difficult to be sourced. We allow additional capital expenditure on their replacement.

(i) **Air Conditioning System** - The petitioner has submitted that Bluestar make AC system at Malda, Dalkhola, Siliguri and Birpara sub-stations, are going to complete 25 years of useful service in tariff block 2009-14. The OEM ceased manufacturing the above system long back. Spare and service supports are not available. The system is prone to frequent faults with many cases of leakage of refrigerants. Additional capital expenditure on their replacement is being allowed.

(j) **Bus Bar Protection Panel** – The petitioner has submitted that Bus Bar Protection Panels at Malda, Dalkhola, Siliguri and Birpara Sub-stations were commissioned in 1986. These items have completed their useful life of 25 years, and hence their replacement is being allowed.

(k) **Provision of FF System** - The petitioner has submitted that 220 kV Sub-stations at Siliguri, Birpara and Purnea have no high velocity water fire fighting system. Provision of fire fighting system in transformer > 10MVA capacity is mandatory as per CEA's 2010 Regulations (Technical Standards for Construction of electrical plants and electric lines). The petitioner has submitted reasons for HVW Fire-fighting with Emulsifier facility for Siliguri, Purnea & Birpara Sub-stations. The reasons furnished by the petitioner seem justified, and hence additional capital expenditure is being allowed.

(l) **Construction of Security Path way (Civil Works) etc.** - The petitioner has submitted that pathway along with the sub-station boundary is necessary as per direction of Intelligence Bureau (IB). The petitioner has submitted a letter dated 27.4.2009 from Director, IB, Ministry of Home Affairs. Sub-stations are always provided with boundaries and if the same is to be repaired or upgraded or pathways are to be provided, it should be done under O&M expenses, and hence additional capital expenditure for pathway along the sub-station boundary is not being allowed under civil works.

(m) **Foundation work (Pile & Normal) (under transmission line)** – The petitioner has claimed additional capital expenditure of ₹387 lakh for tower foundation work. Due to change in river course, the diversion of the 220 kV D/C Dalkhola- Purnea transmission line had been carried out by providing 5 new towers with one pile foundation along with 4 normal foundations for each. 220 kV D/C Dalkhola- Purnea Transmission Line was commissioned in November 1986. Due to change in river course of Parman (Near Baisi town, Purnea) river towers at location 35 and 39 became vulnerable. In some of the places at location nos. 35, 36 and 39, the distance from the river bank is less than 10 meters. The affected locations are strengthened with proper revetment/ pitching, etc. However, for a permanent solution, a diversion of transmission line has been carried out by replacing 7 Nos. 220kV towers at locations 33 to 41 by providing 5 nos. 400 kV D/C configuration towers on additional foundations, 1 pile and 4 normal, between location nos. 33 to 41. This work is justified. However, there is replacement of 7 existing 220 kV towers by additional towers for strengthening of existing transmission line, de-cap amount on this account is not given by the petitioner. We allow the additional capital expenditure and the petitioner shall furnish the de-capitalisation value at the time of truing up.

(n) **PLCC Panels** - The petitioner has submitted that all the PLCC panels at Malda, Dalkhola, Siliguri and Birpara are proposed to be replaced as they have completed 25 years of service. These panels are quite old and it is quite difficult to maintain the said panels due to non-availability of critical

components required for repair support from OEM, M/s BPL, which has already phased out production of this type of PLCC design cards. As per affidavit dated 28.6.2012, the year of commissioning indicated by the petitioner is 1986, and hence we allow additional capital expenditure on PLCC.

(o) **PLCC compatible EPABX** - The petitioner has submitted that Malda, Dalkhola, Siliguri and Birpara Sub-stations have NELCO make EPABX model. NELCO has already ceased production of EPABX and has closed its factory. Considering this, procurement of new PLCC compatible EPABX's is justified and is being allowed.

(p) **Re-conductoring of Bus and Earthmat** - The petitioner has submitted that with the augmentation of 220 kV Purnea Sub-station by addition of one 100 MVA ICT, additional 132 kV line to BSEB Purnea and Kishanganj and 220 kV interconnection with New Purnea Sub-station during the year 2003, the capacity of 220 kV and 132 kV bus has to be increased. The old 220 kV and 132 kV bus (CTS portion) is single moose conductor. Therefore the entire 220 kV and 132 kV Bus needs to be replaced with twin moose bus arrangement and replacement of necessary jumpers and hardware. Earth mat in the Sub-station switchyard is provided for reducing step and touch potential for the safety of operating personnel. Increased potential causes danger to the working persons. We allow additional capital expenditure on this account.

13. Based on the above discussion, the following additional capital expenditure/ de-capitalisation is being allowed as per details given hereunder:-

(₹ in lakh)

Sl. No.	Equipments to be replaced	Proposed additional capital expenditure allowed		De-cap allowed	
		Quantity	Amount	Quantity	Amount
1	Circuit Breaker	41	613.91	41	207.39
2	CT	85	301.35	85	102.65
3	CVT	103	235.44	103	76.75
4	Automation of S/S		68.47		
5	220 & 132 kV BPI	294	98.22	294	33.46
6	Providing Earth Switch in 220 & 132 kV Buses	5	25	5	0
7	Providing Electrical remote operating system of 245 & 145 kV Class	119	0	0	0
8	Lightening Arrestors	142	79.36	142	27.04
9	DG set	4	50.48	4	17.2
10	Air Conditioning	LS	27		9.2
11	Bus Bar protection Panel	4	40	4	13.64
12	Fire fighting System	3	244.39		0
13	Civil Works	LS	0		0
14	Foundation work (Pile & Normal) for trans line	LS	387(2010-11)		0
15	PLCC Panel	LS	185.17(2011-12)		63.07
16	Re-conductoring	LS	39.99	LS	12.43
	<b>Total</b>		<b>2395.78</b>		<b>562.80</b>

14. Accordingly, additional capital expenditure and de-capitalisation considered for the tariff calculation are as under:-

(₹ in lakh)					
Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Additional capital expenditure	--	387.00	--	1064.31	944.47
De-Cap	--	--	--	339.19	223.61
<b>Net- Additional capital expenditure</b>	--	--	--	<b>725.12</b>	<b>720.86</b>

15. The additional capital expenditure/de-capitalization of the following assets is not being approved:-

(₹ in lakh)				
Sl. No	Name of Asset	Additional capital expenditure	De-capitalisation	Reason
1.	Electrical remote operating system of 245&145 kV Class isolators	258.53	0	The station was commissioned in 1986.However the need for additional works at the end of the life of sub-station is not justified.
2.	Civil Work (Path way etc).	103.82	0	Nothing can be inferred from the letter of Director, IB, Ministry of Home Affairs dated 27.4.2009. Moreover sub-station is always provided with boundaries/walls. The repair or upgradation of the same, if required, can be covered under O&M expenses.
	Total	362.35	0	

16. We have considered the submission of the petitioner for allowing additional capitalization under 9(2) (v) in place of Regulation 10. We agree with the submission of the petitioner that, in the instant case, replacement of defective elements out of a large number of sub-station elements installed under the Chukha transmission system has been proposed for smooth and reliable operation of this transmission

system. It is felt that replacing few items of any transmission system cannot ensure extension of the life of whole transmission system beyond its useful life. It may be appreciated that the replaced elements form only a part of the whole system while other old elements continue to be in service. It may so happen that most of the elements may have completed 25 years of service life, whereas only few elements because of replacement are new.

17. The petitioner has in its affidavit dated 5.5.2011 submitted that all the equipments proposed for replacement through additional capital expenditure are being replaced after completion of 25 years of useful service, and in the installation of new equipments as proposed, there will be no de-capitalisation. The life of the Sub-station equipment is 25 years and when the equipment completes 25 years, they shall be replaced thereby effecting recovery of full permissible depreciation. In view of this, additional capital expenditure under 9 (2) (v) of the 2009 Tariff Regulations is being allowed.

### **Debt- equity ratio**

18. Regulation 12 (2) of the 2009 Tariff Regulations provides as under:-

“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”.

19. Details of the debt-equity in respect of the transmission assets as on 1.4.2009 are given overleaf:-



(₹ in lakh)

Particulars	Admitted capital cost as on 1.4.2009	
	Amount	%
Debt	6894.72	50.00
Equity	6894.72	50.00
<b>Total</b>	<b>13789.43</b>	<b>100.00</b>

20. Details of debt equity ratio corresponding to the additional capital expenditure after adjusting de-cap during 2010-11, 2012-13 and 2013-14 period is given hereunder:-

(₹ in lakh)

Normative						
Add cap for 2010-2011			Add cap for 2012-2013		Add cap for 2013-14	
	Amount	%		%	Amount	%
Debt	270.90	70.00	507.58	70.00	504.60	70.00
Equity	116.10	30.00	217.54	30.00	216.26	30.00
<b>Total</b>	<b>387.00</b>	<b>100.00</b>	<b>725.12</b>	<b>100.00</b>	<b>720.86</b>	<b>100.00</b>

21. Details of the debt-equity ratio as on 31.3.2014 are as under:-

(₹ in lakh)

	As on 31.3.2014	
	Amount	%
Debt	8177.80	52.35
Equity	7444.61	47.65
<b>Total</b>	<b>15622.41</b>	<b>100.00</b>

### Return on equity

22. Regulation 15 of the 2009 Tariff Regulations provides as under:-

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% for thermal generating stations, transmission system and run of the river generating

station, and 16.5% for the storage type generating stations including pumped storage hydro generating stations and run of river generating station with pondage and shall 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."

23. The petitioner's has prayed to allow grossing up the base rate of return with the applicable tax rate as per relevant Finance Act and direct settlement of tax liability between the generating company/transmission licensee and the beneficiaries/long term transmission customers on year to year basis. BSEB has submitted that the pre-tax rate of ROE of 15.5% works out to 17.481% (grossed up at 11.33% of MAT rate). The petitioner's prayer to allow grossing up the base rate of

return with the applicable tax rate as per relevant Finance Act, shall be settled in accordance with the provisions of Regulation 15 of the 2009 Tariff Regulations. In view of the above, the following amount of equity has been considered for calculation of return of equity is given hereunder:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Opening equity	6894.72	6894.72	7010.82	7010.82	7228.35
Addition due to additional capital expenditure	0.00	116.10	0.00	217.54	216.26
Closing equity	6894.72	7010.82	7010.82	7228.35	7444.61
Average equity	6894.72	6952.77	7010.82	7119.58	7336.48
Return on equity (Base Rate )	15.50%	15.50%	15.50%	15.50%	15.50%
Tax rate for the year 2008-09 (MAT)	11.330%	11.330%	11.330%	11.330%	11.330%
Rate of return on equity (Pre Tax )	17.481%	17.481%	17.481%	17.481%	17.481%
Return on equity (Pre Tax)	<b>1205.27</b>	<b>1215.41</b>	<b>1225.56</b>	<b>1244.57</b>	<b>1282.49</b>

### **Interest on loan**

24. Regulation 16 of the 2009 Tariff Regulations provides as under:-

“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.”

25. In these calculations, interest on loan has been worked out as per details given hereunder:-

(a) Gross amount of loan, repayment of instalments and rate of interest and weighted average rate of interest on actual average loan have been considered as per the petition;

(b) Tariff is worked out considering normative loan and normative repayments. Depreciation allowed has been taken as normative repayment for the tariff period 2009-14;

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

on loan;

(d) The petitioner has considered separate loan portfolio for de-cap and additional capital expenditure in order to work out the weighted average rate of interest. We have considered a combine loan portfolio for calculating the weighted average rate of interest;

(e) Proportionate value of additional loan in proportion to the additional capital expenditure allowed has been considered for calculating weighted average rate of interest.

26. Detailed calculation of the weighted average rate of interest has been given in the Annexure to this order.

27. The interest on loan has been calculated on the basis of prevailing rate available as on date of commercial operation. Any change in the rate of interest subsequent to date of commercial operation will be considered at the time of truing up. The interest on loan is worked out as under:-

(₹ in lakh)					
Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
Gross normative loan	6894.72	6894.72	7165.62	7165.62	7673.20
Cumulative repayment upto previous year	6894.72	6894.72	7165.62	7165.62	7551.71
Net loan-opening	0.00	0.00	0.00	0.00	121.48
Addition due to additional capital expenditure	0.00	270.90	0.00	507.58	504.60
Repayment during the year	0.00	270.90	0.00	386.10	500.98
Net loan-closing	0.00	0.00	0.00	121.48	125.11
Average loan	0.00	0.00	0.00	60.74	123.30
Weighted average rate of interest on loan	0.0000%	0.0000%	8.6400%	8.6400%	8.6400%
Interest	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>5.25</b>	<b>10.65</b>

## **Depreciation**

28. Regulation 17 (4) of the 2009 Tariff Regulations provides as under:-

(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.

29. The de-capitalised assets are parts of sub-station which in turn is a part of the combined assets of transmission lines and sub-stations. The capital cost of the de-capitalised equipment has been indicated in the affidavit dated 3.8.2012 as ₹339.19 lakh and ₹223.61 lakh for the years 2012-13 and 2013-14 respectively and the same has been allowed.

30. Further, the petitioner has informed in the petition that whole depreciable values (90% of original gross block) against these part assets is being recovered in 2012-13 to 2013-14, and cumulative depreciation amount corresponding to the de-capitalised assets would be 90% of the original value of de-capitalised asset.

31. However, it is clear that although a part-asset of the substation is being taken out of service, the sub-station itself has not been taken out. As in Petition Nos. 334/2010 and 316/2010, the petitioner in the instant petition also has shown that while the full depreciable value corresponding to the part assets has been recovered, the sub-station has not depreciated fully. In those petitions, proportionate cumulative depreciation corresponding to de-capitalised assets has been worked out by multiplying the capital cost of de-capitalised assets by the ratio of Cumulative

depreciation up to provision year and Average Gross block for the transmission assets up to provision year of de-capitalisation. As the part assets were taken out of service, the amounts of depreciation were reduced from the accumulated depreciation during the years 2011-12 and 2012-13 respectively in those petitions.

32. As per the order dated 31.3.2008 in Petition No 124/2004, balance useful life of the asset was sixteen years as on 1.4.2004 and depreciation was spread over the balance useful life. The spread over of depreciation has been continued during the present tariff period as per the 2009 Tariff Regulations. Cumulative depreciation up to 31.3.2009 amounting to ₹8936.06 lakh was considered for tariff purpose in order dated 31.3.2008 in Petition No 124/2004. The same methodology has been followed in the instant petition.

33. Details of depreciation worked out as under:-

(₹ in lakh)					
Particulars	2009-10	2010-11	2011-12	2012-13	2013-14
As per order dated 21.12.2005	13789.43	13789.43	14176.43	14176.43	14901.55
Addition during 2009-14 due to additional capital expenditure	0.00	387.00	0.00	725.12	720.86
Gross block	13789.43	14176.43	14176.43	14901.55	15622.41
Average gross block	13789.43	13982.93	14176.43	14538.99	15261.98
Rate of depreciation	4.9567%	4.9612%	4.9655%	4.9778%	4.9963%
Depreciable value	12006.76	12180.91	12355.06	12681.36	13332.05
Balance useful life of the asset as on 1.4.2009 is 11 years as per order dated 21.12.2005	11	10	9	8	7
Remaining depreciable value	3070.70	2965.69	2843.27	3088.80	3506.86
<b>Depreciation</b>	<b>279.15</b>	<b>296.57</b>	<b>315.92</b>	<b>386.10</b>	<b>500.98</b>
Cumulative depreciation/ advance against depreciation	9215.21	9511.78	9827.70	9978.66	10326.17
Cumulative depreciation pertaining to de-capitalized asset	0.00	0.00	-235.14	-153.47	0.00
<b>Net cumulative depreciation</b>	<b>9215.21</b>	<b>9511.78</b>	<b>9592.56</b>	<b>9825.19</b>	<b>10326.17</b>

### Operation & maintenance expenses

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

(₹ in lakh)

Element	2009-10	2010-11	2011-12	2012-13	2013-14
400 kV D/C twin conductor T/Line (₹ lakh/ kms)	0.627	0.663	0.701	0.741	0.783
220 kV D/C single conductor T/L (₹ lakh/ kms)	0.269	0.284	0.301	0.318	0.336
220 kV S/C single conductor T/L (₹ lakh/ kms)	0.179	0.189	0.200	0.212	0.224
400 kV bays (₹ lakh/ bay)	52.40	55.40	58.57	61.92	65.46
220 kV bays (₹ lakh/ bay)	36.68	38.78	41.00	43.34	45.82
132 kV & below	26.2	27.7	29.28	30.96	32.73

35. Based on the above norms, the petitioner has calculated the following operation and maintenance expenses which are allowed:-

(₹ in lakh)

Element	2009-10	2010-11	2011-12	2012-13	2013-14
40 Km., 400 kV D/C twin conductor, Farakka- Malda Ckt-I & II T/L	25.08	26.52	28.04	29.64	31.32
562 Km. (86+36+119+116+161+41+3), 220 kV D/C single conductor T/L	151.178	159.608	169.162	178.716	188.832
38 km, 220 kV S/C single conductor T/L	6.802	7.182	7.60	8.056	8.512
4 Nos. 400 kV bays	209.60	221.60	234.28	247.68	261.84
34 Nos. 220 kV bays	1247.12	1318.52	1394.00	1473.56	1557.88
2 Nos., 132 kV bays	52.40	55.40	58.56	61.92	65.46
Total O&M allowable	1692.18	1788.83	1891.64	1999.57	2113.84



36. The petitioner has submitted that O & M expenses for the year 2009-14 had been arrived on the basis of normalized actual O & M expenses during the period 2003-04 to 2007-08. 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 expenses for the 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%.

37. 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**

38. 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 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 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%) has been considered as the rate of interest on working capital.

39. Necessary computations in support of interest on working capital are given hereunder:-

	( ₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Maintenance Spares	253.83	268.32	283.75	299.94	317.08
O & M expenses	141.02	149.07	157.64	166.63	176.15
Receivables	548.68	565.59	597.43	670.46	756.09
<b>Total</b>	<b>943.53</b>	<b>982.98</b>	<b>1038.82</b>	<b>1137.03</b>	<b>1249.32</b>
Rate of Interest	12.25%	12.25%	12.25%	12.25%	12.25%
<b>Interest</b>	<b>115.58</b>	<b>120.42</b>	<b>127.26</b>	<b>139.29</b>	<b>153.04</b>

### Transmission charges

40. The transmission charges being allowed for the transmission assets are summarized hereunder:-

	(₹ in lakh)				
	2009-10	2010-11	2011-12	2012-13	2013-14
Depreciation	279.15	296.57	315.92	386.10	500.98
Interest on Loan	0.00	0.00	0.00	5.25	10.65
Return on equity	1205.27	1215.41	1225.56	1244.57	1282.49
Interest on Working Capital	115.58	120.99	126.75	134.12	143.13
O & M Expenses	1692.18	1788.83	1891.64	1999.57	2113.84
<b>Total</b>	<b>3292.18</b>	<b>3421.80</b>	<b>3559.87</b>	<b>3769.61</b>	<b>4051.09</b>

### Filing fee and the publication expenses

41. The petitioner has sought reimbursement of fee paid by it for filing the petition and publication expenses. BSEB has submitted that the filing fee can be allowed at the discretion of the Commission as per Regulation 42 of the 2009 Tariff Regulations. It has further submitted that the Commission in its order dated 11.9.2008 in Petition No. 129/2005 has disallowed the claim of the Central Power Sector Undertakings for reimbursement of filing fee, and on this ground the claim of the petitioner in the present petition is liable to be rejected by the Commission. 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**

42. 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.

43. BSEB has submitted that the petitioner's request for reimbursement for licence fee should be rejected as license fee is part of the O&M expenses. No separate provisions are contained in the 2009 tariff Regulations. The petitioner has clarified that the licence fee has been a new component of cost to the transmission licence under O&M stage of the project and has become incidental to the petitioner only from 2008-09. 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**

44. 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 the prayer of the petitioner pre-mature and accordingly the petitioner's prayer is rejected.

### **Sharing of transmission charges**

45. The transmission charges for the Assets shall be borne by the beneficiaries in accordance with Regulation 33 of the 2009 Tariff 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 as amended from time to time.

46. This order disposes of Petition No. 331/2010.

sd/-  
**(M. Deena Dayalan)**  
**Member**

sd/-  
**(V.S. Verma)**  
**Member**



**Annexure**

**CALCULATION OF WEIGHTED AVERAGE RATE OF INTEREST ON LOAN**

(` in Lakh)

	Details of Loan	2009-10	2010-11	2011-12	2012-13	2013-14
<b>1</b>	<b>Bond XXXIII</b>					
	Gross loan opening	0.00	<b>0.00</b>	<b>0.00</b>	<b>571.08</b>	<b>2104.60</b>
	Cumulative Repayment upto DOCO/previous year	0.00	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	Net Loan-Opening	0.00	0.00	0.00	571.08	2104.60
	Additions during the year	0.00	0.00	571.08	1533.52	937.29
	Repayment during the year	0.00	0.00	0.00	0.00	0.00
	Net Loan-Closing	0.00	0.00	571.08	2104.60	3041.89
	Average Loan	0.00	0.00	285.54	1337.84	2573.25
	Rate of Interest	8.64%	8.64%	8.64%	8.64%	8.64%
	Interest	0.00	0.00	24.67	115.59	222.33
	Rep Schedule	12 Annual Instalments from 8.7.2014				
	<b>Total Loan</b>					
	Gross loan opening	0.00	0.00	0.00	571.08	2104.60
	Cumulative Repayment upto DOCO/previous year	0.00	0.00	0.00	0.00	0.00
	Net Loan-Opening	0.00	0.00	0.00	571.08	2104.60
	Additions during the year	0.00	0.00	571.08	1533.52	937.29
	Repayment during the year	0.00	0.00	0.00	0.00	0.00
	Net Loan-Closing	0.00	0.00	571.08	2104.60	3041.89
	Average Loan	0.00	0.00	285.54	1337.84	2573.25
	<b>Weighted Average Rate of Interest</b>	<b>0.0000%</b>	<b>0.0000%</b>	<b>8.6400%</b>	<b>8.6400%</b>	<b>8.6400%</b>
	<b>Interest</b>	0.00	0.00	24.67	115.59	222.33