

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Coram

1. Shri Ashok Basu, Chairman,
2. Shri K.N.Sinha, Member

Petition No.25/2002

In the matter of

Petition for approval of tariff for Kahalgaon Transmission System in Eastern Region for the period 1.4.2001 to 31.3.2004.

And in the matter of

Power Grid Corporation of India Ltd.

.... Petitioner

Vs

1. Bihar State Electricity Board
2. West Bengal State Electricity Board
3. Grid Corporation of Orissa Ltd.
4. Damodar Valley Corporation
5. Power Dept., Govt. of Sikkim
6. Jharkhand State Electricity Board

.....Respondents

The following were present

1. Shri Prashant Sharma, PGCIL
2. Shri S. S. Sharma, PGCIL
3. Shri U.K. Tyagi, PGCIL
4. Shri Manoj Rastogi, PGCIL
5. Shri A.K. Nagpal, PGCIL
6. Shri S. Mehrotra, Dy. Mgr (F), PGCIL
7. Shri S.K. Jain, Manager (Law), PGCIL
8. Shri J Sridharan, ED(P), PGCIL
9. Shri Mahesh K.R., PGCIL
10. Shri R.K. Vohra, ED (CommI), PGCIL
11. Shri T.P.S. Bawa, SE, PSEB
12. Shri M Kumar, EE, UPPCL
13. Shri R.N. Pathak, ACE(Comm.-LD), RVPNL
14. Shri K.K. Mittal, XEN (ISP), RVPNL

ORDER
(DATE OF HEARING: 12.12.2002)

In this petition, the petitioner, Power Grid Corporation of India Ltd has sought approval for tariff in respect of the Kahalgaon Transmission System (hereinafter referred to as "the Transmission System"), in Eastern Region for the period from 1.4.2001 to 31.3.2004 based on the terms and conditions of tariff contained in the Commission's notification dated 26.3.2001, (hereinafter referred to as "the notification dated 26.3.2001").

2. 400 kV Kahalgaon Transmission System was conceived for evacuation of power from Kahalgaon STPS in Eastern Region. The Transmission System was commenced and implemented by NTPC. Subsequently, the petitioner had taken over the Transmission System. Ministry of Power, vide letters dated 1.6.1992 and 7.9.1992 had approved the Revised Cost Estimate of the Transmission System for Rs.22375 lakh (including IDC of Rs.1025 lakh). The scope of work included:

- i) Kahalgaon-Maithon D/C line
- ii) Maithon-Jamshedpur D/C line
- iii) Jamshedpur-Rourkela S/C line
- iv) Sub-stations at Maithon, Jamshedpur and Rourkela.

3. The Transmission System was completed as per the schedule matching with the commissioning of the power plant by NTPC in 1993 to 1994. The dates of commercial operation of the various elements are as under:

	Name of Transmission line	Date of Commercial Operation
i.	400 KV Kahalgaon-Maithon-II line	1.3.1993
ii.	400 KV Maithon-Jamshedpur-II line	1.1.1994
iii.	400 KV Jamshedpur-Rourkela-I line	1.1.1994
iv.	400 KV Maithon-Jamshedpur-I line	1.6.1994
v.	400 KV Kahalgaon-Maithon-I line	1.10.1994

4. The transmission charges for the Transmission System from 1997-98 to 2001-02 were notified by Ministry of Power vide its notifications dated 4.12.98 and 11.5.1999 by considering a capital cost of Rs.19447.00 lakh. . However, as the terms and conditions for determination of tariff notified by the Commission have come into effect on 1.4.2001, the transmission charges approved by Ministry of Power were rendered valid up to 31.3.2001. The present petition for approval of tariff for the period from 1.4.2001 to 31.3.2004 has been filed against the above backdrop.

5. The petitioner has sought approval for transmission charges as under:

(Rs. in lakh)			
Transmission Tariff	2001-2002	2002-2003	2003-2004
Interest on Loan	108.73	88.67	68.60
Interest on Working Capital	98.89	103.59	101.90
Depreciation	579.91	579.91	579.91
Advance against Depreciation	162.27	248.05	0.00
Return on Equity	1312.08	1312.08	1312.08
O & M Expenses	941.78	998.88	1057.03
Total	3203.66	3331.18	3119.52

6. The petitioner has furnished the following details in support of its claim for interest on working capital:

	(Rs. in lakh)		
	2001-2002	2002-2003	2003-2004
Spares	247.48	262.33	278.07
O & M expenses	78.48	83.24	88.09
Receivables	533.94	555.20	519.92
Total	859.90	900.77	886.08
Rate of Interest	11.50%	11.50%	11.50%
Interest	98.89	103.59	101.90

7. In addition, the petitioner has prayed for approval of Development Surcharge, in terms of the notification dated 26.3.2001.

CAPITAL COST

8. As laid down in the notification dated 26.3.2001, the project cost as approved by CEA or an appropriate independent agency, other than Board of Directors of the generating company, as the case may be, shall be the basis for computation of tariff. As already noticed, the tariff for the Transmission System was notified by Ministry of Power vide its notification dated 4.12.1998 read with the notification 11.5.1999 by considering cost of Rs. 19447.00 lakh. Therefore, for the purpose of present petition, the capital cost of Rs.19447.00, as considered by Ministry of Power in its notifications dated 4.12.1998 and 11.5.1999, has been adopted as the opening gross block as on 1.4.2001.

ADDITIONAL CAPITAL EXPENDITURE

9. Para 1.10 of the notification dated 26.3.2001 provides that tariff revisions during the tariff period on account of capital expenditure within the approved project cost incurred during the tariff period may be entertained by the Commission only if such expenditure exceeds 20% of the approved cost. In all cases where such expenditure is less than 20%, tariff revision shall be considered in the next tariff period. The petitioner has not claimed the additional capital expenditure for the period after

1.4.2001 in the petition. Therefore, the additional capitalisation is not being considered in the present petition.

EXTRA RUPEE LIABILITY

10. Para 1.13 (a) of the notification dated 26.3.2001 provides as under:

(a) Extra rupee liability towards interest payment and loan repayment actually incurred, in the relevant year shall be admissible; provided it directly arises out of foreign exchange rate variation and is not attributable to Utility or its suppliers or contractors. Every utility shall follow the method as per the Accounting Standard-11 (Eleven) as issued by the Institute of Chartered Accountants of India to calculate the impact of exchange rate variation on loan repayment.

(b) Any foreign exchange rate variation to the extent of the dividend paid out on the permissible equity contributed in foreign currency, subject to the ceiling of permissible return shall be admissible. This as and when paid, may be spread over the twelve-month period in arrears.

11. The petitioner has claimed the FERV in accordance with the following method:

Outstanding loan as on 31.3.2001 (in foreign currency) X (exchange rate as on 31.3.2001 - exchange rate as on the date of commercial operation/1.4.92)

12. The amount of FERV arrived at in the above manner has been added in the capital cost as on 1.4.2001 (base capital cost for the current tariff period).

13. We have deliberated upon the issue. After considering the fact that the method of computation of FERV up to 31.3.2001 was on repayment of the loan and payment of interest on actual basis, it has been decided that FERV to be capitalised for adding in the gross block as on 1.4.2001, would be arrived in the following manner, otherwise it would result in double payment:

Foreign Loan outstanding as on 31.03.2001 x (Exchange Rate as on 31.03.2001 - Exchange Rate as on the date of commercial operation/01.04.1992 as given in the petition).

14. FERV amount so arrived would be added in the loan and equity as on 1.4.2001 in the debt-equity ratio in which the tariff was allowed by Ministry of Power for the previous tariff setting. FERV allowed for the period up to 31.3.2001 is computed as under:

IBJ-II (Tranche D)	
Outstanding balance as on 31.03.(in JPY lakh)	627.88
Exchange Rate as on 31.03.2001	0.377
Exchange Rate as on DOCO/01.04.1992	0.3226
FERV on the outstanding loan as on 31.03.2001 (Rs. in lakh)	34.16
Commerz Bank (Tranche B&C IBJ-II replacement)	
Outstanding balance as on 31.03.2001(in JPY lakh)	720.22
Exchange Rate as on 31.03.2001	0.377
Exchange Rate as on DOCO/01.04.1992	0.3226
FERV on the outstanding loan as on 31.03.2001 (Rs. in lakh)	39.18
ING Bank (Tranche A IBJ-II replacement)	
Outstanding balance as on 31.03.2001 (in JPY lakh)	1650.30
Exchange Rate as on 31.03.2001	0.377
Exchange Rate as on DOCO/01.04.1992	0.3226
FERV on the outstanding loan as on 31.03.2001 (Rs. n lakh)	89.78
Total	163.11

15. Thus, the following capital expenditure has been considered in the calculation

(Rs. in lakh)	
Capital Expenditure upto 31.03.2001 as per previous tariff setting	19447.00
FERV upto 31.03.2001 worked out as above	163.11
Capital Expenditure upto 31.03.2001	19610.11
Additional Capital Expenditure after 31.03.2001	0.00
Capital Expenditure considered for determination of Tariff	19610.11

16. Exchange rate as on the date of commercial operation of the last element, that is, 1.10.1994 was to be considered for calculations. As per the petitioner, the rates applicable on that date are not available. Therefore, exchange rate as on 28.9.1994 has been considered as per information provided by the petitioner.

17. The entitlement of the petitioner to FERV is subject to the condition that the petitioner would furnish a certificate that there has been no drawl of foreign loan after the date of commercial operation of the respective transmission element claimed in the petition. The certificate shall be submitted within four weeks of this order. If petitioner fails to submit the certificate within stipulated time, the amount on account of FERV would not be allowed as pass through in tariff.

SOURCES OF FINANCING. DEBT – EQUITY RATIO

18. As per Para 4.3 of the notification dated 26.3.2001, capital expenditure of the transmission system shall be financed as per approved financial package set out in the techno-economic clearance of CEA or as approved by an appropriate independent agency, as the case may be. The petitioner has claimed tariff by taking debt and equity in the ratio of 50:50. It is pointed out on behalf of the respondents that taking debt and equity as claimed by the petitioner will result into higher return on equity (ROE). The respondents have submitted that equity of 20% should be considered for

the purpose of fixation of tariff. In the case in hand, the assets were commissioned before 1.4.1997 and Ministry of Power while notifying tariff vide notifications dated 4.12.1998 and 11.5.1999 had considered debt and equity on notional basis in the ratio of 50:50 of the Net Fixed Assets as on 1.4.1997 in view of the notification dated 16.12.1997. Therefore, the debt-equity ratio of 50:50 has been considered for determination of tariff in the present petition. Accordingly equity has been taken as Rs. 8070.06 lakh notionally as on 1.4.1997. On the same basis, opening gross loan of Rs 8070.06 lakh as on 1.4.1997 has been considered.

INTEREST ON LOAN

19. As provided in the notification dated 26.3.2001, interest on loan capital is to be computed on the outstanding loans, duly taking into account the schedule of repayment, as per financial package approved by CEA or any independent agency.

20. The petitioner has claimed interest on the notional loan arrived at by reducing cumulative depreciation from 1997-98 to 2000-01 from notional loan as on 1.4.1997 as was admitted in the Ministry of Power tariff notifications for the previous tariff setting along with notional loan arising out of FERV claimed. Depreciation during the years 2001-02 to 2003-04 has been taken as repayment of loans during the respective years. Weighted average rate of interest has been worked out by the petitioner on the basis of actual outstanding loans as on 1.4.2001 and their actual rates of interest, as on 1.4.2001. The above weighted rate of interest is applied on the average normative loan during the respective year to arrive at the interest on normative loan.

21. In our calculation, the interest on loan has been worked out as detailed below:

- (i) Closing balance of the notional loan as on 31.3.2001 is taken as opening Balance of the loan as on 1.4.2001.
- (ii) FERV has been added in the above loan.
- (iii) repayment of the loan during the year is worked out by considering the actual repayment during the year or the repayment calculated in accordance with the following formula, whichever is higher:

actual repayment during the year x notional net loan at the beginning of the year/ actual net loan at the beginning of the year,
- (iv) On the basis of actual rate of interest on actual average loan, the weighted average rate of interest on loan has been worked out and the same has been applied on the notional average loan during the year to arrive at the interest on loan.

22. The details of calculation of weighted average rate of interest are as given below:

Calculation of weighted average rate of Interest

(Rs. in Lakh)

Details of Loan	2001-02	2002-03	2003-04
NTPC Bonds			
Gross Loan -Opening ¹	73.45	73.45	73.45
Cumulative Repayment up to Previous Year	0.00	73.45	73.45
Net Loan-Opening	73.45	0.00	0.00
Repayment during the year	73.45	0.00	0.00
Net Loan-Closing	0.00	0.00	0.00
Average Loan	36.73	0.00	0.00
Rate of Interest	9.00%	9.00%	9.00%
Interest	3.31	0.00	0.00
Repayment Schedule	Bullet on 20.03.2002		

Bond-III Series (IInd)			
Gross Loan -Opening	63.79	63.79	63.79
Cumulative .Repayment up to Previous Year	0.00	63.79	63.79
Net Loan-Opening	63.79	0.00	0.00
Repayment	63.79	0.00	0.00
Net Loan-Closing	0.00	0.00	0.00
Average Loan	31.90	0.00	0.00
Rate of Interest	9.75%	9.75%	9.75%
Interest	3.11	0.00	0.00
Repayment Schedule	Bullet on 28.10.2001		
Bond-III Series (Ist)			
Gross Loan -Opening	10.21	10.21	10.21
Cumulative Repayment up to Previous Year	0.00	10.21	10.21
Net Loan-Opening	10.21	0.00	0.00
Repayment	10.21	0.00	0.00
Net Loan-Closing	0.00	0.00	0.00
Average Loan	5.11	0.00	0.00
Rate of Interest	13.50%	13.50%	13.50%
Interest	0.69	0.00	0.00
Repayment Schedule	Bullet on 28.02.2002		
Bond-I (Issue-III)			
Gross Loan -Opening ¹	340.61	340.61	340.61
Cumulative Repayment up to Previous Year	0.00	340.61	340.61
Net Loan-Opening	340.61	0.00	0.00
Repayment during the year	340.61	0.00	0.00
Net Loan-Closing	0.00	0.00	0.00
Average Loan	170.31	0.00	0.00
Rate of Interest	9.00%	9.00%	9.00%
Interest	15.33	0.00	0.00
Repayment Schedule	Bullet on 10.03.2002		
IBJ-II (Tranche D)			
Gross Loan -Opening ¹	759.58	759.58	759.58
Cumulative Repayment up to Previous Year	557.02	658.30	759.58
Net Loan-Opening	202.55	101.28	0.00
Repayment during the year	101.28	101.28	0.00
Net Loan-Closing	101.28	0.00	0.00
Average Loan	151.92	50.64	0.00
Rate of Interest	0.5225%	0.5225%	0.5225%
Interest	0.79	0.26	0.00
Repayment Schedule	24.09.2001, 24.03.2002, 24.09.2002 and 24.03.2003		

Commerz Bank (Tranche B&C IBJ-II replacement)			
Gross Loan -Opening ¹	406.60	406.60	406.60
Cumulative Repayment up to Previous Year	174.26	290.43	406.60
Net Loan-Opening	232.34	116.17	0.00
Repayment during the year	116.17	116.17	0.00
Net Loan-Closing	116.17	0.00	0.00
Average Loan	174.26	58.08	0.00
Rate of Interest	1.73%	1.73%	1.73%
Interest	3.01	1.00	0.00
Repayment Schedule	24.09.2001, 24.03.2002, 24.09.2002 and 24.03.2003		
ING Bank (Tranche A IBJ-II replacement)			
Gross Loan -Opening ¹	532.39	532.39	532.39
Cumulative Repayment up to Previous Year	0.00	0.00	532.39
Net Loan-Opening	532.39	532.39	0.00
Repayment during the year	0.00	532.39	0.00
Net Loan-Closing	532.39	0.00	0.00
Average Loan	532.39	266.19	0.00
Rate of Interest	0.8475%	0.8475%	0.8475%
Interest	4.51	2.26	0.00
Repayment Schedule	Bullet on 24.03.2003		
Total Loan			
Gross Loan -Opening	2186.62	2186.62	2186.62
Cumulative Repayment up to Previous Year	731.28	1436.79	2186.62
Net Loan-Opening	1455.34	749.83	0.00
Repayment during the year	705.51	749.83	0.00
Net Loan-Closing	749.83	0.00	0.00
Average Loan	1102.59	374.92	0.00
Rate of Interest	2.7891%	0.9403%	
Interest	30.75	3.53	0.00

¹ Amount of loan outstanding as on 31.03.1992 in the transferor books (as per the affidavit filed on 26.03.2003 by the petitioner)

23. The entitlement of the petitioner to interest on loan as a part of tariff is computed as under:

	(Rs. in lakh)		
	2001-02	2002-03	2003-04
Gross Loan -Opening	8070.06	8070.06	8070.06
Cumulative Repayment up to Previous Year	4768.16	6368.83	8070.06
Net Loan-Opening	3301.89	1701.22	0.00
Repayment during the year	1600.67	1701.22	0.00
Net Loan-Closing	1701.22	0.00	0.00
Average Loan	2501.56	850.61	0.00
Rate of Interest	2.7891%	0.9403%	0.0000%
Interest	69.77	8.00	0.00
Gross Loan -Opening	8070.06	8070.06	8070.06
Cumulative Repayment up to Previous Year	4768.16	6368.83	8070.06
Net Loan-Opening	3301.89	1701.22	0.00
Repayment during the year	1600.67	1701.22	0.00
Net Loan-Closing	1701.22	0.00	0.00
Average Loan	2501.56	850.61	0.00
Rate of Interest	2.7891%	0.9403%	0.0000%
Interest	69.77	8.00	0.00

DEPRECIATION

24. Based on the notification dated 26.3.2001, the petitioner is entitled to claim depreciation. The salient provisions for calculation of depreciation as per the notification dated 26.3.2001 are reproduced below:

- (i) The value base for the purpose of depreciation shall be the historical cost of the asset.
- (ii) Depreciation shall be calculated annually as per straight-line method at the rate of depreciation as prescribed in the Schedule attached to the notification dated 26.3.2001

Provided that the total depreciation during the life of the project shall not exceed 90% of the approved original cost. The approved original cost shall include additional capitalisation on account of foreign exchange rate variation also.

- (iii) On repayment of entire loan, the remaining depreciable value shall be spread over the balance useful life of the asset.

- (iv) Depreciation shall be chargeable from the first year of operation. In case of operation of the asset for part of the year, depreciation shall be charged on pro-rata basis.
- (v) Depreciation against assets relating to environmental protection shall be allowed on case-to-case basis at the time of fixation of tariff subject to the condition that the environmental standards as prescribed have been complied with during the previous tariff period.

25. The petitioner has claimed the depreciation on the capital expenditure in accordance with above principles. In the calculation, depreciation has been worked out on the capital cost as per para above and the rates as prescribed in the Commission's notification dated 26.03.2001. For working out cumulative depreciation the depreciation as per last tariff setting has been considered by the petitioner in its claim.

26. It is noted that repayment of the entire notional loan considered for tariff calculation is over in the year 2002-03. Therefore, depreciation for the year 2003-04 is to be calculated by spreading the same over the balance useful life of the assets. The elements of the Transmission System were declared under commercial operation as indicated below:

<u>Name of asset</u>	<u>Date of Commercial Operation</u>
i. 400 KV Kahalgaon-Maithon-II line	1.3.1993
ii. 400 KV Maithon-Jamshedpur-II line	1.1.1994
iii. 400 KV Jamshedpur-Rourkela-I line	1.1.1994
iv. 400 KV Maithon-Jamshedpur-I line	1.6.1994
v. 400 KV Kahalgaon-Maithon-I line	1.10.1994

27. One asset is in operation for about 8 years and three assets for about 7 years. Therefore, on an average entire assets of the project are in operation for about 7 years as on 1.4.2001. As per the notification dated 26.3.2001, the useful life of the transmission line at 66 kV and above is 35 years, for sub-station equipment 25 years, for communication equipment (PLCC) it is 15 years and for building it is 50 years. The present petition covers transmission lines, sub-stations, PLCC equipment and buildings. The cost of individual line is not available. Therefore, useful life of the assets has to be average life of all the assets. The weighted average life of the assets has been calculated by taking completed cost of the line and substations as weights as given below:

<u>Items</u>	<u>Completed cost</u>	<u>Useful life</u>
Line cost	Rs. 10488.00 lakh	35 years
Substation cost	Rs. 7696.00 lakh	25 years
PLCC	Rs. 61.00 lakh	15 years
Buildings	Rs. 937.00 lakh	50 years

$$\begin{aligned}
 \text{Weighted average life} &= \frac{10488.00 \times 35 + 7696.00 \times 25 + 61.00 \times 15 + 937.00 \times 50}{10488.00 + 7696.00 + 61.00 + 937.00} \\
 &= 31.66 \text{ years (say 32 years)}
 \end{aligned}$$

28. It may be seen that the average useful life of the Transmission System as a whole is 32 years. The assets are in operation for period of about 7 years (average) as on 1.4.2001. Accordingly, the balance useful life of the assets in this petition works out to 25 years (32-7) as on 1.4.2001.

29. Based on the above, depreciation for individual items of capital expenditure has been calculated on the capital cost of Rs. 19610.11 lakh at the rates as prescribed in the notification dated 26.3.2001. While approving depreciation component of tariff, the weighted average depreciation rate of 2.92% has been worked out. For working out cumulative depreciation, the depreciation as per the Ministry of Power notification dated 11.5.1999 has been taken into consideration. The break up of the capital cost is not available in the Ministry of Power notification dated 11.5.1999. Therefore, the same has been considered as per the details furnished by the petitioner. The calculations in support of weighted average rate of depreciation of 2.92% are appended hereinbelow:

(Rs. in lakh)						
Capital Expenditures as on 31.03.2001	Total	FERV up to 31.3.2001	Total Including FERV	Approved capital cost	Rate of Depreciation	Amount of Depreciation
Land	265.00	2.22	267.22		0%	0.00
Building & Other Civil Works	937.00	7.86	944.86		1.80%	17.01
Transmission Line	10488.00	87.97	10575.97		2.57%	271.80
Sub-Station Equipment	7696.00	64.55	7760.55		3.60%	279.38
PLCC	61.00	0.51	61.51		6.00%	3.69
Total	19447.00	163.11	19610.11	22375.00		571.88
Weighted Average Rate of Depreciation	19447.00	163.11				2.92%

30. Accordingly, depreciation has been allowed as calculated below:

(Rs. in lakh)				
		2001-02	2002-03	2003-04
Rate of Depreciation	2.92%			
Depreciable Value	17649.10			
Balance Useful life of the asset	25.00	25.00	24.00	23.00
Remaining Depreciable Value		9410.94	8738.44	8065.93
Depreciation		571.88	571.88	350.69

ADVANCE AGAINST DEPRECIATION

31. In addition to allowable depreciation, the petitioner becomes entitled to Advance Against Depreciation when originally scheduled loan repayment exceeds the depreciation allowable as per schedule to the notification. Advance Against Depreciation is computed in accordance with the following formula:

AAD = Originally scheduled loan repayment amount subject to a ceiling of 1/12th of original loan amount minus depreciation as per schedule.

32. The petitioner has claimed Advance Against Depreciation on the basis of
- (i) 1/12th of gross loan worked out as 50% of the gross block admitted by Ministry of Power in the petition of previous tariff setting,
 - (ii) Repayment of loans during the year, and
 - (iii) depreciation as claimed in the petition.

33. The petitioner, in its affidavit filed on 30.4.2003, has submitted that as per Ministry of Power norms, for the assets commissioned before 1.4.1997, tariff for the period after 1.4.1997 was to be calculated on the basis of 50:50 notional debt equity, irrespective of actual debt equity deployed. It is also submitted that net asset value for the above assets have been arrived after offsetting the permissible depreciation against debt equity. Therefore the tariff is to be regulated based on normative debt equity as may be arrived from the net asset value as on 1.4.97.

34. The entitlement of the petitioner has been considered in accordance with the notification dated 26.3.2001. In the calculation, Advance Against Depreciation has been worked out on the basis of gross loan and repayment (including of notional loan)

and depreciation as worked out above. The petitioner's entitlement to Advance Against Depreciation has been calculated as shown below:

(Rs. in lakh)			
Advance Against Depreciation	2001-02	2002-03	2003-04
1/12th of Gross Loan(s)	672.50	672.50	672.50
Scheduled Repayment of the Loan(s)	1600.67	1701.22	0.00
Minimum of the above	672.50	672.50	0.00
Depreciation during the year	571.88	571.88	350.69
Advance Against Depreciation	100.62	100.62	0.00

OPERATION & MAINTENANCE EXPENSES

35. In accordance with the notification, Operation and Maintenance expenses, including expenses on insurance, if any, are to be calculated as under:

- i) Where O&M expenses, excluding abnormal O&M expenses, if any, on sub-station (OMS) and line (OML) are separately available for each region, these shall be normalised by dividing them by number of bays and line length respectively. Where data as aforesaid is not available, O&M expenses in the region are to be apportioned to the sub-station and lines on the basis of 30:70 ratio and these are to be normalised as below:

O&M expenses per Unit of the line length in Kms (OMLL) =

Expenses for lines (OML)/Average line length in Kms (LL)

O&M expenses for sub-stations (OMBN) = O&M expenses for substations (OMB)/Average number of bays (BN)]

- ii) The five years average of the normalised O&M expenses for lines and for bays for the period 1995-96 to 1999-2000 is to be escalated at 10% per annum for two years (1998-99 and 1999-2000) to arrive at normative O&M expenses per unit of line length and per bay for 1999-2000.
- iii) The normative O&M per unit length and normative O&M per bay for the year 1999-2000 for the region derived in the preceding paragraph is to be escalated @ 6% per annum to obtain normative values of O&M expenses per unit per line length and per bay in the relevant year. These normative values are to be multiplied by line length and number of bays (as the case may be) in a given system in that year to compute permissible O&M expenses for the system.
- iv) The escalation factor of 6% per annum is to be used to revise normative base figure of O&M expenses. Any deviation of the escalation factor computed from the actual inflation data that lies within 20% of the notified escalation factor of 6% shall be absorbed by utilities/beneficiaries.

36. The different elements of Operation & Maintenance expenses have been considered in the succeeding paragraphs in the light of provisions of the notification based on the data available since 1995-96.

Employee Cost

37. The petitioner has, inter alia, claimed incentive and *ex gratia* as a part of employee cost. The petitioner was asked to specify the amount of minimum statutory bonus paid to its employees under the Payment of Bonus Act. The petitioner vide its

affidavit dated 6.2.2003 has stated that the incentive paid to employees does not include minimum statutory bonus. The petitioner has further stated that the *ex gratia* was being paid in lieu of bonus, as is customary and a normal practice followed in private and public sectors. The petitioner has also furnished a write-up on Incentive scheme in support of the claim. It has been clarified on behalf of the petitioner that even the top management of the petitioner company is paid incentive and *ex gratia* included as a part of employee cost in O&M expenses claimed. The payment of incentive other than the statutory minimum bonus is at the discretion of the petitioner company and should be borne out of its profits or incentive earned from the respondents for higher availability of the Transmission System. In view of the above, the incentive and *ex gratia* payments made by the petitioner to its employees have been kept out of consideration for calculation of employee cost.

38. The petitioner was directed to furnish details of the arrears on account of pay and allowances for the period prior to 1995-96, but paid between 1995-96 to 1999-2000. The petitioner has submitted the details of such arrears, amounting to Rs.48.21 lakh and Rs 53.17 lakh paid for Eastern Region during 1995-96 and 1996-97. Similarly, the arrears for the previous years included in the employee cost for 1995-96 and 1996-97 for Corporate Office were stated to be Rs. 9.61 lakh and Rs. 35.60 lakh. The petitioner has also submitted that the arrears on account of pay revision from 01.01.97 to 31.03.2000 have been paid during the years 2000-01 and 2001-02 also. The amounts of these arrears as claimed by the petitioner are Rs.159.26 lakh and Rs.(-) Rs.4.39 lakh for Eastern Region and Rs. 297.13 lakh and Rs. 109.95 lakh for the Corporate Office for the years 2000-01 and 2001-02 respectively. The petitioner has prayed that the arrears on account of pay and allowances for the period prior to

1995-96 should be deducted while those pertaining to the period from 1995-96 to 1999-2000 but paid subsequent to 1999-2000 should be added to O&M charges. The petitioner has argued that since these pay arrears pertain to the period being considered for fixation of normative O&M, the arrears should be considered while fixing the normative O&M. We find the submission of the petitioner to be logical and have considered the submission in the calculation of employee cost.

Repair & Maintenance Expenses

39. WBSEB has stated that the petitioner has not furnished sufficient explanation for about 81% increase repair and maintenance expenses during 1997-98 over those of 1996-97. It is noted that the petitioner has explained that this variation is due to major repair in Kahalgaon-Biharshariff line due to collapse of tower. . Major repair is not a regular phenomenon, and hence expenses on this account have to be excluded from the process of normalisation. Therefore, "repair and maintenance" expenses in 1998-99 have been limited to Rs.399.68 lakh (20% over and above the "repair and maintenance" expenses for the year 1996-97). However, if any major repairs are undertaken during the tariff period covered by this order, the petitioner may approach the Commission with proper justification to claim the actual expenses as a part of O&M expenses.

Power Charges

40. In case of Corporate Office, the power charges as claimed by the petitioner have been considered in the calculation of O&M expenses. In case of Eastern Regional Transmission System (ERTS) the petitioner was directed to submit break up of power charges between substation facilities and the residential colonies. The

petitioner in its affidavits filed in these proceedings has submitted the break up. Since, power charges for residential quarters in the colony are recoverable from the employees, such charges amounting to Rs 13.96 lakh, Rs 15.19 lakh, Rs 22.4 lakh, Rs 48.77 lakh and Rs 32.47 lakh for the five years from 1995-96 to 1999-2000 have been deducted from the total power charges claimed by the petitioner for the purpose of normalisation.

Insurance

41. It has been noted that the petitioner has a policy of self-insurance for which it has created the insurance reserve. The insurance charges claimed by the petitioner are credited to the insurance reserve. The petitioner was directed to furnish the management policy on creation of insurance reserve, items of loss secured and the conditions thereto. The petitioner has submitted insurance policy of the petitioner company under affidavit dated 6.2.2003. The key features of the policy submitted by the petitioner are as under:

- (a) Insurance reserve is created @ 0.1% on gross value of fixed assets at the close of the year, to meet the future losses arising from uninsured risks, except machinery breakdown for valve hall of HVDC, and fire risk of HVDC equipment and SVC sub-stations.
- (b) The policy generally covers following:
 - (i) Fire, lightning, explosion/implosion, and bush fire
 - (ii) Natural calamity: flood, earthquake, storm, cyclone, typhoon, tempest, hurricane, tornado, subsidence and landslide
 - (iii) Riot, strike/ malicious and terrorist damage

- (iv) Theft, burglary, Missile testing equipment, impact damage due to rail/ road or animal, aircraft and articles dropped there from.
- (c) The losses of assets caused by the above causes are adjusted against insurance reserve as per the corporation guidelines.
- (d) The amount so set aside in the insurance reserve has not been separately claimed from the respondents and the expenses have been met from the permitted O&M charges under the tariff.

42. The petitioner has stated that the policy of self-insurance has also been followed by NHPC, where 0.5% per annum of the gross block of O&M projects is transferred to self-insurance reserve account. It has also been informed that the rate of 0.1% as booked under O&M expenses towards self-insurance reserve is lower than the insurance premium (0.22%) being charged by the insurance companies for the risks covered in the self-insurance policy. In support of this claim, the petitioner has placed on record a letter from Reliance General Insurance Company quoting for the insurance rate of the assets covered in the self-insurance policy of the petitioner company.

43. In view of the explanation furnished on behalf of the petitioner, the insurance charges as claimed have been considered in O&M expenses. We, however, make it explicit that the self-insurance provided by the petitioner is for replacement of the damaged assets and the beneficiaries shall not be charged anything in case of damage due to any of the events mentioned in the insurance policy.

44. In case of Training & Recruitment expenses, Communication expenses, Traveling, Rent, and Miscellaneous Expenses as claimed by the petitioner have been considered for calculation, both in the case of the ERTS as well as Corporate Office.

Other Expenses

45. In case of ERTS, the petitioner has stated that the provisions are made for the losses and shortage of store materials and for the doubtful advances paid to contractors. Since all these items are controllable by the petitioner and reflect the managerial efficiency of the petitioner, the provisions made in case of ERTS on this account have not been considered as admissible for reimbursement. In case of Corporate Office, the following expenses have not been admitted for reimbursement:

- (a) Donation of Rs. 0.05 lakh, Rs. 30 lakh, Rs. 34.78 lakh and Rs. 600.03 lakh for the years 1995-96, 1996-97, 1998-99 and 1999-2000, as these donations are not related to transmission business. The expenditure on account of the donations need be borne by the petitioner out of other profits of the corporation.
- (b) Provisions of Rs. 1107.61 lakh, Rs. 385.8 lakh and Rs. 0.27 lakh for the year 1996-97, 1997-98 and 1999-2000. These provisions were made for the loss of stores in Eastern Region and North Eastern Region, for bad and doubtful debt in Northern Region and for shortage of store in North Eastern Region. The petitioner has stated that provision of loss of store in Eastern Region (Rs 863.16 lakh in 1996-97) and provision of bad and doubtful debt in Northern Region (Rs 385.80 lakh in 1997-98) were written back during subsequent years in the regional books of

account. In view of this, the petitioner has submitted that these expenses need not be considered while fixing the O&M of the respective regions. As all these items are controllable by the petitioner and reflect the managerial efficiency. However, an amount of Rs. 11.14 lakh on account of fire at the corporate office in 1998-99 has been considered as admissible under the head provisions.

- (c) Legal expenses amounting to Rs. 2.65 lakh in the Corporate Office on legal opinion on CERC matters have not been allowed in line with the Commission's policy of allowing only the fees for the petitions filed in the Commission. However, other legal expenses for disputes related to compensation, contracts, service matters and labour cases have been admitted.

Recoveries

46. The details of the recoveries for the ERTS and the Corporate Office were furnished by the petitioner vide affidavit dated 6th February 2003. The petitioner in the aforesaid affidavit also furnished the "complete details" of the recoveries for the ERTS. According to the petitioner, the income from sale of bid documents has already been adjusted for under the sub-head Tender Expenses under the head Other Expenses. Hence, income under this sub-head has not been considered in the recovery for the ERTS as well as Corporate Office. Similarly, electricity charges recovered/recoverable from employees residential buildings and other residential buildings have not been considered under the head "recovery" as the power charges for colony consumption have been deducted in case of the ERTS.

Allocation of Corporate Office Expenses to Various Regions

47. The petitioner has submitted the method for allocation of Corporate Office expenses to various Regions. The key steps in the apportionment of Corporate Office expenses among the regions are as under:

- i) Expenses booked under Training & Recruitment, Directors sitting fees, provisions, R&D, Write off of fixed assets/ non-operating expenses and donations are considered exclusively as O&M expenses.
- ii) After deducting these exclusive O&M expenses, the balance Corporate Office expenses are allocated in the ratio of Transmission charges to annual Capital outlay to obtain expenses allocated to O&M and construction activity.
- iii) The allocation to O&M activity obtained in step (ii) is added to exclusive O&M expenses obtained in step (i) to arrive at total O&M expenses in the Corporate Office.
- iv) RLDC expenses are then deducted from the total O&M expenses obtained in step (iii) to arrive at O&M expenses allocated to transmission business.
- v) O&M expenses allocated to transmission business are then allocated to various regions in the ratio of their respective transmission charges.

48. The methodology adopted by the petitioner for allocation of Corporate Office O&M expenses has been approved and followed in the calculation of O&M expenses. The comparative statement of O&M expenses claimed by the petitioner and those allowed and considered for the years 1995-96 to 1999-2000 for the purpose of computation of O&M expenses for the tariff period are given herein below:

**DETAILS OF O&M EXPENSES FOR POWERGRID SYSTEM IN
EASTERN REGION**

								(All Figures in Rs. Lakhs)		
	1995-96		1996-97		1997-98		1998-99		1999- 2000	
Items	As per Petitioner	As allowed for	As per Petitioner	As allowed for	As per Petitioner	As allowed for	As per Petitioner	As allowed for	As per Petitioner	As allowed for
Employee Cost	1003.20	843.52	1236.89	1108.76	1672.90	1600.67	1970.16	1907.01	2551.38	2167.94
Repair & Maintenance	263.18	263.18	333.07	333.07	602.04	399.68	407.97	407.97	533.34	533.34
Power Charges	302.04	288.08	367.49	352.30	400.30	377.90	378.85	330.08	407.02	374.55
Training & Recruitment	15.17	15.17	9.14	9.14	5.12	5.12	18.25	18.25	2.32	2.32
Communications	106.71	106.71	99.94	99.94	113.20	113.20	112.85	112.85	86.81	86.81
Travelling	193.08	193.08	191.47	191.47	228.42	228.42	236.18	236.18	270.55	270.55
Printing & Stationery	15.82	15.82	15.84	15.84	18.06	18.06	20.69	20.69	16.00	16.00
Rent	14.06	14.06	13.64	13.64	16.16	16.16	16.33	16.33	15.76	15.76
Miscellaneous Expenses	210.50	210.50	269.26	269.26	283.90	283.90	375.72	375.72	533.27	533.27
Insurance	6.78	6.78	7.99	7.99	98.26	98.26	102.58	102.58	104.55	104.55
Others	76.41	71.51	64.24	60.17	176.36	120.52	493.99	395.28	75.44	75.44
Corporate Expenses Allocation	536.01	524.66	414.68	204.09	391.89	338.04	349.15	348.38	402.73	325.67
TOTAL	2742.96	2553.07	3023.65	2665.67	4006.61	3599.94	4482.72	4271.32	4999.17	4506.20
Less : Recoveries		23.78		64.49		13.18		10.01		15.64
Net O&M Expenses	2742.96	2529.29	3023.65	2601.18	4006.61	3586.76	4482.72	4261.31	4999.17	4490.56

NOTE: Only charges for power consumption at sub-stations has been considered admissible

Method of Normalizing O&M Expenses

49. The following formulae for calculation of normative O&M expenses as per the notification, as amended vide Central Electricity Regulatory Commission (Terms and Conditions of Tariff) (Second Amendment) Regulations, 2003 published in the Gazette of India on 2.6.2003 have been followed

$$AVOMLL = \frac{1}{5} \sum_{i=1995-1996}^{1999-2000} \frac{|OML_i|}{|LL_i|}$$

$$AVOMBN = \frac{1}{5} \sum_{i=1995-1996}^{1999-2000} \frac{|OMS_i|}{|BN_i|}$$

Where:

AVOMLL and AVOMBN are average normalized O&M expenses per Ckt. km of line length and per bay respectively.

OML_i and OMS_i are O&M expenses for the lines and for the sub-stations for the ith year respectively.

LL_i and BN_i are the total line length in Ckt. km and total number of bays in the ith year respectively.

50. In the process of normalisation, abnormal expenses such as expenses on account of additional security have to be deducted as per the notification, for which the petitioner may file separate petition. Accordingly, the amount of Rs 23.33 lakhs, Rs 0.68 lakhs, Rs 24.78 lakhs and Rs 143.56 lakhs spent on CISF security at Salakati

Sub-station of the Kahalgaon Transmission System for the years 1996-97 to 1999-200 has been deducted from the total O&M expenses for the region.

51. As per the above method, AVOMLL and AVOMBN are calculated based on the data for the years 1995-96 to 1999-2000. These normalised averages correspond to the year 1997-98. After escalating these averages by 10% per annum for two years, the normative O&M expenses for the base year 1999-2000 have been obtained. Normative O&M expenses for subsequent years are obtained by escalating these normative figures by 6% per annum. Following table gives comparison of the normative O&M expenses as calculated by the petitioner and as per our calculations allowed for the base year i.e. 1999-2000 and afterwards:

NORMALIZED O&M EXPENSES FOR EASTERN REGION

											(All Figures in Rs. Lakhs)	
S. NO.	Items	1995-96	1996-97	1997-98	1998-99	1999-2000	Total for five years 95-96 to 99-00	99-00	2000-01	2001-02	2002-03	2003-04
1	Total O&M expenses(Rs. Lakhs)	2529.29	2601.18	3586.76	4261.31	4490.56						
2	Abnormal O&M expenses	0.00	23.33	0.68	24.78	143.56	192.35					
3	Normal O&M expenses (S.No. 1 -S.NO. 2)	2529.29	2577.85	3586.08	4236.53	4347.00						
4	OML (O&M for lines)= 0.7 X S. NO.3	1770.50	1804.49	2510.25	2965.57	3042.90	12093.71					
5	OMS (O&M for substation) = 0.3XS.NO.3	758.79	773.35	1075.82	1270.96	1304.10	5183.02					
6	Line length at beginning of the year in Kms.	4418.70	4418.70	4418.70	4482.70	4665.70						
7	Line length added in the year in Kms.	0.00	0.00	64.00	183.00	86.00						
8	Line length at end of the year in Kms.	4418.70	4418.70	4482.70	4665.70	4751.70						
9	LL (Average line length in the Region)	4418.70	4418.70	4450.70	4574.20	4708.70	22571.00					
10	NO. of bays at beginning of the year	76	88	88	90	92						

11	NO. of bays added in the year	12	0	2	2	1						
12	NO. of bays at the end of the year	88	88	90	92	93						
13	BN (Average number of bays in the Region)	82.0	88.0	89.0	91.0	92.5	442.50					
14	AVOMLL(OML/LL)	0.40	0.41	0.56	0.65	0.65	2.668					
15	AVOMBN(OMS/BN)	9.25	8.79	12.09	13.97	14.10	58.194					
16	NOMLL(allowable O&M per unit of line length)			0.5335	0.5869	0.6456		0.6456	0.6843	0.7254	0.7689	0.8150
17	NOMBN(Allowable O&M per bay)			11.6389	12.8028	14.0831		14.0831	14.9280	15.8237	16.7731	17.7795
18	NOMLL(as calculated by petitioner)			0.6000				0.7300	0.7700	0.8200	0.8700	0.9200
19	NOMBN(as calculated by petitioner)			13.0500				15.7900	16.7400	17.7400	18.8000	19.9300

NOTE:

Security expenses on account of CISF deployment have been considered in accordance with the Notification. The petitioner may file petition for reimbursement of such abnormal expenses with justification after they are incurred.

52. The differences in NOMLL and NOMBAN as calculated by the petitioner and as allowed are mainly on account of certain expenses disallowed by us as explained in preceding paragraphs. Using these normative values, O&M charges have been calculated.

53. In our calculations the escalation factor of 6% per annum has been used. In accordance with the notification, if the escalation factor computed from the observed data lies in the range of 4.8% to 7.2%, this variation shall be absorbed by the petitioner. In case of deviation beyond this limit, adjustment shall be made on by applying actual escalation factor arrived at on the basis of weighted price index of CPI for industrial workers (CPI_IW) and index of selected component of WPI (WPI_TR).

54. The details of O&M expenses allowed are given hereunder:

2001-02			2002-03			2003-04		
Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)	Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)	Line length in Ckm	No. of bays	O&M expenses (Rs. in lakh)
824	15	835.05	824	15	885.153	824	15	938.263

RETURN ON EQUITY

55. In accordance with the notification, the petitioner is entitled to return on equity at the rate of 16% per annum. For the purpose of tariff equity of Rs. 8070.00 lakh as calculated below has been considered.

	Rs. in lakh
Equity as allowed by GoI in previous tariff setting	7988.50
Notional Equity arising out of FERV worked out as above	81.56
Total	8070.06

56. On the above basis, the petitioner shall be entitled to return on equity of Rs. 1291.21 lakh each year during the tariff period.

INTEREST ON WORKING CAPITAL

57. As provided in the notification, the interest on working capital shall cover:

- (a) Operation and maintenance expenses (cash) for one month;
- (b) Maintenance spares at a normative rate of 1% of the capital cost less 1/5th of the initial capitalised spares. Cost of maintenance spares for each subsequent year shall be revised at the rate applicable for revision of expenditure on O & M of the transmission system; and
- (c) Receivables equivalent to two months' average billing calculated on normative availability level, which is 98%.

58. In keeping with the above methodology, working capital has been worked out. The value of maintenance spares for 1997-98 has been taken as per Ministry of Power notification dated 11.5.1999 and the same has been escalated up to 2000-01 as per respective WPI/CPI and thereafter the same has been further escalated @ 6% per annum for the tariff period 2001-02 to 2003-04. The value of initial capitalised spares has been considered zero. The petitioner has claimed interest on working capital at the rate of 11.5%, based on annual SBI PLR for the year 2001-2002, which has been allowed separately by the Commission in certain other petitions and, therefore, the same has been allowed here also despite the objection of some of the respondents. The detailed calculations in support of interest on Working Capital are as under:

Interest on Working Capital

		(Rs. In lakh)		
Working Capital		2001-02	2002-03	2003-04
Escalation for Maintenance Spares	6%			
Spares	233.39			
Less: 1/5 th of Initial Spares	0.00			
Maintenance Spares	233.39	247.39	262.23	277.97
O & M expenses		69.59	73.76	78.19
Receivables		493.63	492.01	445.39
Total		810.60	828.01	801.54
Rate of Interest		11.50%	11.50%	11.50%
Interest		93.22	95.22	92.18

TRANSMISSION CHARGES

59. In the light of above discussion, we approve the transmission charges as given in the Table below:

TABLE

(Rs. in lakh)			
Transmission Tariff	2001-02	2002-03	2003-04
Interest on Loan	69.77	8.00	0.00
Interest on Working Capital	93.22	95.22	92.18
Depreciation	571.88	571.88	350.69
Advance against Depreciation	100.62	100.62	0.00
Return on Equity	1291.21	1291.21	1291.21
O & M Expenses	835.05	885.15	938.26
Total	2961.75	2952.09	2672.34

60. In addition to the transmission charges, the petitioner shall be entitled to other charges like Development Surcharge, income tax, incentive, surcharge and other cess

and taxes in accordance with the notification subject to directions, if any, of the superior courts. The petitioner shall also be entitled to recovery of filing fee of Rs 2 lakh, which shall be recovered from the respondents in five monthly installments of Rupees forty thousand each and shall be shared by the respondents in the same ratio as other transmission charges. This is subject to confirmation that the amount is not already included in the O&M charges.

61. The petitioner is already billing the respondents on provisional basis in accordance with the Commission's notification dated 4.4.2001 as extended from time to time. The provisional billing of tariff shall be adjusted in the light of final tariff now approved by us. The adjustment is, however, subject to directions of the superior courts.

62. The transmission charges approved by us shall be included in the regional transmission tariff for Eastern Region and shall be shared by the regional beneficiaries in accordance with the notification.

63. This order disposes of Petition No.25/2002.

**Sd/-
(K.N. SINHA)
MEMBER**

**Sd/-
(ASHOK BASU)
CHAIRMAN**

New Delhi dated the 17th Feb 2004